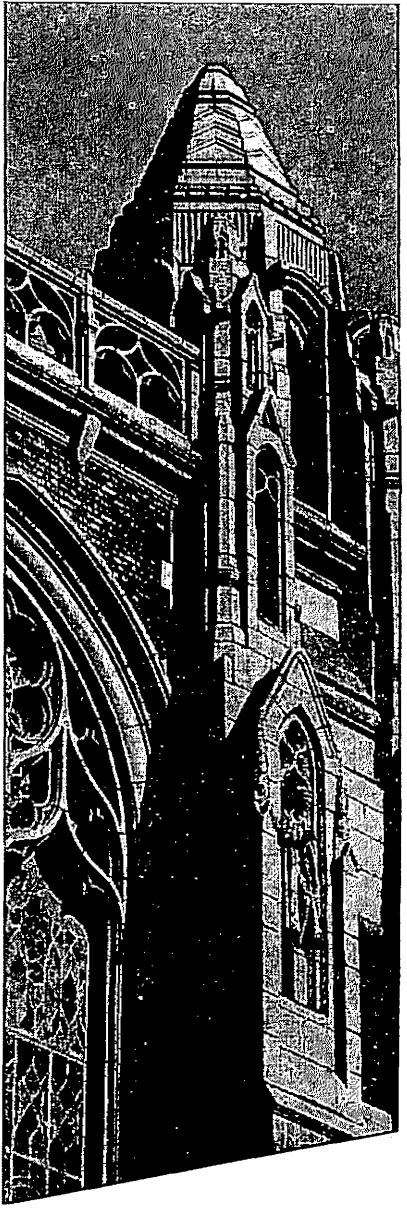
BULLETIN
UNIVERSITY
OF
WASHINGTON



COLLEGE OF
ARTS AND
SCIENCES
1953-1955

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 home 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
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
DIVISION OF HEALTH SCIENCES
  SCHOOL OF DENTISTRY
  SCHOOL OF MEDICINE
  SCHOOL OF NURSING
  COLLEGE OF PHARMACY
SCHOOL OF LAW

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT
SUMMER QUARTER ANNOUNCEMENT
HOME STUDY
EXTENSION CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 872
June, 1953

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CONTENTS

CALENDAR

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

AUTUMN QUARTER, 1953

REGISTRATION PERIOD

SEPT. 8-SEPT. 29	Registration for students in residence Spring Quarter, 1953. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 25, but no later than September 18.*)
SEPT. 11-SEPT. 29	Registration for former students not in residence Spring Quarter, 1953. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 25, but no later than September 18.*)
SEPT. 14-SEPT. 25	Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (*August 28 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. 14-SEPT. 29	Registration for new transfer students with at least full sophomore standing. (*August 28 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—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—WEDNESDAY	Instruction begins (8 a.m.) for all other students
OCT. 2—FRIDAY	President's Convocation (11 a.m.)
OCT. 6—TUESDAY	Last day to add a course
NOV. 11—WEDNESDAY	Armistice and Admission Day holiday
NOV. 26-NOV. 29	Thanksgiving recess
DEC. 18—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1954

REGISTRATION PERIOD

NOV. 23-DEC. 11	Registration for students in residence Autumn Quarter, 1953. (*Registration appointments will be issued on presentation of ASUW cards beginning October 23.*)
DEC. 29-DEC. 31	Registration for former students not in residence Autumn Quarter, 1953. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 19.*)
DEC. 29-DEC. 31	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. 4—MONDAY	Instruction begins
JAN. 8—FRIDAY	Last day to add a course
FEB. 22—MONDAY	Washington's Birthday and Founder's Day holiday
MAR. 19—FRIDAY	Instruction ends

SPRING QUARTER, 1954

REGISTRATION PERIOD

FEB. 24-MAR. 12	Registration for students in residence Winter Quarter, 1954. (*Registration appointments will be issued on presentation of ASUW cards beginning January 22.*)
MAR. 24-MAR. 26	Registration for former students not in residence Winter Quarter, 1954. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 18.*)
MAR. 24-MAR. 26	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. 29—MONDAY	Instruction begins
APR. 2—FRIDAY	Last day to add a course
MAY 21—FRIDAY	Governor's Day
MAY 31—MONDAY	Memorial Day holiday
JUNE 6—SUNDAY	Baccalaureate Sunday
JUNE 11—FRIDAY	Instruction ends
JUNE 12—SATURDAY	Commencement

SUMMER QUARTER, 1954

REGISTRATION PERIOD

JUNE 2-JUNE 4 JUNE 14-JUNE 18	Registration for all students. (*Registration appointments for students in residence Spring Quarter, 1954, and for former students not in residence Spring Quarter, 1954, may be obtained from the Registrar's Office beginning April 19. 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 21—MONDAY	Instruction begins
JUNE 22—TUESDAY	Last day to add a course for the first term
JUNE 25—FRIDAY	Last day to add a course for the full quarter
JULY 5—MONDAY	Independence Day holiday
JULY 21—WEDNESDAY	First term ends
JULY 22—THURSDAY	Second term begins
JULY 23—FRIDAY	Last day to add a course for the second term
AUG. 20—FRIDAY	Instruction ends

AUTUMN QUARTER, 1954

REGISTRATION PERIOD

SEPT. 7-SEPT. 28	Registration for students in residence Spring Quarter, 1954. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 24, but no later than September 17.*)
SEPT. 10-SEPT. 28	Registration for former students not in residence Spring Quarter, 1954. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 24, but no later than September 17.*)
SEPT. 13-SEPT. 24	Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (*August 27 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. 13-SEPT. 28	Registration for new transfer students with at least full sophomore standing. (*August 27 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. 27—MONDAY	Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing.
SEPT. 29—WEDNESDAY	Instruction begins (8 a.m.) for all other students
OCT. 1—FRIDAY	President's Convocation (11 a.m.)
OCT. 5—TUESDAY	Last day to add a course
NOV. 11—THURSDAY	Armistice and Admission Day holiday
NOV. 25-NOV. 28	Thanksgiving recess
DEC. 17—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1955

REGISTRATION PERIOD

NOV. 22-DEC. 10	Registration for students in residence Autumn Quarter, 1954. (*Registration appointments will be issued on presentation of ASUW cards beginning October 22.*)
DEC. 29-DEC. 31	Registration for former students not in residence Autumn Quarter, 1954. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 18.*)
DEC. 29-DEC. 31	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—MONDAY	Instruction begins
JAN. 7—FRIDAY	Last day to add a course
FEB. 22—TUESDAY	Washington's Birthday and Founder's Day holiday
MAR. 18—FRIDAY	Instruction ends

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

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

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NELSON A. WAHLSTROM, B.B.A.	*Comptroller and Business Manager*
LLOYD S. WOODBURNE, Ph.D.	*Dean of the College of Arts and Sciences*
WALTER L. RILEY, M.A.	*Assistant Dean of the College of Arts and Sciences*
EDWARD H. LAUER, Ph.D.	*Senior Adviser and Dean Emeritus of the College of Arts and Sciences*

COLLEGE OF ARTS AND SCIENCES FACULTY

ANTHROPOLOGY

ELMENDORF, WILLIAM WELCOME, 1946 (1950) ..... *Assistant Professor of*
B.A., 1934, M.A., 1935, Washington; *Anthropology*
Ph.D., 1949, California

GARFIELD, VIOLA EDMUNDSON, 1937 (1945) ..... *Assistant Professor of Anthropology*
B.A., 1928, M.A., 1931, Washington; Ph.D., 1939, Columbia

GUNTHER, ERNA, 1923 (1941) ..... *Professor of Anthropology; Director of the*
A.B., 1919, Barnard; *Museum; Executive Officer of the Department*
A.M., 1920, Ph.D., 1928, Columbia *of Anthropology*

HULSE, FREDERICK SEYMOUR, 1948 (1949) ..... *Associate Professor of Anthropology*
A.B., 1927, M.A., 1928, Ph.D., 1934, Harvard

JACOBS, MELVILLE, 1928 (1952) ..... *Professor of Anthropology*
A.B., 1922, College of the City of New York; A.M., 1923, Ph.D., 1931, Columbia

KIRCHHOFF, PAUL, 1947 (1950) ..... *Associate Professor of Anthropology and of*
Ph.D., 1931, Leipzig (Germany) *Far Eastern Languages and Literature*

MASSEY, WILLIAM CLIFFORD, 1950 ..... *Instructor in Anthropology and in Latin-*
A.B., 1940, California *American Geography and History*

MCCLELLAN, CATHERINE, 1952 ..... *Assistant Professor of Anthropology*
A.B., 1942, Bryn Mawr; Ph.D., 1950, California

OSBORNE, HOMER DOUGLAS, 1949 (1952) ..... *Assistant Professor of Anthropology;*
B.A., 1938, M.A., 1941, New Mexico; *Curator of the Museum*
Ph.D., 1951, California

RAY, VERNE FREDERICK, 1933 (1947) ..... *Professor of Anthropology*
B.A., 1931, M.A., 1933, Washington; Ph.D., 1937, Yale

ARCHITECTURE

BRIGHTBILL, LINWOOD JAMES, 1947 (1949)—*Assistant Professor of Architectural Engineering*
B.S. in C.E., 1931, M.S. in C.E., 1933, Minnesota

DIETZ, ROBERT HENRY, 1947 (1948)—*Assistant 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

HAUAN, MERLIN JAMES, 1928—*Lecturer in Architecture*
B.S. in E.E., 1925, Washington

HERRMAN, ARTHUR PHILIP, 1923 (1937)—*Professor of Architecture; Director of the School of Architecture*
B.A. in Arch., 1921, Carnegie Institute of Technology

HUGUS, ROBERT EDWARD, 1948 (1951)—*Assistant Professor of Architecture*
B. Arch., 1942, Minnesota; M. Arch., 1947, Harvard

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 Engineering*
B.S. in C.E., 1932, M.S. in C.E., 1934, Illinois

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 (1950)—*Assistant Professor of Architecture*
B. Arch., 1935, Washington

WALDRON, LAWRENCE GALEN, 1947 (1949)—*Instructor in Architecture*
B. Arch., 1936, Washington

WHERRETTE, WILLIAM CARNES, 1948—*Instructor in Architecture*
B. Arch., 1948, Carnegie Institute of Technology

WOLFE, MYER RICHARD, 1949—*Assistant Professor of City Planning*
B.S., 1940, New Hampshire; M. Regional Planning, 1947, Cornell

ART

ALPS, GLEN EARL, 1945 (1950)—*Assistant Professor of Art*
B.A., 1940, Colorado State College of Education; M.F.A., 1947, Washington

ANDERSON, FREDERICK NEIL, 1945 (1950)—*Instructor in Art*
B.A., 1943, Washington

BENSON, EDNA GRACE, 1927 (1936)—*Associate Professor of Art*
B.A., 1909, M.A., 1923, Columbia

BONIFAS, PAUL AMI, 1946 (1947)—*Associate Professor of Art*

BRAZEAU, WENDELL PHILLIPS, 1945 (1950)—*Assistant 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 (1947) ..... *Assistant 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

FROMBERG, GERALD, 1952 ..... *Instructor in Art*
B.A., 1946, Brooklyn College; M.A., 1951, New Mexico

FULLER, STEVEN D., 1946 (1948) ..... *Instructor in Art*
B.A., 1939, M.F.A., 1948, Washington

HEIBERG, MALVINA MATTHEWS, 1947 (1949) ..... *Instructor in Art*
B.F.A., 1939, New York

HENSLEY, MERDECES HOOVER, 1939 (1952) ..... *Lecturer in Art*
B.F.A., 1930, M.F.A., 1938, Washington

HILL, RAYMOND LEROY, 1927 (1945) ..... *Professor of Art*
Grad., 1913, Rhode Island School of Design

HIXSON, WILLIAM JOHN, 1950 ..... *Instructor in Art*
B.A., 1948, M.F.A., 1950, Oregon

ISAACS, WALTER F., 1922 (1929) ..... *Professor of Fine Arts; Director of*
B.S.F.A., 1909, James Millikin (Illinois) *the School of Art*

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 (1951) ..... *Instructor in Art*
B.A., 1948, M.F.A., 1951, Washington

PATTERSON, AMBROSE McCARTHY, 1919 (1947) ..... *Professor Emeritus of Painting;*
National School of Art (Melbourne); Juliens, *Consultant in Painting*
Colorossi, Delacluse, Whistler Simon, and Lhote
Schools of Art (Paris)

PATTERSON, VIOLA HANSEN, 1947 ..... *Instructor in 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

TSUTAKAWA, GEORGE, 1946 (1952) ..... *Assistant Professor of Art*
B.A., 1937, M.F.A., 1950, Washington

ASTRONOMY

JACOBSEN, THEODOR SIEGUMFELDT, 1928 (1952) ..... *Professor of Astronomy*
B.A., 1922, Stanford; Ph.D., 1926, California

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; 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 ..... *Instructor in Botany*
B.A., 1941, Occidental College; Ph.D., 1950, California

MEEUSE, BASTIAAN JACOB DIRK, 1952 ..... *Assistant 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; Research Consultant*
B.S., 1896, Iowa; M.A., 1909, Washington; 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

CHEMISTRY

ANDERSON, ARTHUR G., JR., 1946 (1947) ..... *Assistant 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 the Department of Chemistry; Director of Bagley Hall Laboratories*
B.S., 1928, Geneva College; M.S., 1930, Ph.D., 1932, Wisconsin

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

GREGORY, NORMAN WAYNE, 1946 (1947) ..... *Assistant Professor of Chemistry*
B.S., 1940, M.S., 1941, Washington; Ph.D., 1943, Ohio State

HALSEY, GEORGE DAWSON, JR., 1951 ..... *Assistant 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 (1949) ..... *Assistant Professor of Chemistry*
B.S., 1941, Illinois; Ph.D., 1947, Minnesota

SIMPSON, WILLIAM TRACY, 1948 (1949) ..... *Assistant 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

WIBERG, KENNETH BERLE, 1950 (1952) ..... *Assistant Professor of Chemistry*
B.S., 1948, Massachusetts Institute of Technology; Ph.D., 1950, Columbia

CLASSICS

DENSMORE, HARVEY BRUCE, 1907 (1952) ..... *Professor Emeritus of Classics; Research Consultant*
A.B., 1903, Oregon; A.B., 1907, Oxford

GRUMMEL, WILLIAM CHARLES, 1950 ..... *Assistant 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 Officer of the Department of Classics*
B.A., 1936, Toronto; Ph.D., 1940, Johns Hopkins

RABINOWITZ, WILSON GERSON, 1948 (1951) ..... *Acting Assistant Professor of Classics*
A.B., 1940, California

READ, WILLIAM MERRITT, 1927 (1945) ..... *Professor of Classics; University Editor*
A.B., 1923, DePauw; M.A., 1924, Ph.D., 1927, Michigan

THOMSON, DAVID, 1902 (1947) ..... *Professor Emeritus of Latin; Vice-President Emeritus; Prelaw Adviser*
B.A., 1892, Toronto; LL.D., 1936, British Columbia

COMMUNICATIONS

ADAMS, EDWIN HUBBARD, 1939 (1950) ..... *Associate Professor in Charge of Division of Radio and Television; Manager of University Radio Station KUOW*
B.A., 1927, M.A., 1931, Washington State College

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 ..... *Assistant 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

EVEREST, HAROLD PHILIP, 1940 (1952) ..... *Professor of Journalism; Vice-President of the University*
B.A., 1938, M.A., 1950, Washington

FROST, VERNON R., 1945 (1952) ..... *Professor of Journalism; Director of the School of Communications*
B.A., 1926, M.A., 1949, Washington

JENKINS, LESTER P., 1950 ..... *Lecturer in Journalism*

LAFROMBOISE, CLARENCE BROWN, 1950 ..... *Assistant Professor of Journalism; Executive Secretary, Washington Newspaper Publishers Association*
B.B.A., 1926, Washington

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 of Journalism*
B.A., 1924, Washington

PEARSON, HARRY S., 1950 (1952) ..... *Lecturer in Journalism*

ROOT, CORNELIUS, 1947 *Director of Laboratories in the School of Communications*

RYAN, MILO, 1946 (1952) ..... *Associate Professor of Journalism and Radio-Television*
B.A., 1928, M.A., 1934, Michigan

SETHRE, ROBERT ARTHUR, 1950 ..... *Instructor in Journalism*
B.A., 1947, Washington

DRAMA

CARR, KENNETH MILLS, 1944 (1948) ..... *Instructor in 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 ..... *Instructor in Drama*
B.A., 1936, Siena College (Tennessee)

HARRINGTON, DONAL FRANCIS, 1938 (1952) ..... *Professor of Drama*
B.A., 1928, Montana State College; 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 (1950) ..... *Instructor in Drama*
A.B., 1946, Western Reserve

SIKS, GERALDINE BRAIN, 1950 (1951) ..... *Acting Instructor in Drama*
B.A., 1935, Central Washington College of Education;
M.A., 1940, Northwestern

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 of Economics*
A.B., 1940, M.A., 1942, University of California at Los Angeles

GILLINGHAM, JOHN BENTON, 1947 ..... *Assistant Professor of Economics; Assistant*
A.B., 1939, Washington State College; *Director of the Institute of*
M.A., 1941, Wisconsin *Labor Economics*

GLICKFELD, MORRIS DAVID, 1949 (1950) ..... *Assistant Professor of Economics*
A.B., 1941, California

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 ..... *Assistant 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 (1949) ..... *Assistant Professor of Economics*
B.A., 1942, Ph.D., 1950, Wisconsin

MCCAFFREE, KENNETH MAURICE, 1949 (1950) ..... *Assistant Professor of Economics*
B.A., 1940, Southwestern College; M.A., 1942, Denver; Ph.D., 1950, Chicago

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

ENGLISH

ADAMS, ROBERT PARDEE, 1947 ..... *Associate Professor of English*
B.A., 1931, Oberlin; Ph.D., 1937, Chicago

ANDERSON, SYLVIA FINLAY, 1920 (1947) ..... *Assistant Professor of English*
B.A., 1919, M.A., 1923, Washington

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, GEORGE 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 ..... *Assistant Professor of English*
A.B., 1938, Miami (Ohio); A.M., 1940, Harvard; Ph.D., 1946, Cornell

COLTON, AGNES LOUISE, 1941 (1952) ..... *Lecturer in English*
B.A., 1925, Whitman; M.A., 1928, Oregon; Ph.D., 1939, Washington

CORNU, MAX DONALD, 1928 (1943) ..... *Associate 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 ..... *Assistant 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

DUNCAN, JOSEPH ELLIS, 1952 ..... *Instructor in English*
B.A., 1943, M.A., 1946, Louisville; Ph.D., 1951, Columbia

EBY, EDWIN HAROLD, 1927 (1947) ..... *Professor of English*
Ph.B., 1923, Chicago; Ph.D., 1927, Washington

EMERY, DONALD WILLIAM, 1934 (1947) ..... *Assistant 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 ..... *Instructor in 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 ..... *Assistant Professor of English*
A.B., 1937, Kansas City; M.A., 1938, Wisconsin; Ph.D., 1949, Cornell

HAMILTON, ALBERT CHARLES, 1952 ..... *Instructor in 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 (1948) ..... *Assistant Professor of English*
B.A., 1937, Washington; Ph.D., 1943, Yale

HOOVER, BENJAMIN BEARD, 1952 ..... *Instructor in English*
A.B., 1947, M.A., 1948, Ph.D., 1951, California

HUSTON, FRANCES BREITWEG, 1944 (1949) ..... *Instructor in English*
B.A., 1931, Reed College; M.A., 1948, Washington

KAUFMAN, HELEN ANDREWS, 1930 (1943) ..... *Assistant 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

MCKINLAY, FLORENCE DILLOW, 1937 (1950) ..... *Assistant Professor of English*
B.A., 1908, Lombard (Illinois); M.A., 1931, Washington

MARK, SARA NORRIS, 1937 (1947) ..... *Instructor in English*
B.A., 1911, B.S., 1911, M.A., 1928, Washington

MASON, MARY LUCILE, 1943 (1949) ..... *Instructor in English*
B.A., 1923, Grinnell College; M.A., 1948, Washington

MATHEWS, JACKSON, 1949 ..... *Associate Professor of General Literature*
A.B., 1928, M.A., 1931, Georgia; Ph.D., 1946, Columbia

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; 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, Chicago

RABEL, LILI ELIZABETH, 1950 (1951) ..... *Acting Instructor in English*
B.A., 1945, M.A., 1946, Michigan

REDFORD, GRANT H., 1945 ..... *Assistant Professor of English*
B.S., 1937, Utah State; M.A., 1940, Iowa

RIVENBURGH, VIOLA K., 1944 (1950) ..... *Instructor in English*
A.B., 1919, Nebraska; M.A., 1926, University of Hawaii

ROETHKE, THEODORE HUEBENER, 1947 (1948) ..... *Professor of English*
A.B., 1929, A.M., 1936, Michigan

STEIN, ARNOLD SYDNEY, 1948 ..... *Associate Professor of English*
A.B., 1936, Yale; A.M., 1938, Ph.D., 1942, Harvard

STEVENS, ARTHUR WILBUR, 1948 (1951) ..... *Acting Instructor in English*
B.A., 1942, Brown

STIRLING, THOMAS BRENTS, 1932 (1949) ..... *Professor of English*
LL.B., 1926, Ph.D., 1934, Washington

THORPE, BERENICE DU RAE, 1946 (1952) ..... *Assistant Professor of English*
B.A., 1924, M.A., 1949, Washington

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

YAGGY, ELINOR MAY, 1943 (1950) ..... *Assistant Professor of English*
B.A., 1929, M.A., 1939, Idaho; Ph.D., 1946, Washington

ZILLMAN, LAWRENCE JOHN, 1932 (1943) ..... *Associate Professor of English*
B.A., 1928, Ph.D., 1936, Washington

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

CARRASCO, PEDRO, 1951 (1952) ..... *Assistant Research Anthropologist in the*
B.A., 1937, Instituto Blasco-Ibáñez *Far Eastern and Russian Institute*
(Spain); M.S., 1945, Universidad Nacional
de México; Ph.D., 1949, Columbia

CHANG, KUN, 1951 ..... *Instructor in Far Eastern and Slavic Languages*
B.A., 1938, National Tsinghua University (China); *and Literature*
M.A., 1949, Yale

ERLICH, VICTOR, 1948 ..... *Assistant Professor of Slavic Languages and Literature*
M.A., 1937, Free Polish University (Warsaw); Ph.D., 1951, Columbia

GERSHEVSKY, NOAH DAVID, 1943 (1947) ..... *Assistant Professor of Russian Language*
B.S. in Met., 1930, Montana School of Mines

IFLAND, MIRIAM, 1949 (1951) ..... *Acting Instructor in Far Eastern and Slavic*
B.A., 1946, St. John's University (China) *Languages and Literature*

JANSEN, MARIUS BERTHUS, 1950 ..... *Assistant 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*

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 (1948) ..... *Associate Professor of Chinese Language*
Dr. Rer. Pol., 1931, Vienna (Austria)

SHIH, VINCENT YU-CHUNG, 1945 (1951) ..... *Associate Professor of Chinese*
B.A., 1925, Fukien Christian University (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 ..... *Assistant Professor of Russian History*
B.A., 1943, Oregon; M.A., 1947, Harvard; D.Phil., 1950, Oxford (England)

WILHELM, HELLMUT, 1948 (1950)..... *Associate Professor of Chinese History*
Ph.D., 1932, Berlin (Germany) *and 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

FISHERIES

BELL, FREDERICK HEWARD, 1931..... *Lecturer in Fisheries*
B.A., 1924, British Columbia

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

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 (1948)..... *Assistant Professor of Fisheries;*
B.S., 1934, M.S., 1940, Ph.D., *Assistant Researcher in Applied Fisheries*
1946, Washington *Laboratory*

GENERAL STUDIES

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

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*

LEPPARD, HENRY MILTON, 1951 ..... *Visiting Professor of Geography*
B.A., 1919, Queen's University (Canada); Ph.D., 1928, Chicago

MARTIN, HOWARD HANNA, 1930 (1940) ..... *Professor of Geography*
B.S., 1922, Pennsylvania; M.A., 1923, Ph.D., 1929, George Washington; Sc.D. (Honorary), 1937, Monmouth College

MARTS, MARION ERNEST, 1946 (1951) ..... *Assistant 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 (1948) ..... *Assistant 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

GEOLOGY

BARKSDALE, JULIAN DEVREAU, 1936 (1949) ..... *Professor of Geology*
B.A., 1930, Stanford; Ph.D., 1936, Yale

COOMBS, HOWARD ABBOTT, 1934 (1952) ..... *Professor of Geology; Executive Officer of the Department of Geology*
B.S., 1929, M.S., 1932, Ph.D., 1935, 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; M.A., 1948, Ph.D., 1952, California

MISCH, PETER HANS, 1947 (1950) ..... *Professor of Geology*
D.Sc., 1932, University of Goettingen (Germany)

WHEELER, HARRY EUGENE, 1948 (1951) ..... *Professor of Geology*
B.S., 1930, Oregon; A.M., 1932, Ph.D., 1935, Stanford

WILLIS, CLIFFORD LEON, 1946 ..... *Instructor in Geology*
B.S. in Min.E., 1939, Kansas; Ph.D., 1950, Washington

GERMANIC LANGUAGES AND LITERATURE

BUCK, GEORGE CRAWFORD, 1950 ..... *Instructor in German*
B.A., 1942, Amherst; M.A., 1948, Yale

ECKELMAN, ERNEST OTTO, 1911 (1947) ..... *Professor Emeritus of Germanic Literature; Librarian in Germanics*
B.A., 1897, Northwestern; B.L., 1898, Wisconsin; Ph.D., 1906, Heidelberg (Germany)

KAHN, ROBERT LUDWIG, 1948 (1951) ..... *Instructor in German; Assistant to the Dean, College of Arts and Sciences*
B.A., 1944, M.A., 1945, Dalhousie (Nova Scotia); Ph.D., 1950, Toronto

LAUER, EDWARD HENRY, 1934 ..... *Professor of Germanic Languages and Literature; Senior Adviser and Dean Emeritus of the College of Arts and Sciences*
A.B., 1906, A.M., 1909, Ph.D., 1916, Michigan

MEISNEST, FREDERICK WILLIAM, 1927 (1947) ..... *Professor Emeritus of Germanic Literature; Graduate Examiner*
B.S., 1893, Ph.D., 1905, Wisconsin

MEYER, HERMAN CARL HENRY, 1934 (1942) ..... *Associate Professor of Germanic Languages*
B.A., 1924, Capital; Ph.D., 1936, Chicago

REED, CARROLL EDWARD, 1946 (1952) ..... *Associate Professor of Germanic Languages*
B.A., 1936, M.A., 1937, Washington; Ph.D., 1941, Brown

REY, WILLIAM HENRY, 1950 ..... *Assistant Professor of Germanic Literature*
Ph.D., 1937, Frankfurt (Germany)

SAUERLANDER, ANNEMARIE MARGARET, 1947 (1949) ..... *Associate Professor of German*
B.A., 1928, M.A., 1930, Buffalo; Ph.D., 1936, Cornell

SCHERTEL, MAX, 1931 (1950)—*Assistant Professor Emeritus of German; Consultant on Reading Examinations for Advanced Degrees*
B.Ed., 1909, Colorado State College of Education; B.A., 1923
M.A., 1928, Ph.D., 1938, Washington

SOMMERFELD, FRANZ RENE, 1947 (1952)—*Acting Assistant Professor of German*
B.A., 1944, California; M.A., 1946, Columbia

VAIL, CURTIS CHURCHILL DOUGHTY, 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

WESNER, ELENORA M., 1924 (1950)—*Assistant Professor Emeritus of German; Undergraduate Examiner*
B.Ped., 1909, Colorado State
Normal School; A.B., 1915, Chicago; M.A., 1923, Northwestern

WILKIE, RICHARD FRANCIS, JR., 1942 (1948)—*Assistant Professor of Germanic Literature*
B.A., 1933, M.A., 1936, Washington;
Ph.D., 1953, California

HISTORY

CAVARNOS, JOHN PETER, 1952—*Acting Assistant Professor of History*
A.B., 1941, Boston; A.M., 1942, Ph.D., 1947, Harvard;
D. Phil., 1948, Athens (Greece)

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—*Assistant 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; Executive Officer of the Department of History*
A.B., 1920, Cornell; Ph.D., 1926, Johns Hopkins

KATZ, SOLOMON, 1936 (1950)—*Professor of History*
A.B., 1930, Ph.D., 1933, Cornell

LUCAS, HENRY STEPHEN, 1921 (1934)—*Professor of History*
A.B., 1913, Olivet (Michigan); 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 (1950)—*Assistant 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

SAVELLE, MAX, 1947—*Professor of History*
A.B., 1924, M.A., 1926, Ph.D., 1932, Columbia

HOME ECONOMICS

BONNELL, MILDRED, 1947 (1951)—*Acting Assistant Professor of Home Economics; Assistant Director of the University Dining Halls*
B.A., 1927, Illinois; M.A., 1942, Columbia

BROCKWAY, DORIS J., 1951—*Associate Professor of Home Economics*
B.A., 1926, Washington State College; M.A., 1939, Washington

DRESSLAR, MARTHA ESTELLA, 1918 (1937)—*Associate Professor of Home Economics*
A.B., 1913, Southern California;
B.S., 1917, Washington; M.S., 1918, Columbia

HOSMER, MARGARET GEORGE, 1948 (1950)—*Instructor in Home Economics*
B.S., 1918, North Carolina

JOHNSON, MARY LOUISE, 1945 (1947)—*Assistant Professor of Home Economics*
B.A., 1940, Hardin-Simmons; M.S., 1942, Wisconsin

MCADAMS, LAURA ELIZABETH, 1941 (1945)—*Associate Professor of Home Economics*
B.S., 1923, M.S., 1932, Kansas State

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)—*Acting Assistant Professor of Home Economics*
B.S., 1940, M.S., 1951, Washington

ROWNTREE, JENNIE IRENE, 1925 (1932)—*Professor of Home Economics; Director of the School of Home Economics*
B.S., 1918, Wisconsin;
M.S., 1925, Chicago; Ph.D., 1929, Iowa

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; Director of University Food Service*
B.A., 1923, Penn College (Iowa);
M.A., 1927, Chicago

THORSON, INA VIRGINIA, 1949—*Instructor in Home Economics*
B.A., 1944, M.A., 1949, Washington

TURNBULL, FLORENCE, 1952—*Assistant Professor of Home Economics*
B.S., 1943, Manitoba; M.S., 1945, Minnesota

WARNING, MARGARET CYNTHIA, 1943 (1947)—*Assistant Professor of Home Economics*
B.A., 1936, Morningside College (Iowa);
B.S., 1944, M.A., 1945, Washington

WYBOURN, MARJORY, 1948 (1952)—*Assistant Professor of Home Economics*
B.S., 1944, Washington; M.A., 1948, Columbia

MATHEMATICS

AGGARWAL, OM PRAKASH, 1952—*Assistant Professor of Mathematics*
B.A., 1939, M.A., 1941, Hindu College (Delhi University, India);
Ph.D., 1952, Stanford

ALLENDOERFER, CARL BARNETT, 1951—*Professor of Mathematics; Executive Officer of the Department of Mathematics*
B.S., 1932, Haverford College;
B.A., 1934, M.A., 1939, Oxford (England); Ph.D., 1937, Princeton

ARSOVE, MAYNARD GOODWIN, 1951—*Instructor in 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

BALL, RICHARD WILLIAM, 1948 (1952)—*Assistant Professor of Mathematics*
B.A., 1944, M.A., 1945, Ph.D., 1948, Illinois

BALLANTINE, JOHN PERRY, 1926 (1937)—*Professor of Mathematics*
A.B., 1918, Harvard; Ph.D., 1923, Chicago

BEAUMONT, ROSS ALLEN, 1940 (1948)—*Associate Professor of Mathematics*
A.B., 1936, M.S., 1937, Michigan; Ph.D., 1940, Illinois

BIRNBAUM, ZYGMUNT WILLIAM, 1939 (1950)—*Professor of Mathematics; Director of the Laboratory of Statistical Research*
LL.M., 1925, Ph.D., 1929, John Casimir University (Lwow, Poland)

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. (Honorary), 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

HALLER, MARY ELIZABETH, 1931 (1949) ..... *Associate Professor of Mathematics*
B.A., 1924, M.S., 1931, Ph.D., 1934, Washington

HEWITT, EDWIN, 1948 (1950) ..... *Associate 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 ..... *Assistant Professor of Mathematics*
B.A., 1945, Pomona College; Ph.D., 1949, Virginia

KOKORIS, LOUIS A., 1952 ..... *Instructor in Mathematics*
S.B., 1947, S.M., 1948, Ph.D., 1952, Chicago

LEIPNIK, ROY BERGH, 1950 ..... *Assistant Professor of Mathematics*
S.B., 1945, S.M., 1948, Chicago; Ph.D., 1950, California

MCFARLAN, LEE HORACE, 1927 (1946) ..... *Professor of Mathematics*
B.S., 1917, Kansas State Teachers College; A.M., 1921, Ph.D., 1924, Missouri

PAULSON, EDWARD, 1947 (1952) ..... *Associate Professor of Mathematics*
B.A., 1936, Brooklyn College; M.A., 1938, Ph.D., 1948, Columbia

PETERSON, RAYMOND PAUL, JR., 1950 (1952) ..... *Assistant Professor of Mathematics*
B.A., 1947, M.A., 1948, Ph.D., 1950, University of California at Los Angeles

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

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*

CHURCH, PHIL EDWARDS, 1935 (1948) ..... *Professor of Meteorology and Climatology; Executive Officer of the Department of Meteorology*
BS., 1923, Chicago; M.A., 1932, Ph.D., 1937, Clark *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

MCCLAIN, ERNEST PAUL, 1950 ..... *Acting Instructor in Meteorology*
M.S., 1950, Chicago *and Climatology*

SCHALLERT, WILLIAM LOUIS, 1947 (1951) ..... *Acting Assistant Professor of*
B.S., 1938, Wisconsin State Teachers College *Meteorology and Climatology*

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*
Dr. Mus. (Honorary), 1947, Colby College

EICHINGER, WALTER A., 1936 (1945) ..... *Assistant 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

GIBBARD, DONALD CHARLES, 1949 (1951) ..... *Acting Instructor and Executive*
B.A., 1947, M.A., 1948, Washington *Secretary of the School of Music*

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

KINSCELLA, 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

KIRCHNER, GEORGE CASINO, 1919 (1952) ..... *Associate Professor of Music*
Grad., 1911, Leipzig (Germany)

LAWRENCE, CHARLES WILSON, 1926 (1934) ..... *Associate Professor of Music*
B.M., 1918, Oberlin; 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

ROOT, CATHERINE ADAMS, 1946 (1950) ..... *Assistant Professor of Music*
B.A., 1929, B.M., 1930, Coe College; M.A., 1932, Columbia

ROSINBUM, RALPH RAMBO, 1948 (1950) ..... *Instructor in 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

WELTY, THOMAS DANIEL, 1950 (1951) ..... *Acting Instructor in Music*
B.A., 1946, Washington

WERNER, AUGUST HANSEN, 1931 (1932)—*Professor of Music*
B.S., 1913, College of Agriculture (Stend, Norway);
Grad., 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. (Honorary), 1936, Washington College of Music (Washington, D.C.)

OCEANOGRAPHY

BARNES, CLIFFORD ADRIAN, 1947—*Associate Professor of Oceanography*
B.S., 1930, Ph.D., 1936, Washington

FLEMING, RICHARD HOWELL, 1951—*Professor of Oceanography;*
B.A., 1929, M.A., 1931, British Columbia; *Executive Officer of the*
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

PAQUETTE, ROBERT GEORGE, 1946 (1952)—*Lecturer in Oceanography;*
B.S., 1936, Ph.D., 1941, *Assistant Research Oceanographer*
Washington *in Naval 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

PHILOSOPHY

CROMBIE, ALISTAIR C., 1953—*Visiting Professor of Philosophy*
B.Sc., 1938, Melbourne (Australia); Ph.D., 1942, Cambridge (England)

MATSON, WALLACE IRVING, 1950—*Assistant Professor of Philosophy*
A.B., 1942, M.A., 1948, Ph.D., 1949, California

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

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, College of City of New York; M.A., 1940, Ph.D., 1941, Harvard

TURBAYNE, COLIN MURRAY, 1950—*Assistant Professor of Philosophy*
B.A., 1940, M.A., 1947, University of Queensland (Australia);
Ph.D., 1950, Pennsylvania

PHYSICAL EDUCATION FOR MEN

BUCKLEY, ROBERT WILLIAM, 1942 (1950)—*Instructor in Physical Education*
B.A., 1950, Washington

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 (1952)—*Associate Professor of Physical Education; Executive Officer of the Department of Physical Education for Men*
B.Ed., 1930, University of California at Los Angeles; M.S., 1934, Oregon

DYE, WILLIAM HENRY HARRISON, 1950 (1951)—*Acting Instructor in*
B.S., 1937, Ohio State *Physical Education; Head Basketball Coach*

EDMUNDSON, CLARENCE SINCLAIR, 1920 (1951) ..... *Acting Instructor*
B.S.A., 1910, Idaho *in Physical Education*

HINRICHS, JOHN NEY, 1951 ..... *Acting Instructor in Physical Education*
B.A., 1950, Washington

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

MORRIS, WILLIAM CHARLES, 1948 (1951) ..... *Acting Instructor*
B.A., 1949, Washington *in Physical Education*

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*

PHYSICAL EDUCATION FOR WOMEN

BROER, MARION RUTH, 1947 (1948) ..... *Assistant Professor of Physical Education*
B.S., 1933, M.S., 1936, Wisconsin

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

KILBY, EMELIA-LOUISE, 1951 ..... *Instructor in Physical Education*
B.S., 1944, Virginia; M.A., 1947, New York

MACLEAN, DOROTHY G., 1936 (1943) ..... *Assistant Professor*
B.S., 1933, Oregon; M.S., 1938, Washington *of Physical Education*

MCLELLAN, HELEN, 1937 (1945) ..... *Associate Professor of Physical Education*
B.S., 1930, Wisconsin; M.A., 1931, Columbia

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

WALLER, MARLYS SWENSON, 1949 ..... *Instructor in Physical Education*
B.S., 1945, University of California at Los Angeles; M.A., 1946, Columbia

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; Executive Officer of the Department of Physical Education for Women*
B.S., 1931, Utah; M.S., 1936, Wisconsin

WOLF, VIRGINIA, 1950 ..... *Instructor in Physical Education*
B.A., 1946, Earlham College (Indiana); M.S., 1950, Colorado

PHYSICS

BLAIR, JOHN SANBORN, 1952 ..... *Instructor in Physics*
B.S., 1943, Yale; M.S., 1949, Ph.D., 1951, Illinois

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

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

FARWELL, GEORGE WELLS, 1948 ..... *Assistant Professor of Physics*
B.S., 1941, Harvard; Ph.D., 1948, Chicago

GEBALLE, RONALD, 1946 ..... *Assistant Professor of Physics*
B.S., 1938, M.S., 1940, Ph.D., 1943, California

HENDERSON, JOSEPH EDMONDS, 1929 (1942) ..... *Professor of Physics; Director of the Applied Physics Laboratory*
B.S., 1922, College of Wooster; Ph.D., 1928, Yale

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

JACOBSOHN, BORIS ABBOTT, 1948 ..... *Assistant Professor of Physics*
A.B., 1938, A.M., 1939, Columbia; Ph.D., 1947, Chicago

JAKOBSON, MARK JOHN, 1952 ..... *Instructor in Physics*
B.A., 1944, M.A., 1947, Montana State; Ph.D., 1951, California

KENWORTHY, RAY WILLIAM, 1929 (1950) ..... *Associate Professor of Physics*
B.A., 1924, M.S., 1925, Iowa; Ph.D., 1938, Washington

LORD, JERE J., 1952 ..... *Instructor in Physics*
B.A., 1943, Reed College; Ph.D., 1950, Chicago

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

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

PROCTOR, WARREN GEORGE, 1952 ..... *Instructor in 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

UTTERBACH, CLINTON LOUIS, 1918 (1934) ..... *Professor of Physics*
B.S., 1908, Purdue; M.S., 1918, Washington; Ph.D., 1926, Wisconsin

POLITICAL SCIENCE

BALLIS, WILLIAM BELCHER, 1948 ..... *Professor of Russian Government and Politics*
B.A., 1929, Stanford; Ph.D., 1936, Chicago

BONE, HUGH ALVIN, 1948 ..... *Professor of American Government and Politics*
B.A., 1931, North Central College; M.A., 1935, Wisconsin; Ph.D., 1937, Northwestern

BRADDICK, HENDERSON BAMPFIELD, 1952 ..... *Academic Counselor; Executive Secretary, Institute of International Affairs*
A.B., 1942, Washington; LL.B., 1949, Harvard

CAMPBELL, ERNEST HOWARD, 1946 (1949)—*Assistant Professor of Political Science; Assistant Director of the Bureau of Governmental Research and Services*
B.A., 1932, LL.B., 1935, M.A., 1936, Washington; M.A., 1942, Ph.D., 1945, Harvard

COLE, KENNETH CAREY, 1924 (1952)—*Professor of Politics and Public Law; Executive Officer of the Department of Political Science; Codirector of the Institute of Public Affairs*
B.Litt. in Law, 1924, Oxford (England); Ph.D., 1930, Harvard

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—*Instructor in 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 International Organization and Relations; Codirector of the Institute of International Affairs*
B.A., 1917, M.A., 1920, Adelaide (Australia)

MARTIN, CHARLES EMANUEL, 1924—*Professor of International Law and Political Science; Codirector of the Institute of International Affairs*
B.Litt., 1914, A.M., 1915, California; Ph.D., 1918, Columbia; LL.D., 1942, Southern California

RILEY, WALTER LEE, 1946 (1951)—*Acting Assistant Professor of Political Science; Assistant Dean of the College of Arts and Sciences*
B.A., 1933, Adams State College; M.A., 1935, Stanford

SHIPMAN, GEORGE ANDERSON, 1946—*Professor of Public Administration; Codirector of the Institute of Public Affairs*
B.A., 1925, M.A., 1926, Wesleyan University (Connecticut); Ph.D., 1931, Cornell

WEBSTER, DONALD HOPKINS, 1939 (1948)—*Professor of Political Science; Director of the Bureau of Governmental Research and Services and Municipal Research and Services*
B.A., 1929, LL.B., 1931, Ph.D., 1933, Washington

PSYCHOLOGY

AX, ALBERT F., 1951 (1952)—*Instructor in Psychiatry; Lecturer in Psychology*
B.S., 1940, Washington; A.M., 1950, Ph.D., 1950, Harvard

BIJOU, SIDNEY WILLIAM, 1948 (1951)—*Professor of Psychology; Director of the Child Development Clinic*
B.S., 1933, Florida; 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; Dean Emeritus of the Graduate School*
B.A., 1907, M.A., 1910, Nebraska; Ph.D., 1912, Pennsylvania; LL.D., 1946, Nebraska

HEATHERS, LOUISE BUSSARD, 1945—*Assistant Professor of Psychology; Senior Clinical Psychologist in the Counseling Center*
B.A., 1933, Washington; Ph.D., 1940, Yale

HERMANS, THOMAS GERALD, 1929 (1940)—*Assistant Professor of Psychology; Chief Examiner, Bureau of Testing*
B.S., 1923, M.A., 1927, Washington

HORST, A. PAUL, 1947—*Professor of Psychology; Executive Director of Division of Counseling and Testing*
A.B., 1927, California; Ph.D., 1931, Chicago

HORTON, GEORGE PLANT, 1934 (1946)—*Associate Professor of Psychology; Executive Officer of the Department of Correspondence Study*
B.S., 1926, M.A., 1930, Ph.D., 1932, Princeton

KATCHER, ALLAN, 1951—*Assistant Professor of Psychology*
B.S., 1946, Michigan; M.A., 1949, College of the City of New York; Ph.D., 1951, 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

MCKEEVER, BENJAMIN BUTLER, 1949—*Associate Professor of Psychology*
A.B., 1930, M.A., 1931, Harvard; Ph.D., 1940, Iowa

SMITH, MONCRIEFF HYNSON, JR., 1949—*Assistant Professor of Psychology*
A.B., 1940, M.A., 1941, Missouri; Ph.D., 1947, Stanford

STROTHER, CHARLES RIDDELL, 1947—*Professor of Psychology; Professor of Clinical Psychology in the School of Medicine*
B.A., 1929, M.A., 1932, Washington; Ph.D., 1935, Iowa

WILSON, WILLIAM RONALD, 1929—*Professor of Psychology*
B.A., 1917, M.S., 1920, Ph.D., 1925, Washington

WOODBURNE, LLOYD STUART, 1950—*Professor of Psychology; Dean of the College of Arts and Sciences*
A.B., 1929, M.A., 1930, Ph.D., 1932, Michigan

ROMANCE LANGUAGES

CARDONA-COOPER, RODOLFO, 1948 (1950)—*Instructor in Romance Languages and Literature*
B.A., 1946, Louisiana State

CHANG-RODRIGUEZ, EUGENIO, 1951 (1952)—*Acting Instructor in Romance Languages and Literature*
B.A., 1949, William Penn College (Iowa); 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, Université Lausanne (Switzerland)

CREORE, ALVIN EMERSON, 1940 (1947)—*Assistant Professor of Romance Languages*
A.B., 1934, M.A., 1936, Rochester; Ph.D., 1939, Johns Hopkins

DAVID, JEAN FERDINAND, 1936—*Assistant Professor of Romance Languages*
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); M.A., 1924, Michigan; Ph.D., 1929, Universidad Nacional (Bogotá)

GOGGIO, CHARLES, 1920 (1936)—*Professor of Romance Languages*
A.B., 1910, Harvard; A.M., 1914, Ph.D., 1919, Wisconsin

GUIGUET, JEAN MARCEL, 1949—*Assistant Professor of French*
B.A., 1931, Université de Lyon; Agregation de Lettres, 1939, Sorbonne (Paris)

KELLER, JEAN PAUL, 1948—*Instructor in Spanish*
B.A., 1933, Heidelberg College (Ohio); M.A., 1940, Ohio State; Ph.D., 1949, Washington

LYNCH, JOHN FRANCIS, 1947 (1949)—*Instructor in Romance Languages and Literature*
B.A., 1934, M.A., 1937, Washington

NOSTRAND, HOWARD LEE, 1939—*Professor of Romance Languages; Executive Officer of the Department of Romance Languages and Literature*
B.A., 1932, Amherst; M.A., 1933, Harvard; Docteur, 1934, Université de Paris

PERUZZI, EMILIO G., 1952—*Assistant Professor of Romance Languages*
Ph.D., 1947, Florence (Italy)

SIMPSON, LURLINE VIOLET, 1924 (1944)—*Associate Professor of Romance Languages*
B.A., 1920, M.A., 1924, Ph.D., 1928, Washington

VARGAS-BARON, ANIBAL, 1949—*Associate Professor of Spanish*
B.A., 1926, Asbury College; M.A., 1929, Ph.D., 1943, Washington

WHITTLESEY, WALTER BELL, 1909 (1929)—*Assistant Professor of Romance Languages*
B.A., 1907, M.A., 1909, Washington

WILSON, CLOTILDE MARCONNIER, 1929 (1937)—*Assistant Professor of Romance Languages*
B.A., 1926, M.A., 1927, Ph.D., 1931, Washington

WILSON, WILLIAM CHARLES EADE, 1926 (1947)—*Professor of Romance Languages*
A.B., 1922, Montana; M.A., 1925, Ph.D., 1928, Washington

SCANDINAVIAN LANGUAGES AND LITERATURE

ARESTAD, SVERRE, 1937 (1948)—*Associate Professor of Scandinavian Languages; Executive Officer of the Department of Scandinavian Languages and Literature*
B.A., 1929, Ph.D., 1938, Washington

JAHNSON, DORIS CHRISTINE, 1950 (1951)—*Acting Instructor in Scandinavian Languages*
B.A., 1950, Washington

JOHNSON, WALTER GILBERT, 1948 (1949)—*Associate Professor of Scandinavian Languages*
B.A., 1927, Augsburg College; M.A., 1929, Minnesota; Ph.D., 1935, Illinois

SOCIOLOGY

ARMSTRONG, LINCOLN, 1952—*Acting Assistant Professor of Sociology*
B.A., 1941, Bard College; M.A., 1945, Ph.D., 1951, Pennsylvania

BOWERMAN, CHARLES EMERT, 1946—*Assistant Professor of Sociology*
A.B., 1935, Denison; M.A., 1941, Ph.D., 1948, Chicago

CAMILLERI, SANTO FRANCIS, 1952—*Acting Instructor in Sociology*
A.B., 1947, A.M., 1949, University of California at Los Angeles

COHEN, JOSEPH, 1932 (1941)—*Assistant Professor of Sociology*
B.A., 1925, M.A., 1927, Washington; Ph.D., 1935, Michigan

DODD, STUART CARTER, 1947—*Professor of Sociology; Director of the Washington Public Opinion Laboratory*
B.S., 1922, M.A., 1924, Ph.D., 1926, Princeton

DORNBUSCH, SANFORD MAURICE, 1952—*Acting Assistant Professor of Sociology*
A.B., 1948, Syracuse; M.A., 1950, Ph.D., 1952, Chicago

FARIS, ROBERT E. LEE, 1948—*Professor of Sociology*
Ph.B., 1928, M.A., 1930, Ph.D., 1931, Chicago

FINLEY, JARVIS M., 1952—*Acting Instructor in Sociology*
B.A., 1941, Arkansas; M.A., 1947, Texas

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

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

LARSEN, OTTO NYHOLM, 1949 (1951)—*Acting Instructor in Sociology*
B.A., 1947, M.A., 1949, Washington

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

MCGLAMERY, CHARLES DONALD, 1949 (1950)—*Acting Instructor in Sociology*
B.S., 1942, M.S., 1949, Oklahoma Agricultural and Mechanical College

MERKLINGHAUS, OTTO ELLIS, 1947 (1951)—*Acting Instructor in Sociology*
B.A., 1946, M.A., 1949, Washington

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

MILES, FRANK FRODSHAM, 1947 (1949)—*Instructor in Sociology*
B.A., 1935, M.S.W., 1950, Washington

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

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

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

WENDLING, AUBREY, 1948 (1950)..... *Acting Instructor in Sociology*
B.A., 1944, San Francisco State College

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

SPEECH

BASKERVILLE, BARNET, 1948..... *Assistant 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; 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..... *Assistant 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)

GOLDSTEIN, BERNARD JON, 1952..... *Assistant Professor of Speech*
A.B., 1942, Brooklyn; M.A., 1947, Ph.D., 1952, Columbia

GRAYUM, HELEN STOLTE, 1950 (1952)..... *Acting Instructor in Speech*
A.B., 1933, Nebraska State Teachers College; M.A., 1935, Iowa;
Ph.D., 1952, Indiana

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

HOGAN, MICHAEL, 1947 (1949)..... *Instructor in Speech*
B.A., 1938, M.A., 1950, Washington

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

LA RUSSO, DOMINIC, 1951..... *Acting Instructor in Speech*
B.A., 1950, Washington

LASHLEY, WARREN LESTER, 1950..... *Instructor in Speech*
B.A., 1949, Kent State University; M.A., 1950, Northwestern

MUMFORD, GLADYS ANN, 1949..... *Instructor in Speech*
B.S., 1944, State Teachers College (Shippensburg, Pennsylvania);
M.A., 1948, Iowa

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

NILSEN, THOMAS ROBERT, 1950..... *Instructor in Speech*
B.A., 1940, M.A., 1948, Washington

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..... *Instructor in Speech*
B.A., 1946, M.A., 1950, Ph.D., 1952, Michigan

PENCE, ORVILLE LEON, 1941 (1946)..... *Assistant 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

RANCK, GLORIA VIRGINIA, 1950..... *Acting Instructor in Speech*
B.A., 1938, Earlham College

RICHARDS, GALE LEE, 1952..... *Assistant Professor of Speech*
B.A., 1940, Akron; M.A., 1942, Ph.D., 1950, Iowa

TIFFANY, WILLIAM ROBERT, 1951 ..... *Assistant Professor of Speech*
B.A., 1946, M.A., 1947, Washington; Ph.D., 1951, Iowa

TRISOLINI, ANTHONY GEORGE, 1952 ..... *Instructor in Speech*
B.A., 1950, Hartwick College; M.A., 1951, Northwestern

WITKIN, BELLE RUTH, 1950 (1951) ..... *Acting Instructor in Speech*
B.A., 1939, College of Puget Sound; M.A., 1951, Washington

ZOOLOGY

BAILEY, ROBERT E., 1952 ..... *Instructor in Zoology*
A.B., Santa Barbara College, 1948; Ph.D., 1951, California

EDMONDSON, WALLES 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 ..... *Assistant Professor of Zoology*
A.B., 1936, M.A., 1941, California; Ph.D., 1952, George Washington

KINCAID, TREVOR, 1899 (1947) ..... *Professor Emeritus of Zoology;*
B.S., 1899, Washington; *Research Consultant*
D.Sc., 1940, College of Puget Sound

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; Ph.D., 1941, New York

PASSANO, LEONARD MAGRUDER, III, 1953 ..... *Instructor in Zoology*
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 ..... *Associate in Microbiology*
B.S., 1934, M.S., 1952, Washington

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

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

GREEN, ALVIN WARREN, 1947 (1951) ..... *Assistant Professor of Public Health and*
B.S. in C.E., 1940, Iowa; *Preventive Medicine; Public Health Engineer*
M.S. in E., 1951, Washington

GROMAN, NEAL BENJAMIN, 1950 ..... *Instructor in Microbiology*
S.B., 1947, Ph.D., 1950, Chicago

GUSTAFSON, PAUL VICTOR, 1948 ..... *Assistant Professor of Microbiology*
B.S., 1936, Whitworth; M.S., 1937, Ph.D., 1942, Illinois;
M.D., 1947, Chicago

HAIN, RAYMOND, 1951 (1952) ..... *Assistant Professor of Pathology*
M.D., 1945, Jefferson Medical School

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 ..... *Instructor in Microbiology*
B.A., 1942, Brooklyn College; M.D., 1949, California

LAZARUS, ALFRED S., 1948 ..... *Associate Professor of Public Health and*
A.B., 1935, M.A., 1937, Ph.D., 1938, California *Preventive Medicine*

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

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

POWERS, LELAND EARLE, 1946 ..... *Professor of Public Health and Preventive*
M.D., 1933, Iowa; *Medicine; Executive Officer of the Department*
M.S. in P.H., *of Public Health and Preventive Medicine;*
1939, Michigan *Campus Health Officer*

REEVES, GEORGE SPENCER, 1935 (1950) ..... *Associate Professor of Physical*
B.S., 1933, Oregon State; M.S., 1938, *Education and Public Health and*
Oregon; M.P.H., 1951, California *Preventive Medicine*

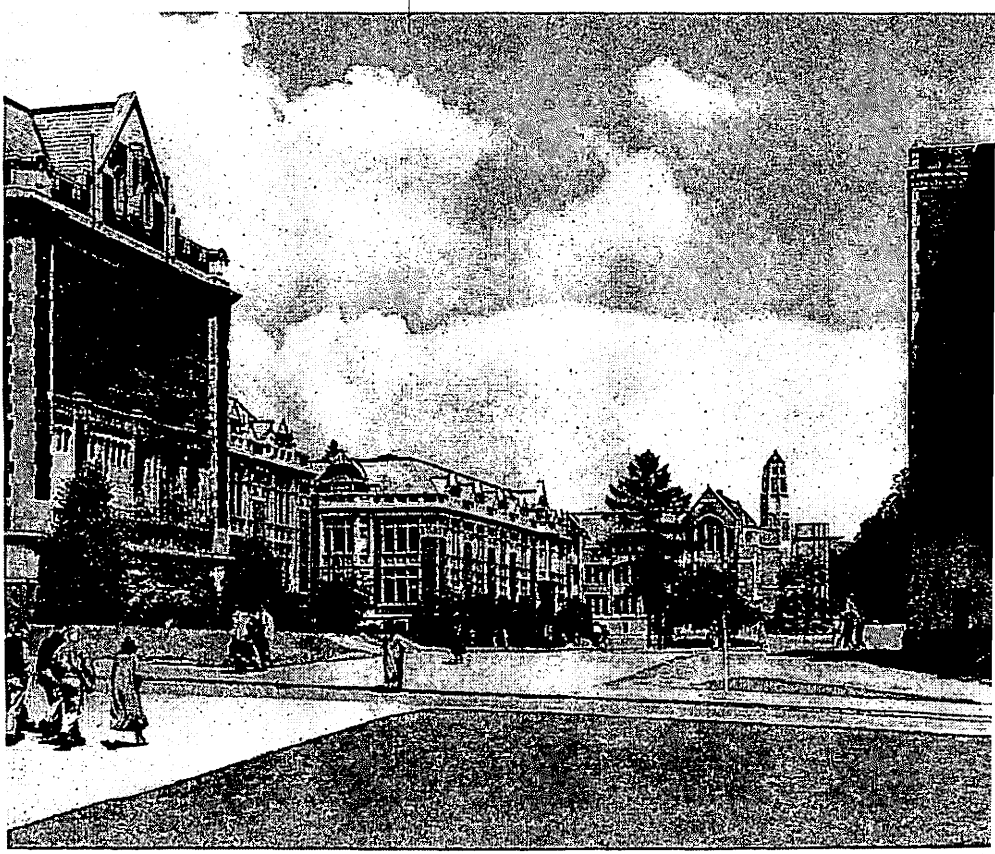
REIFF, ROBERT H., 1952 ..... *Instructor in Pathology*
A.B., 1939, Whitman College; Ph.D., 1944, M.D., 1948, Minnesota

THIERSCH, JOHN, 1950 (1952) ..... *Associate Professor of Pathology*
M.D., 1935, Bern (Switzerland); M.D., 1935, Freiburg (Germany);
M.D., 1938, Adelaide (Australia); M.D., 1951, Washington

THORNTON, HELEN K., 1947 ..... *Research Associate in Pathology*
B.S., 1937, M.S., 1939, Washington; Ph.D., 1944, Ohio State

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



GENERAL INFORMATION

GENERAL INFORMATION

THE FIRST COURSES offered by the University when it opened on 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, and 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 semi-professional 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, nursing, and social work), which prepare students for entrance to professional schools.

4. Special programs (including General Education, General Studies, and Premajor).

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 in 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 theaters, the Showboat, the Penthouse, and the Playhouse, are used throughout the year in the School of Drama program. Radio Station KUOW, an FM station operated by the School of Communications, is used both for student training and for public service in radio.

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.

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 28, 1953, or August 27, 1954.* 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 unit[1] 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 College of Arts and Sciences are as follows: 3 units of English; 2 units of one foreign language; 2 units of mathematics, including ele-

[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.

mentary algebra and plane geometry (both algebra and geometry are required for architecture and science majors, but non-science majors may present 2 units of algebra if preferred); 1 unit of social science; 1 unit of one laboratory science; and at least 7 units of electives. Less than one 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 various departments (see pages 51-196).

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. Those deficient in both first-year algebra and plane geometry are seldom admitted on this basis. 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. (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.) 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 $15 per course) and do not carry University credit.

SCHOLARSHIP REQUIREMENT. The University scholarship requirement is a high school grade point of 2.0 (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 2.0 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 academic credits with a 2.0 grade average, except that if he carries less than 12 hours in one quarter, he may not be removed from probation unless he has earned at least a 2.0 average for the current quarter, as well as a minimum cumulative average of 2.0 for his total quarters in attendance. A student removed from probation under these provisions then is subject to the regular scholarship rules.

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 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 difficulty at his former school.

2. Applicants who have completed a year or more of college work must have a 2.0 grade-point average in their entire college records. Those with less than a year of college work must have a 2.0 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

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 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.

ADMISSION WITH GRADUATE STANDING

Prospective graduate students must apply for admission to the Graduate School. Entrance requirements are described in the *Graduate School Bulletin.*

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.

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 on campus each quarter.

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 all of the required steps for 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 Education 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, medicine, and nursing.

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 AND ACHIEVEMENT TESTS

New freshman students (including transfer students with less than 45 quarter credits) take achievement tests in English, social science, natural science, and mathematics, and a general aptitude test as part of the registration requirements. Test results do not affect admission but are used in advising and in assigning students to appropriate sections of English, mathematics, and other courses. 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.

Veterans who are accepted for entrance to the College of Arts and Sciences 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 two months before 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 consult a Veterans Administration regional office at least one month before the beginning of the quarter. 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, because allowances are not made until after monthly attendance is established.

Principal fees for each quarter (Autumn, Winter, and Spring) are listed below.

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

The fee for auditing in the Nursery School is $15 rather than $12.

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 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.

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 (for ASUW members, optional), 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 for men students taking physical education activities.

Music Fees, per quarter

Private lessons, one-half hour a week 25.00

Private lessons, one hour a week 37.50

Group lessons 5.00

Piano practice, one hour a day 3.00

Organ practice, one hour a day 6.00

Practice rooms are available only to students taking music courses.

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 to $5 is charged for late registration; $2 for each change of registration; $5 for a late medical examination; and $1 for a late X ray. The fee for a special examination is $1; for an advanced-credit examination, $2 per credit; and for removal of an Incomplete, $2.

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.

ESTIMATE OF YEARLY EXPENSES

The figures given below are minimum estimates for an academic year, which includes Autumn, Winter, and Spring Quarters. Special charges and the cost of books and supplies vary according to the course program and may change from year to year. 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
Athletic Admission Ticket (optional)	5.00
Accident Insurance (optional)	4.95
Special Charges and Deposits	38.50

Military uniform deposit, breakage ticket, and locker fees.

Books and Supplies	75.00

Board and Room

Double room in campus temporary dormitory, with meals in University Commons and Student Union Cafeteria, or double room and meals in Men's Residence Hall	500-570.00
Room and meals in Women's Residence Halls—single, 600.00; double,	525.00
Room and meals in student cooperative house	445-460.00
Room and meals in fraternity or sorority house	660-700.00

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

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.

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, which is scheduled for completion in the fall of 1953, or in University-operated temporary dormitories, 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, Friends' Center, 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.

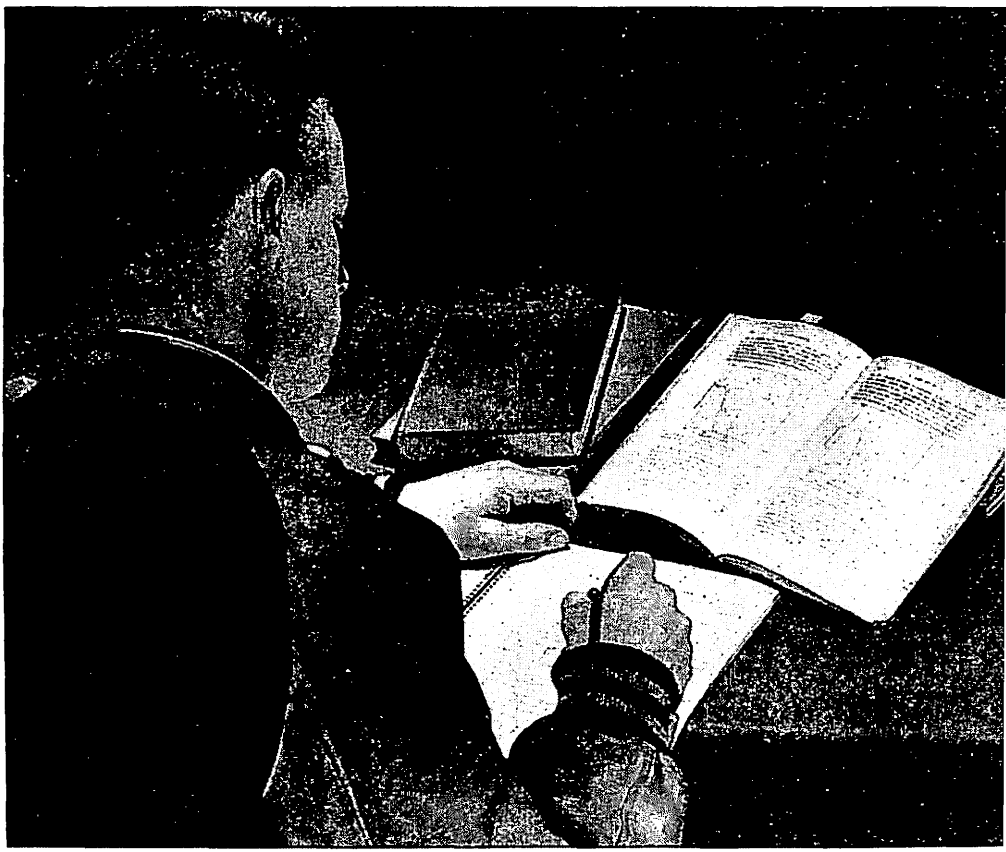
HEALTH SERVICES

The University Health Center helps to guard against infectious diseases and incipient ill health. Treatment is available for most cases of illness. A dispensary serves students during class hours, and an infirmary receives bed patients at any hour. Infirmary patients receive nursing care, medicine, and the attendance of a staff doctor up to one week each quarter without charge; after the first week, the cost is $2 a day. At their own expense, patients may consult any licensed physician in good standing.

To supplement the protection of the Health Center, the ASUW and the Board of Regents have approved a student accident insurance plan. This low-cost group policy is underwritten by a private insurance company and provides twenty-four-hour coverage up to $500 for accidental injuries sustained on or off campus. Participation is optional. Detailed information about quarterly cost and limits of coverage is given to students during registration.

PLACEMENT

Part- and full-time work off campus may be obtained through the University Placement Office. Placement services are available to students and graduates of the University and to the wives and husbands of University students. 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 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, medicine, and nursing. 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. Every student has the privilege of graduating under the requirements most recently published 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 may 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 197-203).

Exemptions from the requirements 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 take Physical Education 104, a basic skills course, in their first

quarter, and swimming in their second or third quarter. In the other four quarters they may choose any four of a variety of gymnastics and sports, or may substitute freshman or varsity sports.

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 have attained the age of twenty-five.
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 Health Officer as unfitted to join regular classes will be assigned by the Executive Officer of the School 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 approved transfer of credit for a similar course taken at 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. For women transfer students with less than a normal year's credit, the question of imposing this requirement is referred to the Department of Physical Education for Women.

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 1.8. All other students must maintain an average of 2.0, and a cumulative average of 2.0 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, three points; C, 2 points; 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 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 10 credits in their major subject at this College.

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:

Humanities	*Social Sciences*	*Sciences*
Architecture	Anthropology	Anatomy 301
Art	Economics	Astronomy
Classics	Far Eastern Institute courses	Biochemistry
Drama	Geography	Biology
English	History	Botany
Far Eastern languages	Home economics	Chemistry
General literature	Philosophy	Fisheries
Germanic languages	Physical education	Geology
Humanities 101, 102, 103, 201, 202, 203	Political science	Mathematics
Journalism	Psychology	Meteorology
Liberal Arts	Social Science 101, 102, 103, 201, 202, 203	Microbiology
Librarianship	Sociology	Oceanography
Music		Pharmacy 115
Radio		Physical Science 101, 102, 104
Romance languages		Physics
Scandinavian languages		Zoology
Slavic languages		
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 military training 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.

GRADUATE 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.*

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

ANTHROPOLOGY

Executive Officer: ERNA GUNTHER, 211 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 103).

BACHELOR OF ARTS

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

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

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

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School 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.

As part of the graduate offering a field school is being established at La Paz, Baja California, in conjunction with La Escuela Nacional de Antropología y Historía de México. Arrangements have been made for a coordinated program consisting of the following graduate courses: 501, 523, 571, and 581.

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.

212, 213, 214 World Ethnography (5,5,5)
Basic descriptive surveys of primitive cultures designed as prerequisites to advanced work in specific areas.

212 The Americas — **Staff**
Indian cultures of North and South America.

213 Africa and Oceania — **Elmendorf**
The cultures of Africa and the islands of the Pacific.

214 Eurasia — **Hulse**
The cultures of peoples in Europe and Asia.

270 Field Course in Archaeology (12) — **Staff**
Archaeological methods and techniques as demonstrated through field experience. Prerequisite, 5 credits in anthropology. (Offered Summer Quarter only.)

280 Theories of Race (2) — **Massey, Elmendorf**
Survey of human heredity; racial history; race differences. Not open to students who have had 101, 380, or 390.

310 North American Indians (3) — **Gunther**
A descriptive and analytical study of American Indian cultures north of the Rio Grande. Prerequisite, 212.

312 Peoples of Oceania (3) — **Elmendorf**
Ethnographic analysis of the islands of the Pacific, including the effects of modern contacts. Prerequisite, 213.

313 Peoples of Africa (3) — **Staff**
Prerequisite, 213.

314 Peoples of Central and Northern Asia (3) — **Kirchhoff**
Prerequisite, 214.

315 Native Peoples of Latin America (3) — **Massey**
Indigenous cultures of Mexico and Central and South America. Indian elements in modern Latin America. Prerequisite, 212.

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 1953-54.)

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.

411 Indian Cultures of the Pacific Northwest (3) — **Garfield**
Comparative analysis of material culture and social, religious, and political institutions. Prerequisite, 310.

413 Aboriginal Peoples of Australia (3) — **Staff**
The dynamics of a contemporaneous stone-age culture. Prerequisite, 213.

417 Middle American Civilization (2) — **Kirchhoff**
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) — **Elmendorf**
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.

437 Primitive Social and Political Institutions (3) — **Staff**
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, 103, Psychology 100, and junior standing.

442 Socialization of the Child in Primitive Cultures (3) **Staff**
How the child is molded in cultural patterns and prepared for adult life in various primitive societies; comparative data from tribes in North and South America, Africa, Asia, Australia, and Oceania. Prerequisite, 102, or 15 credits in social sciences.

450J Introduction to General Linguistics (5) **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 (2) **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) **Staff**

499 Undergraduate Research (*, maximum 12) **Staff**
Prerequisite, permission.

COURSES FOR GRADUATES ONLY

501 Laboratory Analysis of Field Data (2) **Staff**
(Offered at La Paz Field School only.)

505 Field Techniques in Ethnography (3) **Gunther**

511 Cultural Problems of the Northwest Coast (3) **Garfield**

519J Seminar on Asia (3) **Wilhelm, Kirchhoff, Staff**
The large cultural regions of the continent are studied in succession with special reference to anthropological problems. Offered jointly with the Far Eastern and Russian Institute.

521 Native American Culture History (4) **Kirchhoff**
A historical interpretation of the geographical distribution of critical aspects of North and South American Indian cultures.

522 Cultural Problems of Western America (3) **Elmendorf**

523 Colloquium on Arid America (5) **Staff**
(Offered at La Paz Field School only.)

525 Seminar in Culture Processes (3) **Staff**

531 Analysis of Oral Literature (3) **Garfield**

542 Personality Patterns in Japanese Culture (3) **Staff**

551 Field Techniques in Linguistics (3) **Staff**

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) **Gunther**

570 Seminar in Archaeology (3) **Osborne**

571 Field Course in Archaeology and Historic Anthropology (5) **Staff**
(Offered at La Paz Field School only.)

580 Anthropology in Contemporary Problems (3) **Staff**

581 Field Course in Migration and Population Study (5) **Staff**
(Offered at La Paz Field School only.)

600 Research (*) **Staff**

Thesis (*) **Staff**

ARCHITECTURE

Director: ARTHUR P. HERRMAN, 204 Architecture Hall

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

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

Students are not permitted to deviate from a curriculum or substitute courses except with the consent of the Director of the School. In the courses in design—

Architecture 224, 225, 226, 324, 325, 326, 424, 425, and 426—a student may sometimes advance by excellence of work, without technical registration for all quarters.

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

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

PRE-ARCHITECTURE REQUIREMENTS

First Year

	CREDITS
Arch. 100, 101 Appreciation	4
Arch. 105 The House	2
Engl. 101, 102, 103 Composition	9
Math. 104, 155, 156 Plane Trig. & Arch. Math.	9
Soc. 110 Survey	5
Soc. 255 American Housing	5
Electives	8
Phys. Educ. 110 or 175 Health	2
Phys. Educ. activity	3
ROTC	6-9
	47-56

Second Year

	CREDITS
Arch. 124, 125, 126 Arch. Des., Gr. I	18
Econ. 200 Introduction	5
Physics 101 or 104 General	5
Physics 112, 113 Arch. Physics	10
Electives	8
Phys. Educ. activity	3
ROTC	6-9
	49-58

BACHELOR OF ARCHITECTURE

Third Year

	CREDITS
Arch. 224, 225, 226 Arch. Des., Gr. II	21
Arch. 230, 231, 232 Materials	6
Arch. 240, 241, 242 Water Color	9
Arch. 276, 277, 278 Statics, Strength, Analysis	9
	45

Fourth Year

	CREDITS
Arch. 300, 301, 400 History	6
Arch. 324, 325, 326 Arch. Des., Gr. III	21
Arch. 360, 361 Theory	4
Arch. 376, 377, 378 Struct. Des.	12
Arch. 380 Intro. to City Plan.	3
	46

Fifth Year

	CREDITS
Arch. 401, 402, 403 History	6
Arch. 424, 425, 426 Arch. Des., Gr. IV	21
Arch. 430, 431, 432 Contract Drawings	10
Arch. 435, 436, 437 Mech. Equip.	6
Arch. 469 Specifications	3
	46

BACHELOR OF ARCHITECTURE IN CITY PLANNING

Third Year

	CREDITS
Arch. 224, 225, 226 Arch. Des., Gr. II	21
Arch. 230, 231, 232 Materials	6
Arch. 240, 241, 242 Water Color	9
Arch. 276, 277, 278 Statics, Strength, Analysis	9
	45

Fourth Year

	CREDITS
Arch. 324, 325 Arch. Des., Gr. III	14
Arch. 360, 361 Theory	4
Arch. 380 Intro. to City Plan.	3
Arch. 480 City Plan. Practice	3
Arch. 490 City Plan. Des.	7
Econ. 350 Public Finance and Taxation I	5
Gen. Engr. 121 Plane Surveying	3
Geog. 477 Urban	5
Electives	3
	47

Fifth Year

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

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

COURSES FOR UNDERGRADUATES

100, 101 Architectural Appreciation (2,2) — **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) — **Hugus, Mithun, Rohrer, Smith, Tsutakawa, Wherrette**
Design and drawing fundamentals to provide a working knowledge, language, and tools for the architect. Prerequisite, permission.

224, 225, 226 Architectural Design, Grade II (7,7,7) — **Hugus, Kolb, Lovett, Sproule, Wherrette, Wolfe**
Prerequisite, 126.

230, 231, 232 Materials and Their Uses (2,2,2) — **Waldron**
Prerequisite, Physics 113.

240, 241, 242 Water Color (3,3,3) — **Hill, Mason**
Still-life and outdoor sketching. Prerequisite, architecture major.

276 Statics (3) — **Jensen, Brightbill**
Basic analysis of forces and force systems by analytical and graphic methods. Stress analysis of trusses. Prerequisite, Mathematics 156.

277 Strength of Materials (3) — **Jensen, Brightbill**
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, Brightbill**
Determination of roof loads. Complete design of various types of roof trusses in timber and steel. Prerequisite, 277.

300, 301 History of Architecture (2,2) — **Pries**
Byzantine, Romanesque, and Gothic periods. Prerequisite, 101.

314, 315, 316 Architectural Drawing (4,4,4) — **Mithun, Rohrer, Tsutakawa**
Orthographic projection, shades and shadows, perspective, drafting and rendering techniques.

324, 325, 326 Architectural Design, Grade III (7,7,7) — **Dietz, Gowen Pries, Lovett, Sproule**
Prerequisite, Architectural Design, Grade II.

360, 361 Theory and Analysis (2,2) — **Gowen**
Design theory, planning, analysis of and reports on building types. Prerequisite, Architectural Design, Grade II.

376 Structural Design: Timber and Steel (4) — **Brightbill, Radcliffe**
Analysis and design of complete building frames. Laminated wood frames. Uses of arches and rigid frames in building construction. Earthquake resistance in design. Prerequisite, 278.

377, 378 Structural Design: Reinforced Concrete (4,4) — **Brightbill, Radcliffe**
377: introduction to the analysis of continuous structures. Development of basic design equations. Design of reinforced concrete beams, girders, and one-way and two-way floor slabs. Prerequisite, 376. 378: design of flat slabs, columns, stairways, footings, foundation walls, and retaining walls. Prerequisite, 377.

380 Introduction to City Planning (3) — **Wolfe**
Circulation, recreation, open areas, public buildings, private development, new towns, and garden cities. Prerequisite, urban planning or architecture major.

400, 401, 402, 403 History of Architecture (2,2,2,2) — **Gowen, Herrman**
400, 401, 402: comparative study of the Renaissance in Europe. Prerequisite, 301. 403: from the middle of the eighteenth century to the present. Prerequisite, 402.

424, 425, 426 Architectural Design, Grade IV (7,7,7) — **Dietz, Gowen Herrman, Pries, Steinbrueck**
Prerequisite, Architectural Design, Grade III.

427, 428, 429 Architectural Problems (3-7,3-7,3-7) — **Herrman, Staff**
Prerequisite, 426.

430, 431, 432 Contract Drawings (2,4,4) — **Dietz**
Lectures and drafting-room practice. Prerequisites, 378 and Architectural Design, Grade III.

435, 436, 437 Mechanical Equipment of Buildings (2,2,2) — **Hauan**
Analysis and methods of air conditioning, lighting, sanitation, heating, etc.

469 Specifications and Contracts (3) **Waldron**
Contract forms, office organization and methods, and ethics.

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.

490, 491, 492, 493, 494 City Planning Design (7,7,7,7,7) **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: WALTER F. ISAACS, 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 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
Art 105 Drawing	3
Art 109 Design	3
Engl. 101 Composition	3
Modern foreign language	5
Phys. Educ. 110 or 175 Health	2
Phys. Educ. activity	1
ROTC	2-3
	17-20

SECOND QUARTER	CREDITS
Art 106 Drawing	3
Art 110 Design	3
Engl. 102 Composition	3
Modern foreign language	5
Phys. Educ. activity	1
ROTC	2-3
	15-18

THIRD QUARTER	CREDITS
Art 107 Drawing	3
Art 111 Design	3
Engl. 103 Composition	3
Modern foreign language	5
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	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
Art 112 History	5
Art 253 Design	3
Art 256 Painting	3
Electives	4
Phys. Educ. activity	1
ROTC	2-3
	16-19

SECOND QUARTER	CREDITS
Art 254 Design	3
Art 257 Painting	3
Art 272 Sculpture	3
Electives	6
Phys. Educ. activity	1
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Art 255 Design	3
Art 258 Painting	3
Electives	9
Phys. Educ. activity	1
ROTC	2-3
	16-19

Third Year

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

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 301 Int. Design	2	Art 450 Illustration or 451 Printmaking	5	Art 320 History	2
Art 463 Composition	3	Art 464 Composition	3	Art 497 Seminar	1
Art 495 Seminar	1	Art 496 Seminar	1	Electives	12
Electives	9	Electives	6		15
	15		15		

CURRICULUM IN ART EDUCATION. Students who wish to emphasize high school teaching will follow the curriculum prescribed below. This curriculum includes 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 Health	2	Phys. Educ. activity	1	ROTC	2-3
Phys. Educ. activity	1	ROTC	2-3		15-18
ROTC	2-3		17-20		
	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 Painting	3
Art 256 Painting	3	Lab. science	5	Educ. 209 Educ. Psychol.	3
Lab. science	5	Electives	4	Educ. 370 Teaching Procedures	5
Phys. Educ. activity	1	Phys. Educ. activity	1	Phys. Educ. activity	1
ROTC	2-3	ROTC	2-3	ROTC	2-3
	17-20		16-19		15-18

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. School Methods	5	Educ. 374 Reading Instruction	5
Music elective	2	Hist. 102 Modern European, 241 United States, or equivalent	5	Nursery Sch. 305 Personality Growth of the Preschool Child, Educ. 402 Child Study & Development, or Psychol. 306 Child Psychol.	3-5
Electives	5		15	Electives	2
	15				15-17

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 463 Composition	3	Art 466 Comm. Design	5	Art 497 Seminar or elective	1
Art 495 Seminar or elective	1	Art 496 Seminar or elective	1	Educ. 372E Professional Lab. Experiences	3
Educ. 320 Art	2	Educ. 371S Directed Teaching, Senior High	8	Educ. 360 Principles	3
Philos. 445 Philos. of Art or Lib. Arts 111 Fine Arts	5	Educ. 390 Evaluation in Educ.	3	Educ. 373 State Manual	2
Pub. Health 461 School & Community Health Programs	5		17	Hist. 464 Wash. & the Pacific Northwest	5
	16			Electives	2
					16

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

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

Second Year

FIRST QUARTER	CREDITS
Art 112 History	5
Art 253 Design	3
Art 256 Painting	3
Arch. 100 Appreciation	2
Electives	3
Phys. Educ. activity	1
ROTC	2-3
	17-20

SECOND QUARTER	CREDITS
Art 151 Fig. sketching	1
Art 254 Design	3
Art 257 Painting	3
Psychol. 100 General	5
Arch. 101 Appreciation	2
Phys. Educ. activity	1
ROTC	2-3
	15-18

THIRD QUARTER	CREDITS
Art 255 Design	3
Art 258 Painting	3
Art 320 History	2
Econ. 200 Introduction	5
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	16-19

Third Year

FIRST QUARTER	CREDITS
Art 305 Lettering	3
Art 329 Appreciation	2
Journ. 220 Fundamentals of Advertising	3
Lab. science	5
Electives	2
	15

SECOND QUARTER	CREDITS
Art 306 Adv. Lettering	3
Art 326 History	2
Journ. 370 Display Advertising	3
Lab. science	5
Electives	2
	15

THIRD QUARTER	CREDITS
Art 362 Life	3
Journ. 371 Typography	3
Pol. Sci. 201 Survey or Sociol. 301 General	5
Electives	4
	15

Fourth Year

FIRST QUARTER	CREDITS
Art 369 Cost. Design	2
Art 463 Composition	3
Art 495 Seminar	1
Electives	9
	15

SECOND QUARTER	CREDITS
Art 370 Cost. Design	2
Art 450 Illust. or 451 Printmaking	5
Art 466 Comm. Design	5
Art 496 Seminar	1
	13

THIRD QUARTER	CREDITS
Art 467 Comm. Design	5
Art 497 Seminar	1
Electives	9
	15

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

First Year

FIRST QUARTER	CREDITS
Art 105 Drawing	3
Art 109 Design	3
Arch. 100 Appreciation	2
Engl. 101 Composition	3
Phys. Educ. 110 or 175 Health	2
Phys. Educ. activity	1
ROTC	2-3
	14-17

SECOND QUARTER	CREDITS
Art 106 Drawing	3
Art 110 Design	3
Arch. 101 Appreciation	2
Engl. 102 Composition	3
Gen. Engr. 107 Engr. Drawing	3
Phys. Educ. activity	1
ROTC	2-3
	15-18

THIRD QUARTER	CREDITS
Art 107 Drawing	3
Art 111 Design	3
Art 272 Sculpture	3
Engl. 103 Composition	3
Math. 101 Intermed. Alg.	5
Phys. Educ. activity	1
ROTC	2-3
	18-21

Second Year

FIRST QUARTER	CREDITS
Art 253 Design	3
Arch. 314 Drawings	4
Mech. Engr. 201 Metal Castings	1
Physics 101 or 104 General	5
Phys. Educ. activity	1
ROTC	2-3
	14-17

SECOND QUARTER	CREDITS
Art 254 Design	3
Arch. 315 Drawing	4
Mech. Engr. 202 Welding	1
Physics 112 For Architects	5
Phys. Educ. activity	1
ROTC	2-3
	14-17

THIRD QUARTER	CREDITS
Art 255 Design	3
Arch. 316 Drawing	4
Mech. Engr. 203 Metal Machining	1
Physics 113 For Architects	5
Phys. Educ. activity	1
ROTC	2-3
	14-17

Third Year

FIRST QUARTER	CREDITS
Art 112 History	5
Art 316 Design for Ind.	3
Art 329 Appreciation	2
Chem.	5
	15

SECOND QUARTER	CREDITS
Art 317 Design for Ind.	3
Chem.	5
Econ. 200 Introduction	5
Mech. Engr. 411 Engr. Econ.	3
	16

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

Fourth Year

FIRST QUARTER	CREDITS
Art 301 Int. Design	2
Art 303 Ceramic	3
Art 445 Adv. Ind. Design	5
Art 495 Seminar	1
Psychol. 236 Industrial	3
Journ. 220 Fundamentals of Advertising	3
	17

SECOND QUARTER	CREDITS
Art 326 History	2
Art 357 Design in Met.	3
Art 446 Adv. Ind. Design	5
Art 496 Seminar	1
Bus. Law 307 Bus. Law	3
Journ. 370 Display Advertising	3
	17

THIRD QUARTER	CREDITS
Art 320 History	2
Art 447 Adv. Ind. Design	5
Art 497 Seminar	1
Gen. Engr. 351 Inventions and Patents	1
Speech 327 Extemp. Speaking	3
Journ. 371 Advertising Typography	3
	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	6
Electives	4
Phys. Educ. activity	1
ROTC	2-3
	18-21

SECOND QUARTER	CREDITS
Art 281 Furn. Design	3
Arch. 101 Appreciation	2
Arch. 125 Design	6
Electives	6
Phys. Educ. activity	1
ROTC	2-3
	18-21

THIRD QUARTER	CREDITS
Art 262 Ess. of Int. Design	2
Art 282 Furn. Design	3
Arch. 105 The House	2
Arch. 126 Design	6
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	16-19

Third Year

FIRST QUARTER	CREDITS
Art 112 History	5
Art 310 Int. Design	5
Lab. science	5
	15

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

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

Fourth Year

FIRST QUARTER	CREDITS
Art 472 Adv. Int. Design	5
Art 495 Seminar	1
Electives	9
	15

SECOND QUARTER	CREDITS
Art 473 Adv. Int. Design	5
Art 496 Seminar	1
Electives	9
	15

THIRD QUARTER	CREDITS
Art 320 History	2
Art 474 Adv. Int. Design	5
Art 497 Seminar	1
Home Ec. 329 Hand Weaving	2
Home Ec. 447 Adv. Home Furn.	3
Electives	2
	15

CURRICULUM IN PAINTING

Second Year

FIRST QUARTER	CREDITS
Art 112 History	5
Art 256 Painting	3
Art 265 Drawing	3
Arch. 100 Appreciation	2
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	16-19

SECOND QUARTER	CREDITS
Art 257 Painting	3
Art 266 Drawing	3
Art 272 Sculpture	3
Arch. 101 Appreciation	2
Electives	4
Phys. Educ. activity	1
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Art 258 Painting	3
Art 267 Drawing	3
Art 320 History	2
Lab. science	5
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	16-19

Third Year

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

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

Fourth Year

FIRST QUARTER	CREDITS
Art 307 Port. Painting	3
Art 463 Composition	3
Art 495 Seminar	1
Electives	8
	15

SECOND QUARTER	CREDITS
Art 308 Port. Painting	3
Art 464 Composition	3
Art 496 Seminar	1
Electives	8
	15

THIRD QUARTER	CREDITS
Art 309 Port. Painting	3
Art 465 Composition	3
Art 497 Seminar	1
Electives	8
	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
Phys. Educ. activity	1
ROTC	2-3
	16-19

SECOND QUARTER	CREDITS
Art 257 Painting	3
Art 273 Sculpture	3
Arch. 101 Appreciation	2
Lab. science	5
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Art 253 Design	3
Art 274 Sculpture	3
Art 320 History	2
Lab. science	5
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	16-19

Third Year

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

THIRD QUARTER	CREDITS
Art 324 Sculpture	3
Art 334 Adv. Sculpture	3
Art 362 Life	3
Econ., pol. sci., or sociol.	5
Elective	1
	15

Fourth Year

FIRST QUARTER	CREDITS
Art 436 Sculpture	5
Art 495 Seminar	1
Advanced sculpture	3
Electives	6
	15

SECOND QUARTER	CREDITS
Art 437 Sculpture	5
Art 496 Seminar	1
Electives	9
	15

THIRD QUARTER	CREDITS
Art 438 Sculpture	5
Art 497 Seminar	1
Electives	9
	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
	17-20

SECOND QUARTER	CREDITS
Art 106 Drawing	3
Art 110 Design	3
Chem. 116 General	5
Engl. 102 Composition	3
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	17-20

THIRD QUARTER	CREDITS
Art 107 Drawing	3
Art 111 Design	3
Chem. 221 General	5
Engl. 103 Composition	3
Phys. Educ. activity	1
ROTC	2-3
	15-18

Second Year

FIRST QUARTER	CREDITS
Art 253 Design	3
Art 256 Painting	3
Art 303 Ceramic	3
Physics 100 Survey	5
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	17-20

SECOND QUARTER	CREDITS
Art 254 Design	3
Art 257 Painting	3
Art 304 Ceramic	3
Electives	5
Phys. Educ. activity	1
ROTC	2-3
	15-18

THIRD QUARTER	CREDITS
Art 255 Design	3
Art 258 Painting	3
Art 330 Adv. Ceramic	3
Electives	7
Phys. Educ. activity	1
ROTC	2-3
	17-20

Third Year

FIRST QUARTER	CREDITS
Art 112 History	5
Art 272 Sculpture	3
Art 453 Adv. Ceramic	3
Math. 101 Intermed. Alg.	5
	16

SECOND QUARTER	CREDITS
Art 273 Sculpture	3
Art 326 History	2
Art 454 Adv. Ceramic	3
Cer. Engr. 202 Raw Materials	3
Social science elective	5
	16

THIRD QUARTER	CREDITS
Art 274 Sculpture	3
Art 301 Elem. Int. Des.	2
Art 320 History	2
Art 455 Adv. Ceramics	3
Cer. Engr. 203 Preparation	3
Electives	5
	18

Fourth Year

FIRST QUARTER	CREDITS
Art 357 Design	3
Art 360 Life	3
Art 485 Adv. Ceramic	5
Art 495 Seminar	1
Cer. Engr. 302 Forming	3
	15

SECOND QUARTER	CREDITS
Art 358 Design	3
Art 486 Adv. Ceramic	5
Art 496 Seminar	1
Cer. Engr. 303 Coatings	3
Social science elective	5
	17

THIRD QUARTER	CREDITS
Art 305 Lettering	3
Art 487 Adv. Ceramic	5
Art 497 Seminar	1
Cer. Engr. 304 Drying & Firing	3
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 & Reactions	3	Cer. Engr. 312 Colloids & Rheology	3
	15	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. Only courses given in the School may be applied toward this degree. In lieu of a thesis, candidates may undertake a problem in painting, sculpture, or design.

COURSES FOR UNDERGRADUATES

100 Introduction to Art (5) — **Moseley**
Lectures and studio work. For nonmajors.

105, 106, 107 Drawing (3,3,3) — **Staff**
Perspective, light and shade, composition, pencil and charcoal.

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.

112 History of Art Through the Renaissance (5) — **Reed**
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) — **Curtis**
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.

256, 257 Painting (3,3) — **Staff**
Oil painting: still life and landscape. Prerequisites, 105, 106, and 107.

258 Painting (3) — **Hill, Mason, Patterson**
Water color. Prerequisites, 256 and 257.

262 Essentials of Interior Design (2) — **Foote**
Illustrated lectures.

265, 266, 267 Drawing and Painting (3,3,3) — **Hill**
Continuation of 256, 257, 258; outdoor sketching in oil and water color.

272, 273, 274 Sculpture (3,3,3) — **Du Pen, Tsutakawa**
Fundamentals of composition in the round and in relief. Creative work is stressed.

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-mâché, leather, weaving, and other media and processes used in secondary schools, service organizations, and recreation groups. Open to nonmajors with sophomore standing.

301 Elementary Interior Design (2) — **Heiberg**
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 (2-3) **Bonifas**
Processes of pottery making, coil and slab. Studies of profile and dimensions. Prerequisite, sophomore standing in art.

304 Ceramic Art (2-3) **Bonifas**
Glazing and decoration. Contact with clay; glaze composition; packing and firing the kiln. Prerequisite, 303.

305 Lettering (3) **Benson**
Design in letters and the composition of letters. Prerequisites, 107, 111, and, for non-majors, permission.

306 Advanced Lettering (3) **Anderson, Benson**
Composition of letter forms, with emphasis on the variants of basic types which are most used now. Brief review of the history of letters and their uses, including page design and the format of books.

307, 308, 309 Portrait Painting (3,3,3) **Isaacs**
Prerequisites, 256, 257, and 258.

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) **Isaacs**
Illustrated lectures. Prerequisite, sophomore standing.

329 Appreciation of Design (2) **Benson**
Lectures on design fundamentals, illustrated with slides and with paintings, pottery, textiles, and other actual objects. Reading and reference work.

330 Advanced Ceramic Art (3) **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, 265 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) **Benson**
Prerequisites, 106 and 111.

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.

413 Oriental Ceramic Art (2) **Staff**
Chinese, Korean, and Japanese ceramics from neolithic times to the present.

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.

436, 437, 438 Sculpture Composition (5,5,5) **Du Pen**
Imaginative design; problems met in professional practice. Prerequisites, 332, 333, and 334.

445, 446, 447 Advanced Industrial Design (5,5,5) **Del Giudice**
Market analysis and selected professional problems in industrial design. Consultation techniques; psychological, sociological, and economic factors involved in designing for consumer acceptance.

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) **Benson**
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) **Benson**

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.

495, 496, 497 Senior Seminar (1,1,1) **Staff**
Required of all seniors in art. Prerequisite, art major.

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) **Jacobsen**
Star finding, solar system, sidereal universe.

303 Spherical Astronomy (3) **Jacobsen**
Spherical triangles, celestial sphere, planetary motions. Prerequisites, 101 and calculus.

305 Practical Astronomy (4) **Jacobsen**
Determination of latitude, longitude, time, azimuth. Sextant work. Prerequisites, 101, trigonometry, and permission.

401 Astrophysics and Stellar Astronomy (3) **Jacobsen**
Interpretation of stellar spectra; motions, types of stars. Prerequisites, 101, and Physics 321 and 322.

404 Advanced Spherical Astronomy (3) **Jacobsen**
Aberration, parallax, precession, nutation, special subjects. Prerequisite, 303 or permission.

499 Undergraduate Research (*, maximum 15) **Jacobsen**
Current or special astronomical problems.

BASIC MEDICAL SCIENCE

Adviser: VICTORIAN SIVERTZ, 121 Education Hall

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

BACHELOR OF SCIENCE IN BASIC MEDICAL SCIENCE

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

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

The following curriculum is suggested for premedical and predental students:

First Year

FIRST QUARTER	CREDITS
Chem. 111 or 115 General	5
Engl. 101 Composition	3
Physics 101, 104, or 121 General	5
Phys. Educ. 110 or 175 Health	2
Phys. Educ. activity	1
ROTC	2-3
	16-19

SECOND QUARTER	CREDITS
Chem. 112 or 116 General	5
Engl. 102 Composition	3
Physics 102, 105, or 122 General	5
Electives	2-3
Phys. Educ. activity	1
ROTC	2-3
	16-20

THIRD QUARTER	CREDITS
Chem. 113 Elem. Qual. Anal.	5
Engl. 103 Composition	3
Physics 103, 106, or 123 General	5
Electives	2-3
Phys. Educ. activity	1
ROTC	2-3
	16-20

Second Year

FIRST QUARTER	CREDITS
Chem. 231 or 235 Organic	3
Chem. 241 or 345 Organic Lab.	2
Zool. 111 General	5
Electives	5
Phys. Educ. activity	1
ROTC	2-3
	16-19

SECOND QUARTER	CREDITS
Chem. 232 or 336 Organic	3
Chem. 242 or 346 Organic Lab.	2
Zool. 112 General	5
Electives	5
Phys. Educ. activity	1
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Chem. 337 Organic	3
Zool. 456 Vert. Embryol	5
Electives	7-10
Phys. Educ. activity	1
ROTC	2-3
	16-22

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 (see pages 65 and 193). 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 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.

351 Human Genetics (3) — **Roman**
For premedical students and those majoring in anthropology, psychology, and related fields dealing with human variation. Prerequisites, Botany 111, Zoology 111, or equivalent, and junior standing.

401 Cytology (3) — **Hsu**
Structure and function of the cell. Prerequisite, permission.

401L Cytology Laboratory (2) — **Hsu**
Must be accompanied by 401.

408 Cellular Physiology (3) — **Whiteley**
Functional aspects of protoplasmic structures. Prerequisite, Zoology 400 or permission.

408L Cellular Physiology Laboratory (2) — **Staff**
Must be accompanied by 408. Prerequisite, permission.

451 Genetics (3 or 5) — **Roman**
Prerequisite, 10 credits in biological science.

452 Cytogenetics (3 or 5) — **Roman**
Chromosomal behavior in relation to genetics. 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 1953-54.)

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.

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

111 Elementary Botany (5) **Meeuse, Walker**
Structure, physiology, and reproduction of seed plants.

112 Elementary Botany (5) **Blaser**
Structure and relationships of the major plant groups. Prerequisites, 111, one year of high school botany, Biology 101J-102J, or Zoology 111 and 112.

113 Elementary Botany (5) **Hitchcock**
Local flora. Training in identification and recognition of ferns and seed plants.

114, 115, 116 Forestry Botany (3,3,3) **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. Prerequisites for each course, 111, 114, or Biology 101J-102J, and permission.

331 Ornamental Plants (3) **Kruckeberg**
Identification and use of trees and shrubs. Prerequisite, 113 or equivalent.

332 Taxonomy Field Trip (*, maximum 27)
(Offered alternate summers; offered 1954.)

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. Prerequisite, 113 or equivalent. (Offered alternate years; offered 1953-54.)

441, 442, 443 Morphology (5,5,5) **Blaser**
441 and 442: vascular plants. 443: Algae and Bryophytes. Prerequisite for each course, 112 or equivalent. (Offered alternate years; offered 1954-55.)

444 Plant Anatomy (5) **Blaser**
Tissues; origin and development of the stele. Prerequisite, 111. (Offered alternate years; offered 1953-54.)

445 Algology (6) **Staff**
Prerequisites, 112 and staff permission. (Offered at Friday Harbor during Summer Quarter only.)

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. Prerequisites, 472 or 371, Chemistry 232 and 242, and permission. (Offered alternate years; offered 1954-55.)

474 Plant Physiology (5) **Walker**
Permeability, mineral nutrition, water relations, and growth. Prerequisites, 472 or 371, and Chemistry 232 and 242, and permission. (Offered alternate years; offered 1953-54.)

475 Problems in Algal Physiology (6) **Meeuse**
Metabolic activity of the algae. Prerequisites, 472 or 371, Chemistry 232 and 242, and permission. (Offered at Friday Harbor during Summer Quarter only.)

498 Special Problems in Botany (1-15) **Staff**
Prerequisite, permission of instructor.

COURSES FOR GRADUATES ONLY

BIOLOGY

501 Advanced Cytology (5) — **Staff**
(Offered alternate years; offered 1953-54.)

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 graduate study or for a professional career, and an elective curriculum which provides a basic introduction to chemical science and allows a wider choice of electives in fields outside the physical sciences. In addition, the Department offers first and second teaching areas for students in the College of Education.

Students planning to major in chemistry are advised to take ½ unit each of algebra and trigonometry beyond the amount required 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; 15 in physics; 24 in mathematics; 18 in science electives; 24 in humanities and social studies; and 26 in free electives. For graduation, the student must demonstrate a reading knowledge of German; obtain a grade-point average of at least 2.5 in his chemistry courses, with a C or better in each course; and obtain a total grade-point average of 2.5.

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

The second-year program should include English 101, 102, 103 (Composition); Chemistry 325 (if not taken in the first year), 335, 336, 337, 345, 346, 355, 356, 357; and Mathematics 251, 252, 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, 426, and 415, 425, 445. Other upper-division courses may be elected to fulfill the general requirements and to provide advanced work in fields of greatest value to the individual.

BACHELOR OF ARTS

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

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

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. The Department of Chemistry requires that all candidates for advanced degrees take entrance, or qualifying, examinations, which are designed to assess the student's knowledge and understanding of the material normally contained in an undergraduate program with a major in chemistry. These examinations are usually given on the 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. Candidates for this degree usually present German as their foreign language.

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

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

COURSES FOR UNDERGRADUATES

101 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 and mineral 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, 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.

108, 109, 110 General Chemistry and Qualitative Analysis (5,5,5)
College of Pharmacy Staff
For pharmacy students only.

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.

116 General Chemistry and Qualitative Analysis (5) **Staff**
Prerequisite, 115 and permission. Content similar to 113.

221 Quantitative Analysis (5) **Staff**
Volumetric and gravimetric. 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, 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. 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 and college physics.

353 Chemical Thermodynamics (4) **Staff**
Prerequisites, 352 and calculus (which may be taken concurrently).

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.

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 Chemical Laboratory (2-3) — **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 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, 426 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 Advanced Organic Chemistry (3,3,3) — **Dauben**
Consideration of synthetic methods, structure determinations, and reaction mechanisms for acyclic, alicyclic, and aromatic compounds, with emphasis on modern theory and practice. Prerequisites, 337 and 445, or permission.

535, 536 Chemistry of Natural Organic Compounds (3,3) — **Anderson**
Structure determination, synthesis and reactions of carbohydrates, fats, oils, terpenoids, steroids, aminoacids, alkaloids, heterocyclics, vitamins, and accessory dietary factors of natural origin. Chemotherapeutics. Prerequisite, permission.

537 Physical Organic Chemistry (3) — **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. Prerequisite, 437 and 457, 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) — **Gregory, Rabinovitch, Simpson**
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, 456 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 Crystalography (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.

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 Greek and Latin courses, Classics 330, Classics 340, History 201-202 (Ancient History), History 401 (Greece in the Age of Pericles), and Philosophy 320- (History of Philosophy).

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

MASTER OF ARTS

Students who intend to work toward 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) **Rabinowitz**
Introduction to classical Greek with emphasis on rapid development of ability to read Attic prose. In the first two quarters the study of forms and syntax is accompanied by the reading of selections from standard authors; the third quarter is devoted to more extensive reading in one or more classical texts.

201-202 Socrates (3-3) **McDiarmid**
A study based on readings from Plato, Xenophon, and Aristophanes.

207, 208 Grammar and Composition (2,2) **Staff**
Systematic review of grammatical principles; exercises in prose composition. To be taken concurrently with 201-202.

241 New Testament Greek (3) **Read**
Prerequisite, 202.

262 Homer (3) **McDiarmid**
Introduction to Greek poetry through selections from the *Iliad* or the *Odyssey*. Prerequisite, 202.

309 Advanced Grammar and Composition (1, maximum 3) **Staff**
Prerequisite, 208.

322 Herodotus and the Persian Wars (3) **Rabinowitz**
(Offered alternate years; offered 1953-54.)

323 Thucydides and the Peloponnesian War (3) **Rabinowitz**
In 322 and 323 portions of the histories are studied intensively and the rest read rapidly. These courses acquaint the student with the historical background of the Greek world in the fifth century B.C. The dialects and styles, as well as the historical methods and suppositions of the authors, are considered. (Offered alternate years; offered 1953-54.)

330 Attic Orators (3) **Rabinowitz**
Selections from the orations of Antiphon, Andocides, Lysias, Isocrates, and Isaeus. The stylistic principles of Greek oratory; orations as sources for political and social conditions of classical Greece. (Offered alternate years; offered 1953-54.)

360 Lyric Poetry (3) **Staff**
(Offered alternate years; offered 1954-55.)

361 Hellenistic Poetry (3) **Staff**
(Offered alternate years; offered 1954-55.)

N391 Sight Reading (0) **Staff**
Prerequisite, 202 or permission.

413 The Pre-Socratic Philosophers (3) **McDiarmid**
(Offered alternate years; offered 1954-55.)

414 Plato: Phaedo (3) **Rabinowitz**
(Offered alternate years; offered 1954-55.)

415 Aristotle: Selections from the Metaphysics (3) **Staff**
(Offered alternate years; offered 1954-55.)

442 Introduction to Greek Drama: Euripides (3) **Staff**
(Offered alternate years; offered 1953-54.)

443 Sophocles (3) **Staff**
(Offered alternate years; offered 1953-54.)

444 Aeschylus (3) **Staff**
(Offered alternate years; offered 1953-54.)

453 Pindar: The Epinician Odes (3) **Staff**
(Offered alternate years; offered 1954-55.)

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**

LATIN

101-102, 103 Elementary Latin (5-5,5) **Grummel**
Introduction to classical Latin with emphasis on the rapid development of reading ability. In the first two quarters the study of forms and syntax is accompanied by the reading of selections from standard authors; the third quarter is devoted to more extensive reading in one or more Latin texts.

201 Roman Letters (3) **Staff**
Reading in the letters of Cicero and Pliny to illustrate important phases of Roman life. Prerequisite, two years of high school Latin or 103.

202 Roman Elegy (3) **Staff**
Selected elegies of Catullus, Tibullus, Propertius, and Ovid. Prerequisite, 201 or permission.

203 Vergil (3) **Grummel**
Selections from the first six books of the *Aeneid*. Prerequisite, 202 or permission.

207, 208 Grammar and Composition (2,2) **Staff**
Systematic review of grammatical principles; exercises in prose composition. Prerequisite, three years of high school Latin or permission.

309 Advanced Grammar and Composition (1, maximum 3) **Read**
Prerequisite, 208.

322 Livy (3) **Staff**
(Offered alternate years; offered 1953-54.)

324 Tacitus (3) **Staff**
(Offered alternate years; offered 1953-54.)

326 Roman Biography (3) **Staff**
(Offered alternate years; offered 1953-54.)

342 Roman Drama (3) **Staff**
(Offered alternate years; offered 1954-55.)

355 Catullus (3) **Grummel**
(Offered alternate years; offered 1954-55.)

356 Horace (3) **Staff**
(Offered alternate years; offered 1954-55.)

N391 Sight Reading (0) **Staff**
Prerequisite, permission.

401 Medieval Latin (3) — **Grummel**
Prerequisite, permission.

404 Comparative Grammar of Latin and Greek (3) — **Bassett**
Comparative and historical study of Latin and Greek as an introduction to Indo-European philology. Prerequisite, permission.

412 Lucretius (3) — **Staff**
(Offered alternate years; offered 1954-55.)

414 Seneca (3) — **Staff**
(Offered alternate years; offered 1954-55.)

415 Cicero's Philosophical Works (3) — **Staff**
(Offered alternate years; offered 1954-55.)

430 Latin Novel (3) — **Staff**
(Offered alternate years; offered 1953-54.)

451 Roman Satire (3) — **Staff**
(Offered alternate years; offered 1953-54.)

459 Lucan (3) — **Staff**
(Offered alternate years; offered 1953-54.)

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 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.

210 Greek and Roman Classics in English (5) — **Staff**
Masterpieces of Greek and Roman literature studied in translation, their meaning as works of art and their contribution to Western culture.

322 Greek History and Philosophy (2) — **Staff**

326 Greek and Roman Epic in English (3) — **Staff**

327 Greek and Roman Drama in English (3) — **Staff**

330 Greek and Roman Mythology (3) — **Staff**

340 Greek and Roman Critics in English (3) — **Staff**
The beginnings of literary criticism, as seen in the writings of the Greek and Roman critics.

COURSES FOR GRADUATES ONLY

GREEK

520 Seminar (5, maximum 15) — **Staff**

540, 541, 542 Literary Criticism: Aeschylus (3,3,3) — **McDiarmid**
Textual criticism. Aristotle and other ancient critics. Independent study of one play.

600 Research (3-5 each quarter) — **Staff**

Thesis (*) — **Staff**

LATIN

520 Seminar (5, maximum 15) — **Staff**

600 Research (3-5 each quarter) — **Staff**

Thesis (*) — **Staff**

COMMUNICATIONS

Director: VERNON R. FROST, 202 Lewis Hall

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

Communications students substitute Journalism 200 for English 103 in fulfilling College requirements in English composition.

Journalism

Director: VERNON R. FROST, 202 Lewis Hall

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.

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. They are required to maintain a 2.5 grade average in this group of journalism courses.

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-Television 342.

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

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

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

BACHELOR OF ARTS

The work of the freshman and sophomore years is essentially the same for all journalism students, except that those planning an editorial 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); and those planning an advertising and management sequence take General Business 101 (Introduction), Art 105 (Drawing), and Marketing 301 (Principles).

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

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
Journ. 100 Journalism Today	2
Journ. 200 News Writing	5
Journ. 201 Copy Editing	2
Journ. 220 Fundamentals of Advertising	3
Econ. 200 Introduction	5
Engl. 101, 102 Composition	6
Hist. 241 Survey of U.S.	5
Pol. Sci. 201 Modern Government, or Pol. Sci. 202 American Gov't and Politics	5
Psychol. 100 General	5

	CREDITS
Classics 101 Latin & Greek in Current Use	3
Speech 120 Intro. to Public Speak. or 240 Oral Interpretation	5
Science electives	10
Electives	29
Phys. Educ. 110 or 175 Health	2
Phys. Educ. activity	6
ROTC	12-18
	90-108

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 2.5 and an average of 3.0 in the four lower-division journalism courses.

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

EDITORIAL OPTION. Third-year requirements are: Journalism 300, 303, 306, 310, 326, 327, 328, 329, 333, 334, 347 and Radio-TV 320. Fourth-year requirements are: Journalism 400 and 401.

ADVERTISING AND MANAGEMENT OPTION. Third-year requirements are: Journalism 300, 303, 306, 310, 326, 329, 347, 348, 350, 352, 355, Radio-TV 342, and Accounting 150 (Fundamentals). Fourth-year requirements are: Journalism 440 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 fields of communication: newspaper, magazine, radio, advertising, public relations, propaganda, and photo journalism. Objectives and responsibilities of the various areas of journalistic communications. Review of career opportunities in these fields. Open to nonmajors.

200 News Writing (5) — **Christian, Benson, Brier, Frost, Mansfield, Sethre**
Structure of the news story, types of news leads, and feature stories. Open to nonmajors.

201 Copy Editing (2) — **Staff**
Editing news copy, writing cutlines and captions, headline writing, and newspaper make-up. Open to nonmajors. Prerequisite, 200 or permission.

220 Fundamentals of Advertising (3) — **Frost, Sethre, Strehlau**
Survey, fundamentals of strategy, layout, attention devices, appeals, copy, and media. Open to nonmajors in Autumn Quarter only.

300 Laboratory Work on University Daily (2-5, maximum 15) — **Astel, Staff**
Practical work on the editorial staff of the University of Washington *Daily*. Prerequisite, journalism major or permission.

303 Public Relations (3) — **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 principles of the graphic arts and newspaper make-up.

310 Photographic Laboratory (1) — **Root**
Basic news photography; the photographic process; news camera technique; darkroom practices; planning news pictures.

326 Contemporary Affairs (2, maximum 8) — **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 and 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 (2) — **Benson**
Practice in preparing editorial page material, including analytical, interpretative, and persuasive writing. Intended to give students a familiarity with reference sources, and the ability to exercise clear thinking and editorial judgment.

334 Historical and Comparative Journalism (5) — **Mansfield**
Growth and development of the press, with emphasis on journalism in the United States, its social, political, and ethical responsibilities; contemporary national and regional publication trends.

340 Advertising Campaigns and Media (3) — **Sethre**
Steps in planning and preparing an advertising campaign. Each student makes layouts, writes copy, and sets up a budget for campaigns. Prerequisite, 220 or Marketing 391. Open to nonmajors.

347 Business Office (3) **Frost**
Organization and promotion of noneditorial departments of publications; management problems.

348 Advertising Layout and Copy (5) **Frost**
Elements of attention, arrangement of visual elements of display to achieve effective layout; the wording of the message, proceeding from original strategy to writing effective advertising copy.

350 Advertising Laboratory (2) **Murton**
Supervision of student efforts in layout, copy fitting, and production specifications.

352 Advertising Selling Laboratory (2, maximum 4) **Staff**
Experience selling space for the University *Daily* and other campus publications.

355 Retail Advertising Layout and Copy (5) **Murton, Strehlau**
Refinements of basic copy and layout in display advertising with particular emphasis on retailing and direct mail systems; professional standards applied from rough visuals through finished layouts.

370 Display Advertising (3) **Sethre**
Layouts and copy writing. Prerequisite, 220 or Marketing 391. Open to nonmajors.

371 Advertising Typography (3) **Sethre**
Type laboratory course in display advertising and campaign planning and production. Prerequisite, 370. Open to nonmajors.

375J Teachers' Course in Journalism (3) **Brier**
Offered jointly with the College of Education. For teachers in high schools and junior colleges, and education students taking first or second teaching areas in journalism. Prerequisites, 200 and 201.

390 Magazine Production (2, maximum 12) **Brier**
Practical work on the editorial staff of the University of Washington *Columns*. Planning, writing, and production of the magazine throughout the academic year. Open to nonmajors. Prerequisite, permission.

400, 401 Editorial Problems (2,2) **Frost**
Group discussions of current problems in communications; guest lecturers. Prerequisite, completion of third-year journalism.

404 Magazine Article Writing (3) **Mansfield, Brier**
Professional nonfiction writing for national magazines, trade journals, and specialized publications. Open to nonmajors. Prerequisite, upper-division standing or permission.

440 Publishing Problems (2) **Frost**
Group discussion of current problems in advertising and management; guest lecturers; field trips. Prerequisite, completion of third-year journalism advertising and management sequence.

452 Advertising Selling Laboratory (2) **Staff**
Experience in advertising office management and selling for the University *Daily* and other campus publications.

460 Problems in Public Relations (5) **Christian**
The use of surveys, publicity, advertising, and special events in public relations; group application of principles to field problems of local businesses or agencies, with report and recommendations. Open to nonmajors. Prerequisites, 303 and permission.

473, 474 Short Story Writing (5,5) **Mansfield**
Professional fiction writing for national magazines. Open only to upper-division students with permission of instructor. Must be taken in sequence, starting in Autumn Quarter. Open to nonmajors.

476 Problems in Short Story Writing (3) **Mansfield**
Advanced professional fiction writing for national magazines. May be repeated for credit at discretion of Division. Limited to ten students. Open to nonmajors. Prerequisite, permission.

480 Propaganda (5) **McKenzie**
Propaganda as a social and political force; development of propaganda and techniques in nineteenth and twentieth centuries. Emphasis on post-1945 period, and on Communist propaganda as it affects the United States. Open to nonmajors.

481 Psychological Warfare (5) **McKenzie, Guthrie, Taylor**
Psychological warfare, its historical development and developing techniques; special emphasis on "Sykewar" problems of World War II and "Cold War." Prerequisite, permission.

482 Undergraduate Seminar in Psychological Warfare (5) **McKenzie**
Preparation of operational studies and reports; problems and suggested solutions in psychological warfare. Prerequisites, 481 and permission.

498 Problems of Journalism (2-5, maximum 15) **Staff**
Research and individual study. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

580 Seminar in Propaganda (5) **McKenzie**
The crystallization of public opinion and of propaganda techniques. Open to nonmajors. Prerequisites, 480 or 481, and permission.

600 Research (3-5) **Staff**

Radio-Television

Director: EDWIN H. ADAMS, Radio Hall

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

BACHELOR OF ARTS

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

	CREDITS
Radio-Television 200 Introduction to Radio	5
Radio-Television 205 Survey of Television	3
Engl. 101, 102 Composition	6
Journ. 200 News Writing	5
Journ. 220 Fundamentals of Advertising	3
Music 107 Survey of Music	5
Speech 110 The Speaking Voice	5
Speech 240 Oral Interpretation	5
Phys. Educ. 110 or 175	2
Phys. Educ. activity	6

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

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

Additional related courses include Journalism 329 (Legal Aspects of Communications), and 480 (Propaganda); and Radio-Television 420 and 498.

COURSES FOR UNDERGRADUATES

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

205 Survey of Television (3) — **Ryan**
History of television; possibilities and limitations; organization and operations of the television station; commercial aspects; elements of programing. Prerequisite, sophomore standing.

320 Radio News Writing (3) — **Ryan**
Techniques of gathering, writing, and editing news for radio; building news programs. Regularly open to nonmajors Autumn Quarter; permission required, Winter, Spring. Prerequisite, Journalism 200.

342 Radio Advertising (3) — **Ryan**
Principles of radio broadcasting as they apply to the advertiser; planning a radio campaign; writing announcements and commercial copy. Regularly open to nonmajors Autumn, Winter; permission required, Spring. Prerequisite, Journalism 220.

380 Station Organization (3) — **Ryan**
Functions and interrelationship of departments of the radio station. Should be taken in the senior year. For majors only. Prerequisite, permission.

420 Advanced Radio News (3) — **Ryan**
Editing and writing news for radio under actual broadcasting conditions. Does not include newscasting. Open to nonmajors. Prerequisites, 320 and permission.

498 Problems of Radio and Television (2-5, maximum 15) — **Staff**
Special projects and individual study. Prerequisite, permission.

DENTAL HYGIENE, PREPROFESSIONAL PROGRAM

Adviser, 121 Education Hall

The two-year predental 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 (General). 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 bulletin of the School of Dentistry.

DENTISTRY, PREPROFESSIONAL PROGRAM

Adviser: VICTORIAN SIVERTZ, 121 Education Hall

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

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

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

Students who do not enter dental school by the end of the second year must select a departmental major. (Also, see Basic Medical Science, page 63.)

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 Department 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 Theater (2,2,2) — **Hughes**
Significant aspects of the modern theater.

146, 147, 148 Theater Speech (3,3,3) — **Gray, Carr**
Prerequisites, 146 for 147; 147 for 148.

251, 252, 253 Acting (3,3,3) — **Harrington, Gray, Carr**
Theory and practice of pantomime, improvisation, and characterization. Prerequisites, 148 for 251; 251 for 252; 252 for 253.

307, 308, 309 Puppetry (2,2,2) — **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 Theatrical Costume Design and Construction (3) — **Crider**

406 Make-up (3) — **Davis**

411, 412, 413 Playwriting (3,3,3) — **Hughes**
A professional course. Prerequisites, English 328, 329, or 330, and permission.

414 Stage Lighting (3) — **Conway, Lounsbury**
A nontechnical survey course.

415 Advanced Stage Lighting (3) — **Staff**

417, 418, 419 Advanced Theater Workshop (2,2,2) — **Staff**
Prerequisite, either 403, 404, 405, 406, 414, or 415, or permission.

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.

427, 428, 429 History of the Theater (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 Theater (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.

441, 442, 443 Radio Acting and Production (2,2,2) — **Morris**
Prerequisites, 251 and 252.

444, 445, 446 Radio Writing (3,3,3) — **Morris**
Prerequisite, two quarters of advanced English composition or one quarter of playwriting.

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 Theater 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

601, 602, 603 Research (5,5,5) — **Hughes**
Prerequisite, permission.

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

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

To remain in the curriculum, students must maintain a 3.0 grade-point average. During the first two years, they complete Economics 200, 201; Accounting 150, 151 (Fundamentals), 255 (Basic Accounting Analysis); History 241 (Survey of the United States); Political Science 201 (Survey); 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 (Constitutional Law), 471 (Administrative Management), and 472 (Administrative Law).

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

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

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

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

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

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

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

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

COURSES FOR UNDERGRADUATES

INTRODUCTORY COURSES

160 American Economic History (5) — **Glickfeld, North**
American economic institutions, their European background and development; the impact of industrialization on the American economy from 1850 to the present

200 Introduction to Economics (5) — **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.

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. Prerequisite, 201.

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)
(Not offered 1953-55.)

306 Development of Economic Thought (5) — **Glickfeld, Gordon, North**
The development of economic doctrines against the background of emerging industrial society, with emphasis upon the impact of the other social sciences and the natural sciences on economic thought.

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. Prerequisite, 200.

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.

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

GOVERNMENT REGULATION, PUBLIC UTILITIES, AND TRANSPORTATION

330 Government and Business (5) — **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. Prerequisite, 200 or 211.

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. Prerequisite, 200.

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

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

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. Prerequisites, 302 and 340; 301 recommended.

446 Labor Problems Abroad (5) — **Glickfeld**
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. Prerequisite, 200.

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

ECONOMIC HISTORY

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

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

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

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)
(Not offered 1953-55.)

471 International Economic Problems (5) **Holzman, Huber**
Analysis of United States foreign aid programs. Problems involved in state trading, cartels, commodity agreements, and foreign investment. Industrialization of undeveloped areas. American economic foreign policy. Prerequisites, 302 and 370.

472 International Monetary Policies (5) **Huber**
Exchange rates and international payments. Alternative policies, including international gold standard, exchange control, currency blocs, and multilateral clearing systems. Problems growing out of World War II. International Monetary Fund. Prerequisites, 320 and 370.

NATIONAL ECONOMIES

390 Comparative Economic Systems (5) **Worcester**
The American, British, and Soviet economic systems in practice. How these economic systems deal with basic economic problems. Some attention given to Marxian doctrine and to the general problems involved in economic planning. Prerequisites, 200, and 15 additional credits in social science.

492 Economic Problems of the Far East (5) **Staff**
Far Eastern countries exclusive of China. Problems of reconstruction, industrialization, commercial policies, exchange and finance, transportation, agriculture, labor, economic planning, and national incomes and distribution. Prerequisites, 200, and 15 additional credits in social science and/or Far Eastern studies.

493 Economic Problems of China (5) **Staff**
(Not offered 1953-55.)

495 The Economy of Soviet Russia (5) **Holzman**
Analytical survey of the operating principles, organization, and performance of the Soviet economy under the five-year plans, with attention to resources, population and labor force, agriculture, industry, domestic and foreign trade, and composition and distribution of the national product. Prerequisites, 200, and 15 additional credits in social science and/or Far Eastern and Slavic studies.

GENERAL

499 Undergraduate Research (3, maximum 6) **Staff**
Does not carry graduate credit. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

ECONOMIC THEORY

503 Economics of the Firm (3) **Worcester**
Analysis of the price and output behavior of the individual business firm; the allocation of resources under conditions of pure competition, imperfect competition, monopoly, and oligopoly. Prerequisite, permission.

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. Prerequisites, 301 and 302, or permission.

506 Income and Employment Theory (3) **Cartwright**
Theories of employment, output, and income of the Keynesian and neo-Keynesian groups. Prerequisite, 505 or permission.

507 Neo-Classical Economics and Its Critics (3) **Gordon**
Prerequisite, permission.

510 Contemporary Developments in Income and Employment Theory (3) **Cartwright**
(Offered 1953-54 and alternate years.)

511 Mathematical Relationships in Economic Theory (3) **Gordon**
Mathematical analysis applied to economic problems. Consideration of indifference curves, elasticity of demand, the description of economic equilibria, and problems relating to rates of change, time lags, and related phenomena. Prerequisites, 503 and 506, or permission.

512 Advanced Theory of the Firm (3) **Worcester**
The problems of profit maximization in all major types of market interdependence under both static and dynamic conditions. Prerequisites, 503 and 505, or permission.

513 Capital and Distribution Theory (3) — **Mund**
(Offered 1954-55 and alternate years.)

515 History of Economic Thought (3) — **Gordon, North**
Prerequisite, permission.

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) — **Glickfeld**
Emphasis on the period since 1750. Prerequisite, permission.

562 American Economic History (3) — **North**
The development of modern American capitalism in the context of the changing industrial structure. Prerequisite, permission.

INTERNATIONAL TRADE

571 International Trade Theory (3) — **Huber**
Theories of international trade, prices, payments, and capital movements. Modern developments in theory of national income and 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 development, optimum resource allocation, and planning in the Soviet Union. Prerequisite, permission.

GENERAL

600 Research (*) — **Staff**
Prerequisite, permission.

Thesis (*) — **Staff**

EDUCATION, PREPROFESSIONAL PROGRAM

Adviser, 121 Education 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.

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

BACHELOR OF ARTS

CURRICULUM IN ADVANCED WRITING. At least 50 credits in English are required. Courses must include: English 258; 264 or 370; 377 or 374; 448 or 449; one course from 404, 406, and 466; 6 credits from 251, 252; 261, 262, 263; 328, 329, and 277, 278; 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 37 to 40 credits, including 10 credits in one period or type of literature. Those who wish to take a minor may include in the total credit requirements a maximum of 10 credits in a related field. Courses required for 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.

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

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

A minimum of 90 credits must be completed before the general examination. Courses required for 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. A maximum of 20 credits may be taken in courses given by other departments.

The subject of the dissertation must be approved by the Graduate Studies Committee of the Department before the candidate begins work on it.

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) a type of literature—drama, fiction, poetry, or essay; and (3) twelve major figures selected by the student from three of the following fields (four from each of the three fields): (a) English literature to 1550, (b) 1550-1660, (c) 1660-1800, (d) 1800 to the present, (e) American literature.

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

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

Courses leading to the degrees of Master of Arts and Doctor of Philosophy with specialization in general and comparative literature are offered through the General and Comparative Literature program (see page 99).

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) — **Rabel**

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) — **Rabel**

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**
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, 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 1954-55.)

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) — **Stein, Ethel**
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, Pellegrini, Stirling, Willis**
370: introduction; 371: comedies and histories; 372: tragedies and romances. Prerequisite, 370 for 371 and/or 372.

374, 375, 376 Late Nineteenth-Century Literature (5,5,5) — **Brown, 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**
(Not offered 1953-54.)

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**

404 Modern European Literature (5) — **Harrison, Hall**

406 Modern English Literature (5) — **Harrison, Hall**

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 1953-54.)

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, Rodford**
Prerequisites, 277, 278, and 279, or permission.

440, 441 Social Ideals in Literature (5,5) — **Adams**
Model commonwealths; literature and society. (Offered alternate years; offered 1953-54.)

447, 448, 449 The English Novel (5,5,5) — **Heilman, Winther, W. Burns**

456, 457, 458 Novel Writing (5,5,5) — **Staff**
Prerequisites, 277, 278, and 279, or permission.

466 Modern American Literature (5) — **Blankenship, Harrison, Davis, Hall, Phillips**
The beginning of realism; tendencies from 1900 to 1915; contemporary fiction and poetry.

484, 485 Advanced Writing Conference (3-5,3-5) — **Harris, Rodford**
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) — **Winther, H. Burns**

509 Methods of Contemporary Criticism (5) — **Bostetter, Mathews, Stein**

510, 511, 512 The Renaissance and Spenser (5,5,5) — **Adams, Stirling**

513 Shakespeare's Dramatic Contemporaries (5) — **Adams**

514, 515 Chaucer (5,5) — **Fowler**
514: *Canterbury Tales*; 515: other poems.

517, 518, 519 Shakespeare (5,5,5) — **Hamilton, Stirling**

521, 522, 523 Seventeenth-Century Literature (5,5,5) — **Stein**

524, 525, 526 American Literature (5,5,5) — **Harrison, Davis, Eby**

527, 528 Studies in Medieval Literature (5,5) — **Staff**

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**

541, 542, 543 Victorian Literature (5,5,5) — **Brown, W. Burns, Winther**

544, 545, 546 Eighteenth-Century Literature (5,5,5) — **Cornu**

547 Rhetoric (5) — **Perrin**

548 Twentieth-Century Literature (5) — **Hall**

553 Current Rhetorical Theory (5) — **Perrin**

586 Graduate Writing Conference (5) — **Staff**

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 91). 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) — **Michael, Taylor, Williston, Maki**
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) — **Michael, Taylor, Williston, Maki**
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.

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." Joint 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. Prerequisite, 290 or upper-division standing. (Offered alternate years; offered 1954-55.)

445 Chinese History: 221 B.C. to 906 A.D. (5) **Wilhelm**
History of the development of the imperial Chinese state. Prerequisite, 290, 444, or upper-division standing. (Offered alternate years; offered 1954-55.)

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. Prerequisite, 290, 444, or upper-division standing. (Offered alternate years; offered 1954-55.)

447 Modern Chinese History (5) **Taylor**
Modern Chinese society from 1840 to the present. Prerequisite, 110 or 310.

451J History of Chinese-Japanese Relations (5) **Jansen**
Nature and extent of China's influence on Japan before the modern period and Japan's influence on China in the modern period; the present relations between the countries. Offered jointly with the Department of History.

452J Early Japanese History (5) **Jansen**
Dominant trends in the development of Japan from the earliest times to 1600 A. D. Offered jointly with the Department of History.

453J Tokugawa Period (5) **Jansen**
Political system, economic problems, and intellectual currents in Japan from 1600 to 1868.

454J Modern Japanese History (5) **Jansen**
Japan's change from a feudal to a modern state; the effects of war and occupation; current problems. 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:

Anthropology 312 Peoples of Oceania (3)
Anthropology 314 Peoples of Central and Northern Asia (3)
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 Eastern Foreign Trade Problems (5)
Geography 303 Asia (5)
Geography 433 U.S.S.R. (3)
Geography 435 Southeast Asia (5)
Geography 436 China (3)
Geography 437 Japan (3)
Philosophy 428 Chinese Philosophy (5)
Political Science 342 Comparative Governments of the Far East (5)
Political Science 344 Chinese Government (5)
Political Science 414 Oriental Political Thought (5)
Political Science 420 The 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) **Kirchhoff, 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 1953-54.)

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.)

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 Seminar in 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) **Kirchhoff, Carrasco, K. Chang Li, Poppe, Staff**

599 Colloquium on Chinese History Research (5, maximum 15) **Michael, C. L. Chang, Hsiao, 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 Problems in the Geography of Asia (3, maximum 9)

History 531 Modern European History: Russia (5)

FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE

Executive Officer: GEORGE E. TAYLOR, 406 Thomson Hall

The Department of Far Eastern and Slavic Languages and Literature 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. Specialization is offered in 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.

COURSES FOR UNDERGRADUATES

CHINESE

101 Chinese Language, Intensive A (10) — **Li, Chang**
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) — **Li, Chang**
Continuation of 101. Prerequisite, 101.

301 Chinese Language, Intensive C (10) — **Li, Chang**
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. Prerequisite, 301. To be taken in sequence only.

405, 406, 407 Classical and Documentary Chinese (5,5,5) — **Reifler**
Syntactical analysis, translation from literary Chinese into English and vice versa. Prerequisite, 301 or equivalent. To be taken in sequence only.

408 Chinese Reference Works and Bibliography (3) — **Wilhelm**
Introduction to the methodology of Sinology. Prerequisite, 301 or equivalent. (Offered alternate years; offered 1954-55.)

455, 456, 457 Chinese Literature (5,5,5) **Wilhelm**
(Offered alternate years; offered 1953-54.)

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

JAPANESE

101-102, 103 First-Year Conversational Japanese (5-5,5) **Tatsumi**
Introduction to conversation, pronunciation, oral composition, and grammar; reading of romanized Japanese; conversation, composition, and grammar; introduction to *kana* syllabaries and Chinese characters. 101-102 not open to students who have taken 101-A; 103 not open to students who have taken 206-B.

151, 152, 153 First-Year Reading Japanese (5,5,5) **McKinnon**
Reading and translation of modern Japanese. 151 not open to students who have taken 206-B. 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)
(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 Mongol Language (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.

RUSSIAN

101 Russian Language. Intensive A (10) **Gershevsky, Ifland**
Elementary.

102-103 Elementary Russian Language (5-5) **Novikow**

104-105 Russian for Social Scientists (5-5) **Ifland**
Introduction to written Russian as a research tool. Recommended for social science majors interested in using Russian sources. No credit for Russian majors.

130 Conversational Russian (2-4) **Staff**
Prerequisite, 206 or equivalent. (Offered Summer Quarter only.)

204 First-Year Elementary Russian (5) **Staff**
Prerequisite, 103 or equivalent.

206 Russian Language. Intensive B (10) **Ifland, Pahn**
Prerequisite, 101 or equivalent.

301 Russian Language. Intensive C (10) **Ifland, Pahn**
Prerequisite, 206 or equivalent.

302 Russian Grammar and Composition (5) **Shaw**
Prerequisite, 301.

303 Advanced Conversation and Composition (5) **Novikow**
Conversation based on material presented by the instructor and written compositions by students. Students entering this course should have a vocabulary of about two thousand words. Prerequisite, 301 or equivalent.

304 Advanced Russian Language (5, maximum 10) **Gershevsky**
Scientific Russian.

330 Conversational Russian (2-4)
Prerequisite, 301 or equivalent. (Offered Summer Quarter only.)

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 equivalent.

410, 411 Advanced Russian Grammar and Composition (5,5) **Erlich**
410: Russian noun; 411: Russian verb. Prerequisites, 302 and 303.

475 Soviet Press Translation (5) **Shaw**
Prerequisite, 410 or equivalent. (Offered alternate years; offered 1953-54.)

485 History of Russian Standard Language (5) **Erlich**
Outline of the Russian literary language from its inception to the present. Prerequisite, 410.

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

SLAVIC

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

TIBETAN

402 Introduction to Literary Tibetan (3) **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 (3) **K. Chang**
Reading of Buddhist Tibetan translations and historical documents. Students should have some knowledge of Chinese and Sanskrit.

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 1954-55.)

Russian 220 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 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 1954-55.)

Russian 425 Dostoevski in English (3) **Spector**
Open only to majors in a language or literature.

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**
(Offered alternate years; offered 1953-54.)

529 Chinese Phonology (3) — **Li**

530 Studies in Chinese Prose (5) — **Shih, Wilhelm**

531 Studies in Chinese Poetry (5) — **Shih, Wilhelm**

532 Studies in Chinese Drama and Novel (5) — **Shih**
(Offered alternate years; offered 1954-55.)

550 Seminar on Chinese Literature (4, maximum 8) — **Shih, Wilhelm**

555 Seminar on Chinese Linguistics (3) — **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) — **Jansen**

522, 523, 524 Readings in Documentary Japanese (5,5,5) — **McKinnon**
Prerequisite, permission. (Offered when demand is sufficient.)

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) — **Staff**
(Offered alternate years; offered 1953-54.)

526 Pushkin (4) — **Staff**
(Offered alternate years; offered 1954-55.)

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

560 Studies in Early Russian Literature (3) — **Staff**
(Offered alternate years; offered 1953-54)

Thesis (*) — **Staff**

SLAVIC

522 Phonetic Structure of Slavic Languages (3) — **Staff**
(Offered alternate years; offered 1954-55.)

523 Morphological Features of Slavic Languages (3) — **Staff**
(Offered alternate years; offered 1954-55.)

531 Old Church Slavonic (3) — **Staff**
Descriptive study of the phonology and grammar of Old Church Slavonic. (Offered alternate years; offered 1954-55.)

532 Readings in Old Church Slavonic (3) — **Staff**
Reading and grammatical interpretation of Old Church Slavonic texts. (Offered alternate years; offered 1953-54.)

FISHERIES

Director: RICHARD VAN CLEVE, Fisheries Center

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

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

First Year

FIRST QUARTER	CREDITS
Fish. 108 Gen. Survey	1
Chem. 111 or 115 General	5
Engl. 101 Composition	3
Zool. 111 General	5
Phys. Educ. 110 or 175 Health	2
Phys. Educ. activity	1
ROTC	2-3
	17-20

SECOND QUARTER	CREDITS
Fish. 109 Gen. Survey	1
Chem. 112 General	5
Engl. 102 Composition	3
Zool. 112 General	5
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	17-20

THIRD QUARTER	CREDITS
Fish. 110 Gen. Survey	1
Chem. 113 Qual. Analysis	5
Engl. 103 Composition	3
Electives	7
Phys. Educ. activity	1
ROTC	2-3
	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, 241, and 242 (Organic) and Biochemistry 361 (Biochemistry).

Second Year

OPTIONS A AND B

FIRST QUARTER	CREDITS
Foreign language	5
Math. 104 Plane Trig.	3
Chem. 221 Quantitative, or 231, 241 Organic	5
Phys. Educ. activity	1
ROTC	2-3
	14-17

SECOND QUARTER	CREDITS
Foreign language	5
Math. 105 College Algebra	5
Elective or Chem. 232, 242 Organic	5
Phys. Educ. activity	1
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Math. 281 Stat. Method	5
Zool. 456 Vert. Embryol	5
Elective or Biochem. 361 Biochem.	3-5
Phys. Educ. activity	1
ROTC	2-3
	16-19

OPTION C

FIRST QUARTER	CREDITS
Chem. 221 Quantitative	5
Physics 101 or 104 General	5
Math. 105 College Algebra	5
Phys. Educ. activity	1
ROTC	2-3
	16-19

SECOND QUARTER	CREDITS
Foreign language	5
Physics 102 or 105 General	5
Math. 153 Analyt. Geom.	5
Phys. Educ. activity	1
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Foreign language	5
Physics 103 or 106 General	5
Math. 281 Stat. Method	5
Phys. Educ. activity	1
ROTC	2-3
	16-19

During the third and fourth years, students specialize in one of the three 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), 251 (Analytic Geometry and Calculus), 252 (Engineering Calculus), or, in lieu of 251 and 252, 307, 308, 309 (Differential and Integral Calculus); Mathematics 281 (Elements of Statistical Method), 382, 383 (Statistical Inference in Applied Research); and Zoology 456 (Vertebrate Embryology).

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

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

Microbiology 301 (General Microbiology); and General Engineering 101, 102 (Drawing).

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

BACHELOR OF SCIENCE IN FISHERIES

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

BACHELOR OF SCIENCE

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

ADVANCED DEGREES

Students who intend to work toward the advanced degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School 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) **Welander**
Survey of the morphology and bodily functions of fishes. Prerequisite, Zoology 112.

402 Phylogeny of Fishes (5) **Welander**
Survey of the system of fish classification; distribution of fishes. Prerequisite, 401.

403 Identification of Fishes (5) **Welander**
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. Prerequisites, Zoology 111 and 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 Lacy**
Reproduction and larval and post-larval life of economically important marine fishes; dispersion and survival rates; implications of these factors in the management of food fisheries; research methods in this field. Prerequisite, 402.

427 Ecology of Marine Fishes (5) **De Lacy**
Effect of variations in hydrographic conditions, availability of food, geographic location, and other environmental conditions on distribution of fishes; their variation in abundance and availability to the fisheries; research techniques in this field. Prerequisite, 402.

451 Propagation of Salmonoid Fishes (5) **Donaldson**
Natural propagation; methods of hatching and rearing; collection and incubation of salmon eggs; design, structure, and maintenance of hatcheries, pond systems, and aquaria. Prerequisites, 402 and 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) **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. Prerequisites, 402, Mathematics 105, and physics, or permission. (Offered Spring Quarter only.)

461 Water Management and Fish Resources (5) **Staff**
Design of fish protective facilities and actual use of hydraulic turbines and spillways at dams; calibration of nets, etc. Prerequisite, 460 or permission. (Offered Autumn Quarter only.)

480, 481 Introduction to Commercial Fishing Industry (3,3) **Staff**
Lectures, demonstrations, and trips conducted by qualified persons from the industry. Commercial fishing operations, marketing, processing, reduction, organization, and labor relations are discussed and observed. Prerequisite, 15 credits in chemistry.

484 Canning and Curing of Fish (5) **Hastings**
Application of physical, chemical, and biological sciences to fish and shellfish preservation; processing engineering, quality control, and commercial methods. Prerequisites, Chemistry 221 or 232, and Microbiology 301.

485 Refrigeration of Fish (5) **Hastings**
Application of refrigeration to processing and marketing of fishery products; refrigeration engineering. Prerequisites, Chemistry 221 or 232, and Microbiology 301.

486 Preparation of Fish By-Products (5) **Hastings**
Production of industrial oils, meals, and pharmaceutical products; utilization of fish wastes. Prerequisites, Chemistry 221 or 232, and Microbiology 301.

495 Introduction to Fisheries Literature (2, maximum 6) **Staff**
Directed training in searching bibliographic sources. Prerequisite, 15 credits in fisheries.

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 Cleve**
Training in methods of searching fisheries literature.

556 Age and Growth of Fishes (5) **Van Cleve**
Principles of growth; methods of determining age and rates of growth in fresh-water and marine fishes. Prerequisites, 402, and Mathematics 383 or permission.

557 Population Enumeration (5) **Van Cleve**
Methods of enumerating animal populations; availability; dominant age groups; gear selectivity. Prerequisite, 556 or permission.

558 Population Dynamics (5) **Van Cleve**
Influence of natural and artificial factors on variation in abundance and yield from animal populations. Prerequisite, 557 or permission.

604 Research (*, maximum 3 for M.S., 10 for Ph.D.) **Staff**

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 2.5 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 106 (Analytic Geometry).

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

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

First Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 111 or 115 General	5	Chem. 112 or 116 General	5	Chem. 113 Qual. Analysis	5
Engl. 101 Composition	3	Engl. 102 Composition	3	Engl. 103 Composition	3
Physics 101 General	5	Physics 102 General	5	Math. 101 Algebra or 104 Plane Trig.	3-5
Phys. Educ. 110 or 175 Health Ed.	2	Electives	2	Physics 103 General	5
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		17-22

Second Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 231 Organic	3	Chem. 232 Organic	3	Chem. 325 Quant. Analysis	5
Chem. 241 Organic Lab.	2	Chem. 242 Organic Lab.	2	Social science elective	5
Zool. 111 General or Bot. 111 Elementary	5	Zool. 112 General or Bot. 112 Elementary	5	Electives	5
Electives	3-5	Electives	7	Phys. Educ. activity	1
Phys. Educ. activity	1	Phys. Educ. activity	1	ROTC	2-3
ROTC	2-3	ROTC	2-3		16-19
	14-19		18-21		

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Biochem. 401 Biochem.	6	Biochem. 402 Biochem.	6	Bot. 461 Yeasts & Molds	5
Micro. 300	6	Chem. 351 Elem. Physical	3	Chem. 352 Elem. Physical	3
Electives	5-6	Electives	9-15	Electives	8-9
	17-18		18-24		16-17

Fourth Year

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

GENERAL AND COMPARATIVE LITERATURE

Chairman: JACKSON MATHEWS, 7 Parrington Annex B

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

BACHELOR OF ARTS

Requirements for a major in general literature are: some upper-division credit or the equivalent in one foreign language, ancient or modern; 20 credits in General

Literature 300, 301, 302, and 450, or equivalents; and not less than 30 credits in other subjects selected with the chairman to form a coherent program.

ADVANCED DEGREES

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

MASTER OF ARTS. 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 86).

COURSES FOR UNDERGRADUATES

300, 301, 302 Masterpieces of European Literature (5,5,5) — **Mathews**
Reading of great works from Homer to the present in several genres, mainly the long poem, the drama, and the novel.

350, 351 Romanticism and the Nineteenth Century in Europe (5,5) — **Mathews**

400 European Literary Criticism since 1900 (5) — **Mathews**

450 The Art of Translation (5) — **Mathews**

480, 481 The Symbolist Movement (5,5) — **Mathews**
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) — **Mathews**

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 220 Russian Literature in English (5)

Russian 321 Contemporary Russian Literature in English (5)
Russian 322 Russian Plays in English (5)
Russian 424 The Russian Symbolists in English (5)
Russian 425 Dostoevski in English (3)

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 218 French Literature in English (5)
Italian 218 Italian Literature in English (5)
Italian 481, 482 Dante in English (2,2)
Italian 484 Renaissance Literature of Italy in English (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

Humanities	*Social Sciences*	*Natural Sciences*	*Expression and Methodology*
1. Hum. 101 Literature	Soc. Sci. 101 Hist. of Civ.	Phys. Sci. 101 The Universe	Engl. Comp. 101
2. Hum. 102 The Arts	Soc. Sci. 102 Hist. of Civ.	Phys. Sci. 102 The Universe	Engl. Comp. 102
3. Hum. 103 Philos.	Soc. Sci. 103 Hist. of Civ.	Sci. elective	Engl. Comp. 103

Second Year

1. Hum. 201 Literature	Soc. Sci. 201 Modern Society	Biol. Sci. 101J-Gen. Biol.	Phys. Sci. 104 Math.
2. Hum. 202 Masterpieces of Art	Soc. Sci. 202 Modern Society	Biol. Sci. 102J Gen. Biol.	
3. Hum. 203 Philos.	Soc. Sci. 203 Modern Society		

Some General Education courses, but not all of them, may be applied toward specific majors. Students who 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	Sci. elective	5
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 Health	2
ROTC	2-3	ROTC	2-3	Phys. Educ. activity	1
	19-22		19-22	ROTC	2-3
					21-24

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. Sci. 101J- Gen. Biol.	5	Biol. Sci. -102J Gen. Biol.	5	Phys. Sci. 104 Math.	5
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

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) — **Blankenship, Harrison, Stocks, Brown**

An introduction to literary forms and techniques through the analysis of representative examples of narrative and poetic art, with emphasis upon the relationship of content and expression.

102 The Arts (5) — **Verrall, Moseley, Staff**

Painting, sculpture, music, architecture, the dance, and drama studied through example, discussion, and criticism.

103 Philosophy (5) — **Rader, Smullyan, Turbayne**

Methods of reflective thinking and the use of them in considering such essential questions as the existence and nature of God, the meaning of a good life and a good social order, the nature and limits of human knowledge, the relationship between mind and body, and the nature of the universe. This course may be offered in partial fulfillment of the requirements for a major in philosophy.

201 Literature (5) — **Staff**

Reading and critical discussion of some of the greatest works in world literature.

202 Masterpieces of Art (5) — **Verrall, Moseley, Staff**

203 Philosophy (5) — **Turbayne**

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) **Katz, Savelle, Jansen, Beatty, Cecil**

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) **Katz, Savelle, Jansen, Beatty, Cecil**

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) **Katz, Savelle, Jansen, Beatty, Cecil**

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) **Cross, Clark, Kenworthy, Coombs**

Part I: The universe as a unit; the stars; the solar system; the earth; the basic process; the atom. Part II: The nature of matter; the structure and behavior of the atom; relations between atoms; the elements; combinations of inorganic and organic elements.

104 Mathematics (5) **Hewitt, Rogers**

Symbolism and inference, the essential processes in pure mathematics; precision and accuracy in reasoning and in expression; mathematical logic; mathematical proofs; detailed analysis of mathematical systems; the applications of mathematics in other sciences.

BIOLOGICAL SCIENCE

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

This course is offered jointly by the Departments of Botany and Zoology and is described in the course announcements of both departments.

GENERAL STUDIES

Director: W. GLEN LUTEY, 213 Denny Hall

Enrollment in General Studies is open to students who plan to follow through to graduation the study of a field of knowledge or a subject of special interest not provided for in departmental curricula. It is also open to those who can spend only a limited time in the University and need guidance in making up a program of work from this or other colleges adapted to their special needs. To be admitted to the Division of General Studies the student must have maintained at least a 2.0 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 major in nursery school should fulfill the requirements for a major through the Division of General Studies. Information on course offerings 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; completion of at least 70 credits in the chosen field or subject; and a thesis giving evidence of the student's competence in his major field.

COURSES FOR UNDERGRADUATES

391 Supervised Study in Selected Fields (*, maximum 6) **Staff**
Special supervised study in a field represented in the College of Arts and Sciences. Prerequisite, permission of major department, supervisor of study, and General Studies Office.

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 Thesis (1-5) **Staff**
For majors only. Prerequisite, 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, it offers first and second teaching areas and a basic academic field for students in the College of Education.

BACHELOR OF ARTS

In the elective curriculum, 50 credits in geography are required. Courses must include: Geography 100, 102, 202, 207, 210, and 358. The remaining 27 credits are elected from among upper-division geography courses. Recommended supporting courses include: Anthropology 390 (Introduction); Economics 200 (Introduction); Geology 101 (Survey), 206 (Elements of Physiography); History 463 (The Westward Movement); Meteorology 101 (Survey), 322 (Regional Climatology); Political Science 201 (Survey), 203 (International Relations); and Sociology 310 (General).

Fields of specialization may be developed in accordance with student interests. Each field of specialization consists of the courses required of all students majoring in geography, selected upper-division geography courses, and supporting courses from other departments and schools. Programs of study may emphasize such fields as general geography, Anglo-America, the Far East, economic geography, and cartography.

ADVANCED DEGREES

Students who intend to work toward the degree of Master of Arts or Doctor of Philosophy in geography must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. The Department requires all candidates for advanced degrees to enroll 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 the *Graduate School Bulletin*).

COURSES FOR UNDERGRADUATES

INTRODUCTORY COURSES

100 Survey of World Geography (5) — **Earle, Eyre, Murphey**
An introductory study of the human geography of the world primarily in terms of the human occupance of major world regions.

102 Introductory Physical Geography (5) — **Staff**
The components of man's habitat (landforms, climates, soils, etc.) with reference to human occupance.

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 major occupations; their distribution, resources used, and commodities produced.

325 Geographical Background of American History (3) — **Martin**
The role of geography in settlement and national development.

370 Conservation of Natural Resources (5) — **Sherman**
Principles and practices of 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 (5) — **Marts**
An analysis and appraisal of water resources in land and industrial developments; problems relating to water resources. 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) — **Staff**
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 (3-5) — **Ullman**
A geographic analysis of urban settlements in terms of their nature, distribution, principal functions, and supporting areas. Primarily for students majoring in geography and such other fields as city and urban planning.

REGIONAL GEOGRAPHY

202 Anglo-American (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 their 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**
A survey of countries and regions; their resources, economic activities, settlement patterns, and international relations.

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 developments 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.

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) **Garrison**
An analysis of present and potential developments chiefly in terms of resource occupance, 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 communication; current political status.

433 U.S.S.R. (3) **Staff**
Natural resources with particular reference to current and potential developments in the extractive and manufactural 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**
Agriculture and industrialization; population problems; systems and problems of transportation; urban and rural economies; and problems of political geography.

437 Japan (3) **Eyre**
Resources and population problems, economic activities, and overseas relationships of contemporary Japan.

GEOGRAPHIC TECHNIQUES

358 Maps and Map Reading (2) **Leppard, Sherman**
Categories of maps and aerial photographs and their special uses; map reading and interpretation.

360 Introductory Cartography (5) **Leppard, Sherman**
Practical laboratory experience in using drafting instruments and cartographic materials; map scale, grid, symbolism, color, lettering, and reproduction.

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. Prerequisite, Sociology 223 or approved equivalent. Offered jointly with the Department of Sociology.

461 Intermediate Cartography (5) **Leppard, Sherman**
Construction and analysis of map projections, relief representation, and field mapping. Prerequisite, 360.

462 Advanced Cartography (5) **Leppard, 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) — **Marts, Sherman**
The development and application of skills essential to geographic field investigations: (1) training in the use of basic and special field techniques and base materials; (2) evaluation of these techniques and materials in a variety of research situations; (3) analysis and interpretation of field data; and (4) presentation of the results of field investigations. (Offered Summer Quarter only.)

COURSES FOR GRADUATES ONLY

N500 Geography as a Professional Field (0)	**Staff**
501 Source Materials in Geographic Research (3)	**Earle**
502 Seminar: Writing and Critique (3)	**Martin**
503 Problems in the Geography of Asia (3, maximum 9)	**Earle, Eyre, Murphey**
504 Problems in the Geography of Europe (3, maximum 9)	**Leppard, Martin**
506 Geography of Anglo-America (3, maximum 9)	**Hudson, Marts**
510 Settlement and Urban Geography (3; maximum 9)	**Ullman**
537 Economic Geography (3, maximum 9)	**Garrison, Marts, Ullman**
551 Recent Trends in Geographic Research (3, maximum 9)	**Staff**
555 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 2.5 is required for entrance to the Geology Department and a cumulative grade-point average of 2.5 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, 332, 344, 361, 412, and 443.

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 Excavation); 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.

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 requirements.

First Year

FIRST QUARTER	CREDITS
Chem. 111 or 115 General	5
Engl. 101 Composition	3
Gen. Engr. 101 Engr. Drawing	3
Math. 104 Plane Trig.	3
Phys. Educ. activity	1
ROTC	2–3
	15-18

SECOND QUARTER	CREDITS
Chem. 112 or 116 General	5
Engl. 102 Composition	3
Math. 105 College Algebra	5
Phys. Educ. activity	1
ROTC	2–3
	14–17

THIRD QUARTER	CREDITS
Chem. 113 Qual. Analysis or elective	5
Gen. Engr. 103 Drafting Problems	3
Math. 153 Analyt. Geom. & Calc.	5
Electives	2
Phys. Educ. activity	1
ROTC	2–3
	16–19

Second Year

FIRST QUARTER	CREDITS
Geol. 205 Rocks & Min.	5
Physics 101 General	5
Electives	5
Phys. Educ. activity	1
ROTC	2–3
	16–19

SECOND QUARTER	CREDITS
Geol. 206 Elem. Physiog.	5
Engl. 103 Composition	3
Gen. Engr. 121 Plane Surveying	3
Physics 102 General	5
Phys. Educ. 110 or 175 Health	2
Phys. Educ. activity	1
ROTC	2–3
	19–22

THIRD QUARTER	CREDITS
Geol. 207 Historical	5
Geol. 221 Mineralogy	5
Physics 103 General	5
Phys. Educ. activity	1
ROTC	2–3
	16–19

Third Year

FIRST QUARTER	CREDITS
Geol. 308 Structural	5
Geol. 323 Optical Min.	5
Electives	5
	15

SECOND QUARTER	CREDITS
Geol. 324 Petrography & Petrology	5
Geol. 330 Gen. Paleon.	5
Humanities electives	5
	15

THIRD QUARTER	CREDITS
Geol. 332 Adv. Paleon.	5
Geol. 344 Field Methods	5
Social science electives	5
	15

Fourth Year

FIRST QUARTER	CREDITS
Geol. 361 Stratigraphy	5
Geol. 412 U.S. Physiog.	5
Foreign language	5
	15

SECOND QUARTER	CREDITS
Geol. 427 Ore Deposits	5
Geol. 443 Adv. Structural	5
Foreign language	5
	15

THIRD QUARTER	CREDITS
Geol. 414 Map Interpret. or electives	5
Foreign language	5
Social science electives	5
	15

COURSES FOR UNDERGRADUATES

101 Survey of Geology (5) — **Coombs, Barksdale, 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) — **Mallory**
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.

215 Soils and Water Resources (3) — **Wheeler**
Basic physical geology in relation to soils and water resources. Primarily for forestry and sanitary engineering students.

221 Mineralogy (5) — **Willis**
Determinative crystallography and blowpipe analysis. Prerequisites, high school chemistry and 205.

308 Structural Geology (5) — **Barksdale**
Interpretation of rock structures and their genesis. Prerequisites, 205, 206, 207, and General Engineering 101, 102, 103.

310 Engineering Geology (5) — **Willis**
Elements of geology for civil engineers. Prerequisite, civil engineering major or permission.

323 Optical Mineralogy (5) — **Coombs, Willis**
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.

332 Advanced Paleontology (5) — **Mallory**
Emphasis on cretaceous faunas. Prerequisite, 207.

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 332.

400 Advanced or Field Work in General Geology (*)
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, Constructional Landforms (5) — **Mackin**
Prerequisites, 205, 206, and 207.

425 Petrography and Petrology (5) — **Misch**
Metamorphic rocks, petrogenesis. Prerequisite, 324.

426 Sedimentary Petrography (5) — **Willis**
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.

436 Micropaleontology (5) — **Mallory**
Prerequisite, 330.

443 Advanced Structural Geology (5) — **Misch**
Prerequisite, 308.

450 Elements of Seismology (5) — **Jones**

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 Studies, Research, or Field Work in Physiography (*)	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 (*)	Wheeler
532	Stratigraphic Paleontology (3)	Wheeler
540	Advanced Studies or Research in Structural Geology (*)	Barksdale, Misch
545	Structure of Eurasia (5)	Misch
546	Structure of the Pacific Rim (5)	Misch
550	Advanced Study or Research in Geophysics (*, maximum 9)	Jones
560	Advanced Work in Stratigraphy (*)	Wheeler
565	Paleozoic Stratigraphy (5)	Wheeler
568	Mesozoic Stratigraphy (3)	Wheeler
570	Advanced or Research Work in Mineralogy, Petrography, and Petrology (*)	Goodspeed, Coombs, Misch
580	Advanced or Research Work in Economic Geology (*)	Goodspeed, Coombs
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 de-

grees must take German 410, 411, 412, 415, 416, 417, 500, 501, 502, 503, 552, 556, and 557 (or equivalents) as they are offered. German 518 and 519 must be taken if twentieth-century literature is used as a major field.

MASTER OF ARTS. Candidates must pass a reading examination in some other suitable foreign language and complete 30 credits of course work for a major.

A German minor for the master's degree requires 15 credits in German courses.

DOCTOR OF PHILOSOPHY. Candidates must pass a reading examination in French, unless some other non-Germanic language seems more advisable, and complete an approved program of studies.

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 1954-55.)

301, 302, 303 Grammar and Conversation (2,2,2) **Rey, Sauerlander**
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, as for 320.

401, 402, 403 Grammar and Composition (2,2,2) **Vail, Meyer, Rey**
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 1953-54.)

410, 411, 412 History of German Literature (3,3,3) **Buck, Wilkie, Kahn**
From the beginnings to the Classical period. (Offered 1954-55.)

415, 416, 417 Nineteenth-Century Literature (3,3,3) **Sommerfeld, Sauerlander, Rey**
(Offered 1953-54.)

418, 419 Naturalism, Expressionism, and Twentieth-Century Realism (3,3) **Rey**
(Offered 1955-56.)

422 Analysis of German Poetry (3) **Sommerfeld**
(Offered 1954-55.)

431 Lessing's Life and Dramatic Works (3) — **Vail**
(Offered 1953-54.)

433 Goethe: The Early Years (3) — **Vail**
(Offered 1954-55.)

434 Goethe: Life and Works 1775-88 (3) — **Buck**
(Offered 1954-55.)

436 Goethe's Faust I (3) — **Sommerfeld**
(Offered 1953-54.)

437 Goethe's Faust II (3) — **Vail**
(Offered 1953-54.)

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 German Philology (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) — **Rey**
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) — **Rey**

DUTCH

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

COURSES FOR GRADUATES ONLY

LITERATURE COURSES

500 Bibliography and Methodology (2) — **Sommerfeld**
(Offered 1953-54.)

510 Literature of the Middle Ages (5) — **Buck**
(Offered 1954-55.)

511 Reformation and Renaissance (3) — **Wilkie**
(Offered 1954-55.)

512 Baroque (3) — **Wilkie**
(Offered 1954-55.)

513 Eighteenth-Century Movements (3) — **Kahn**
(Offered 1954-55.)

515 The Romantic Movement (4) — **Sommerfeld**
(Offered 1953-54.)

516 The Drama of the Nineteenth Century (4) — **Sauerlander**
(Offered 1953-54.)

517 The Literature of the Later Nineteenth Century (4) — **Rey**
(Offered 1953-54.)

518, 519 The Literature of the Twentieth Century (3,3) — **Rey**
(Offered 1955-56.)

531 Lessing (3) — **Vail**
(Offered 1953-54.)

534 Goethe: Life and Works 1775-88 (4) — **Buck**
(Offered 1954-55.)

535 Goethe: Life and Works 1788-1832 (4) — **Sommerfeld**
(Offered 1954-55.)

538 Schiller (4) — **Vail**
(Offered 1955-56.)

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 1953-54.)	**Reed**
550 Gothic (5) (Offered 1953-54.)	**Meyer**
552 Old High German (5) (Offered 1953-54.)	**Reed**
555 Old Saxon (5) (Offered 1956-57.)	**Reed**
556 Middle High German (5) (Offered 1954-55.)	**Meyer**
557 Middle High German Literature in the Original (5) (Offered 1954-55.)	**Reed**
560 Modern Dialects (3) (Offered 1954-55.)	**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: W. STULL HOLT, 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

In this elective curriculum, 50 credits in history are required. Courses must include: either History 101 and 102 or the General Education sequence, Social Science 101, 102, and 103 (History of World Civilization); for History 102, History 305 and 306 may be substituted; either History 241 or History 341, 342, and 343; and at least 25 credits in upper-division history courses.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School 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 three major divisions of history. Subjects within the first division are ancient history, medieval history, and Renaissance history; those within the second division are modern European history, English history, and British Empire history; and the subject within the third division is American history.

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

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

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

DOCTOR OF PHILOSOPHY. Candidates must complete History 501, 502, and at least two years of seminar work, participate in the work of the advanced seminar, and take at least 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. 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 three divisions of history.

COURSES FOR UNDERGRADUATES

101 Medieval European History (5) — **Dobie, Katz, Lytle**
Europe from the disintegration of the Roman Empire to 1500. The evolution of basic values and assumptions of Western civilization, with emphasis on the aspects that led to the development of law, and to the growth of ideas in political, economic, and social institutions and in literature and art.

102 Modern European History (5) — **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) — **Janson**
A survey of political, economic, social, intellectual, literary, and artistic developments in Japan from earliest times to the present. Offered jointly with the Far Eastern and Russian Institute.

305 Early Modern European History (5) — **Emerson, Lytle, Treadgold**
Political, social, economic, and cultural history of Europe from 1450 up 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) — **Savelle**
The founding of Anglo-Saxon society in the western hemisphere, with attention to the earliest colonial establishments, the growth of a new culture, independence, and the organization of the American Union.

342 The Development of American Civilization to 1877 (5) — **Gates**
The growth of the new nation; political, economic, and cultural activities through the post-Civil War period.

343 Modern American Civilization from 1877 (5) — **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 English Constitutional History (5) — **Roberts**
The development of legal and governmental institutions of the English people to the present time. (Offered 1953-54.)

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**
A study of the political, institutional, and cultural history of classical Greece, with special emphasis on the legacy of Greece to western civilization. (Offered 1954-55 and every four years.)

402 Alexander the Great and the Hellenistic Age (5) **Katz**
(Offered 1955-56 and every four years.)

403 The Roman Republic (3) **Katz**
(Offered 1956-57 and every four years.)

404 The Roman Empire (3) **Katz**
A study of the political, social, economic, and cultural history, with special emphasis on the decline of ancient civilization. (Offered 1953-54 and every four years.)

410 The Byzantine Empire (3) **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 1953-54 and every three years.)

412 Medieval Civilization (5) **Lucas**
The Dark Ages from the barbarian invasions to the Age of Feudalism (350-1000). (Offered 1954-55 and every three years.)

413 Medieval Civilization (5) **Lucas**
(Offered 1955-56 and every three years.)

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**
(Offered 1955-56.)

429 France from the Reformation to the French Revolution (5) **Lytle**
(Not offered 1953-55.)

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, 1814-1870 (5) **Lytle, Emerson**
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) **Lytle, Emerson**
The political, social, and cultural history of Europe during a period of mounting industrialization, "the new imperialism," and the ascendancy of Germany as a great power.

433 Europe, 1914-1945 (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 1954-55 and alternate years.)

437 Germany, 1914-1945 (5) **Emerson**
Political history from the collapse of the Bismarckian empire to the collapse of Hitler's empire. (Offered 1953-54 and alternate years.)

441 American Revolution and Confederation (5) **Savelle**
The cause 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 1953-54 and every four years.)

442 The Colonial Mind (5) **Savelle**
(Offered 1956-57 and every four years.)

443 The Intellectual History of the United States (5) **Savelle**
(Offered 1957-58 and every four years.)

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.

451J History of Chinese-Japanese Relations (5) **Jansen**
The nature and extent of China's influence on Japan before the modern period, of Japan's influence on China in the modern period, and of the present relations between the countries. Offered jointly with the Far Eastern and Russian Institute.

452J Early Japanese History (5) **Jansen**
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) **Jansen**
1600 to 1868. Political system, economic problems, and intellectual currents in Japan up to the time of Perry's arrival. Offered jointly with the Far Eastern and Russian Institute.

454J Modern Japanese History (5) **Jansen**
Beginnings and development of modern Japan; Japan's transformation under American rule. Offered jointly with the Far Eastern and Russian Institute.

457 The Diplomatic History of North America, 1492-1763 (5) **Savelle**
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 1954-55 and every four years.)

458 The United States in World Affairs, 1776-1865 (5) **Holt**
The relationship of the United States to world politics and the balance of power; background of the major episodes in American foreign relations.

459 The United States in World Affairs, 1865 to the Present (5) **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.

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. (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 1953-54.)

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 1953-54 and alternate years.)

474 Modern Irish History (5) **Costigan**
Growth of Irish national feeling in the nineteenth century, through the Home Rule and Sinn Fein 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 1953-54 and alternate years.)

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 India, Africa, and the Pacific: acquisition of a new 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 1953-54 and alternate years.)

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 1954-55 and alternate years.)

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)	**Katz, 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.

503-504 Philosophy of History (5-5) (Offered 1954-55 and alternate years.)	**Costigan**
510 Greek and Roman History (5)	**Katz**
514 Medieval and Renaissance History (5)	**Lucas**
531 Modern European History: Russia (5)	**Treadgold**
532 Modern European History (5)	**Emerson**
533 Modern European History (5)	**Lytle**
541 American History (5)	**Savelle**
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

517-518-519 Seminar in Ancient or Medieval History (5-5-5)	**Lucas**
521-522-523 Seminar in Modern European History (5-5-5)	**Emerson**
551J Seminar in Japanese History (3, maximum 6) Offered jointly with the Far Eastern and Russian Institute. Prerequisite, permission.	**Jansen**
553-554-555 Seminar in American History (5-5-5)	**Savelle**
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.

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.

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.

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.

BACHELOR OF SCIENCE IN HOME ECONOMICS

CURRICULUM IN HOME ECONOMICS EDUCATION. Students who plan to teach homemaking in Washington high schools follow this prescribed curriculum, which meets the course requirements (a total of 60 credits in home economics) for the temporary vocational certificate, as well as the course requirements for the provisional general certificate, which is issued through the College of Education (see 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 107 (Survey); 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
Home Ec. 101 Introduction	1
Home Ec. 115 Food Preparation	3
Home Ec. 125 Textiles	3
Home Ec. 134 Clothing Construction	5
Art 109 Design	3
Chem. 101, 230 General	10
Engl. 101, 102, 103 Composition	9
Phys. Educ. 110 Health	2
Speech 100 Basic Improvement	5
Electives	4
Phys. Educ. activity	3
	48

Second Year

	CREDITS
Home Ec. 215 Meal Planning	3
Home Ec. 234 Costume Design	3
Home Ec. 248 The House	3
Econ. 200 Introduction	5
Music 107 Survey	5
Nursing 100 Home Nursing	3
Psychol. 100 General	5
Sociol. 110 Survey	5
Zool. 208 Physiology	5
Electives	5
Phys. Educ. activity	3
	45

Third Year

	CREDITS
Home Ec. 307 Nutrition	5
Home Ec. 315 Advanced Food Selection	5
Home Ec. 347 Home Furnishing	5
Home Ec. 354 Family Economics	5
Educ. 209 Educ. Psychol. and Educ. 370 Intro. to Teaching Procedures (taken concurrently)	8
Educ. 307E Elementary School Methods	5
Educ. 373 State Manual	2
Educ. 332 Home Economics	3
Educ. 390 Evaluation	3
Micro. 301 General	5
	46

Fourth Year

	CREDITS
Home Ec. 338 Family Clothing	3
Home Ec. 348 Home-Management House	3
Home Ec. 356 Family Relationships	3
Home Ec. 457 Child Nutrition	3
Home Ec. 407 Adv. Nutrition or 434 Cost. Des. or 447 Adv. Home Furnishing or 495 Special Problems	3
Educ. 371S Directed Teaching	8
Educ. 372E Professional Lab. Experiences	3
Educ. 360 Principles	3
Educ. 374 Fund. of Reading Instruct.	5
Hist. 464 Wash. and Pacific N.W.	5
Nursery School 305 Personality Growth	3
Pub. Health 461 School & Comm. Health	5
	47

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

First Year

	CREDITS
Home Ec. 101 Introduction	1
Home Ec. 115 Food Preparation	3
Home Ec. 125 Textiles	3
Art 109 Design	3
Chem. 101, 230 General	10
Engl. 101, 102, 103 Composition	9
Phys. Educ. 110 Health	2
Psychol. 100 General	5
Electives	9
Phys. Educ. activity	3
	48

Second Year

	CREDITS
Home Ec. 134 Clothing Const. or 231 Clothing Selection	5–2
Home Ec. 215 Meal Planning	3
Home Ec. 248 The House	3
Econ. 200 Introduction	5
Physics 170 For Nurses	5
Sociol. 110 Survey	5
Zool. 208 Physiol.	5
Electives	14–17
Phys. Educ. activity	3
	48

Third Year

	CREDITS
Home Ec. 307 Nutrition, 407 Adv. Nutrition	8
Home Ec. 315 Adv. Food Selection	5
Home Ec. 347 Home Furnishing	5
Home Ec. 348 Home-Management House	2
Home Ec. 354 Family Economics	5
Home Ec. 356 Family Relations	3
Micro. 301 General	5
Nursery School 305 Personality Growth	3
Electives	9
	45

Fourth Year

	CREDITS
Home Ec. 372 Food Prep., 472 Inst. Food Purch., 473, 474 Inst. Mgmt.	16
Home Ec. 408 Diet Therapy	3
Home Ec. 457 Child Nutrition	3
Biochem. 361 Biochem.	3
Educ. 333 Teaching Inst. Admin.	5
Electives	15
	45

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

Fourth Year

HOME ECONOMICS AND BUSINESS

	CREDITS
Home Ec. 316 Demonst. Cook	3
Home Ec. 408 Diet Therapy, and 415 Exp. Cook., or Biochem. 361 Biochem.	6–3
Home Ec. 457 Child Nutrition	3
Journ. 100 Journalism Today	2
Journ. 200 News Writing	5
Speech 120 Public Speaking	5
Electives	21–24
	45

HOME ECONOMICS AND JOURNALISM

	CREDITS
Home Ec. 457 Child Nutrition	3
Journ. 100 Journalism Today	2
Journ. 200 News Writing	5
Journ. 201 Copy Editing	2
Journ. 220 Advertising	3
Journ. 303 Public Relations	3
Journ. 304 Mag. Article Writing	3
Radio-TV 342 Radio Advertising	3
Electives	21
	45

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 Comm. Disease	3
Pub. Health 412 Organizations and Services	3
Pub. Health 463 Comm. Organization	3
Pub. Health 464 Comm. Educ.	3
Pub. Health 470 Statistics	2
10 credits from Soc. Work 300, 301, 302, 304, 305	10
Electives	15
	45

BACHELOR OF ARTS IN HOME ECONOMICS

CURRICULUM IN TEXTILES, CLOTHING, AND ART. This prescribed curriculum is designed for students whose primary vocational interest is in clothing.

First Year

	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, 230 General	10
Engl. 101, 102, 103 Composition	9
Phys. Educ. 110 Health	2
Electives	6
Phys. Educ. activity	3
	48

Second Year

	CREDITS
Home Ec. 110 Food & Nutrition or 115 Food Prep. or 300 Nutrition	2–5
Home Ec. 234 Costume Des.	3
Art 106 Drawing	3
Art 111 Design	3
Art 151 Figure Sketching	1
Econ. 200 Introduction	5
Hist. 101, 102 Medieval Europe	10
Psychol. 100 General	5
Sociol. 110 Survey	5
Electives	5–8
Phys. Educ. activity	3
	48

Third Year

	CREDITS
Home Ec. 334, 434 Costume Des.	6
Home Ec. 347 Home Furnishing	5
Home Ec. 354 Family Economics	5
Home Ec. 356 Family Rel.	3
Art 369, 370, 371 Costume Design & Illust.	6
Philos. 100 Introduction	5
Electives	15
	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 Des.	10
Art Electives	8
Electives	16
	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 Des.	6
Home Ec. 347 Home Furnishing	5
Home Ec. 354 Family Economics	5
Home Ec. 356 Family Rel.	3
Art 329 Appreciation	2
Art 369, 370 Costume Des. & Illust.	4
Acct. 150	4
Mktg. 301	5
Social Science and Humanities electives	11
	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 Des.	10
Business Administration electives Chosen from: Hum. Rel. 460 Hum. Rel. in Indust. (5) Mktg. 381 Retailing (5) Mktg. 391 Advertising (5) Pers. 310 Pers. Mgmt. (5) or other approved courses	10–15
Prod. 380 Field Work	6
Electives	3–8
	45

NONPROFESSIONAL CURRICULUM IN CLOTHING AND ART. This elective curriculum is for those who wish to stress clothing and art. Suggested electives are: Home Economics 110 or 115; 248; 300 or 307; 457 or Nursery School 305 (Personality Growth of the Preschool Child); Architecture 105 (The House); and courses in the General Education program. The first two years are identical with the professional textiles, clothing, and art curriculum.

Third Year

	CREDITS
Home Ec. 334, 434 Costume Des.	6
Home Ec. 347 Home Furnishing	5
Home Ec. 354 Family Economics	5
Home Ec. 356 Family Rel.	3
Art 369, 370 Costume Design & Illust.	4
Philos. 100 Introduction	5
Electives	17
	45

Fourth Year

	CREDITS
Home Ec. 425 Adv. Textiles	3
Home Ec. 433 Hist. Costume	5
5 credits from Home Ec. 321 (2), 322 (2), 329 (2), and 426 (3)	5
Art or upper-division business electives	10
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 190 (For Home Economics Majors); Sociology 353 (Social Factors in Marriage); and courses in education, journalism, nursery school, and in the General Education program.

First Year

	CREDITS
Home Ec. 101 Introduction	1
Home Ec. 115 Food Preparation	3
Home Ec. 125 Textiles	3
Home Ec. 134 Clothing Const.	5
Art 109 Design	3
Chem. 101, 230 General	10
Engl. 101, 102, 103 Composition	9
Phys. Educ. 110 Health	2
Electives	9
Phys. Educ. activity	3
	48

Second Year

	CREDITS
Home Ec. 215 Meal Prep.	3
Home Ec. 234 Costume Des.	3
Home Ec. 248 The House	3
Econ. 200 Introduction	5
Psychol. 100 General	5
Sociol. 110 Survey	5
Zool. 208 Physiol.	5
Electives	16
Phys. Educ. activity	3
	48

Third Year

	CREDITS
Home Ec. 307 Nutrition	5
Home Ec. 347 Home Furnishing	5
Home Ec. 348 Home-Management House	2
Home Ec. 354 Family Economics	5
Home Ec. 356 Family Rel.	3
Nursery School 305 Personality Growth	3
Electives	22
	45

Fourth Year

	CREDITS
Home Ec. 457 Child Nutrition	3
Electives	42
	45

COURSES AND PROGRAMS FOR STUDENTS MAJORING 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, 332, 350 (or 354), 356 and 457.

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, 348, 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.

ADVANCED DEGREES

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

Students who intend to work toward a master's degree must meet the requirements of the Graduate School 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) — **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) — **Thorson, Warning, Wybourn, Berderon**
Analysis and selection of clothing and accessories. Wardrobe inventory. Planning and construction of cotton or linen dresses. Not open to students who have taken 130.

215 Meal Planning and Preparation (3) — **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. Not open to students who have taken 130 or 134.

234 Costume Design and Construction (3) — **Warning, Thorson**
Flat-pattern designing and wool techniques, including the design of a muslin pattern and the use of it in making a wool dress; study of clothing for children. Prerequisites, 130 or 134, and Art 109.

240 Home Furnishing (3) — **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, Morrison**
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) **Johnson, Goers**
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) **Rowntree, Johnson**
Chemistry of digestion and metabolism. Food values; human requirements and ways of meeting them at different cost levels. Prerequisites, general chemistry and physiology. Qualified transfer students receive 3 credits.

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. Qualified transfer students 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, 130 or 134, and Art 109.

322 Needlecraft (2) **Payne**
National and historic embroideries with application to modern use in the home and in costume. Prerequisites, 130 or 134, and Art 109.

329 Hand Weaving (2) **Brockway**
Mechanism of looms, warping techniques, designing and weaving with various yarns; contemporary designers.

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**
Study of family clothing problems, considering income, occupation, and health as well as esthetic and psychological factors; handling of silk and synthetic fabrics; construction, including renovation and children's garments. Prerequisite, 234.

347 Home Furnishing (5) **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) **Rowntree**
Recent research on vitamins, minerals, amino acids, and their interrelationships. Methods of utilizing knowledge in public health work and in teaching. Prerequisites, 307 and organic chemistry, or permission.

408 Diet Therapy (3) **Johnson, Morrison**
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) **Hosmer, Brockway**
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**
Workroom practices. Study of construction of draperies, slipcovers, bedspreads, etc. Field trips to upholstery and drapery workrooms. Individual projects for interior design. Teaching aids for home economics education majors.

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) — **Rowntree, Deisher**
Physical, mental, and emotional health of children. Experience with parents and children in the Child Nutrition Service. Prerequisite, 300, 307, or permission.

472 Institution Food Purchasing (3) — **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 (*) — **Staff**
Individual study and research in fields of special interest. In registration, field should be indicated by letter. Prerequisite, permission.

A. Costume Design
B. Institution Administration
C. Nutrition
D. Textiles
E. Family Economics
F. Foods
G. Home Economics Education
H. Family Relations
I. Home Management
K. Home Furnishing

COURSES FOR GRADUATES ONLY

507 Readings in Nutrition (*) — **Rowntree, Johnson**
Library research. Prerequisite, 407 or equivalent.

515 Readings in Food Selection and Preparation (*) — **Dresslar**
Professional literature on recent developments.

554 Social and Economic Problems of the Consumer (3-5) — **Staff**
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 class work for graduates in institution management and dietetics. An administrative dietetics internship approved by the American Dietetic Association. Fee, $25 (payable first quarter).

600 Research (*)
In registration, field of interest should be indicated by letter. Prerequisite, permission.

A. Costume Design	Payne
B. Institution Administration	Terrell
C. Nutrition	Johnson
D. Textiles	Brockway
E. Family Economics	Johnston
F. Foods	Dresslar
G. Education	McAdams

Thesis (*) — **Staff**

JOURNALISM

(See Communications, page 73)

LAW, PREPROFESSIONAL PROGRAM

Adviser, 121 Education Hall

Students at the University who plan to enter the University School of Law may qualify for entrance by (1) obtaining a bachelor's degree before entrance; or (2) taking three years of undergraduate work (135 credits) with a 2.5 grade-point average; or (3) taking a special three-year course of prelegal training which leads to a bachelor's degree at the successful completion of the first year in the Law School.

Students who take the three-year course leading to a bachelor's degree after one year in the Law School choose one of three curricula. The College of Business Administration provides a business-law curriculum (see 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 138 credits with a 2.5 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 2.5 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); 6 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.

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

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

LIBERAL ARTS

Assistant Professor: W. GLEN LUTEY, 213 Denny Hall

There is no curriculum leading to a degree in liberal arts. 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

Adviser: GLADYS BOUGHTON, 112 Library

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

An undergraduate curriculum in the Division of General Studies (see page 103) 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**
Introduction to the field of children's books, with special emphasis on their selection and application to the school curriculum and to the child's recreational reading interests.

452 Story Telling (3) — **Groves**
The art and materials of story telling in public libraries, schools, and recreational centers. Folk and fairy tales, myths, epics, picture books, and realistic materials are studied, evaluated, and adapted. Open to undergraduates and nonlibrary school students Autumn Quarter only; for School of Librarianship students Spring Quarter.

460 School Library Administration (3) — **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 1½ units of algebra and 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 may be exempted from Mathematics 104 by taking a qualifying test given at the same time. Students presenting two years of high school algebra may similarly be exempted from Mathematics 105 by passing a qualifying test. Students exempted from 104 and/or 105 may replace these courses with approved mathematics electives.

Mathematics 100 is an introductory course for students who plan to major in mathematics and for other science students. It may be taken concurrently with any other freshman mathematics course. A more extensive introductory course, which is designed for nonscience students, is Physical Science 104, given in the General Education program.

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

BACHELOR OF ARTS

In the elective curriculum, 48 credits in mathematics are required. Courses must include Mathematics 104, 105, 106, 307, 308, 309, and 20 credits in approved electives, 13 of which must be in upper-division courses. The only approved lower-division electives are Mathematics 100 and 281.

BACHELOR OF SCIENCE

In the prescribed curriculum, a grade-point average of 2.5 is required in all mathematics courses. For both options, requirements in other fields include: Physics 101, 102, and 103 (or 104, 105, and 106, or 121, 122, and 123, or 217, 218, and 219), and 15 credits each in the humanities and the social sciences. German or French is recommended as a humanities elective.

MATHEMATICS OPTION. Sixty credits in mathematics are required, including Mathematics 104, 105, 106, 307, 308, 309, and 32 credits in approved electives. The electives must include 9 upper-division credits each in two of these fields: algebra, analysis, and geometry. The only approved lower-division electives are Mathematics 100 and 281.

This sequence of courses is recommended but not prescribed: freshman year, Mathematics 100, 104, 105, and 106; sophomore year, Mathematics 307, 308, and 309; junior year, 401, 402, and 403; 421, 422, and 423; and senior year, 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 104, 105, 106, 281, 307, 308, 309, 401, 481, 482, 483, and 484 are required. An additional requirement is 10 approved credits in courses on applications of statistical methods chosen from the offerings of other departments. Prospective graduate students should take additional upper-division mathematics courses.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School 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.

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 variable, complex variable, and at least one other field chosen by the candidate; and (2) additional material related to the candidate's field of special interest, such as that included in second-year graduate courses.

COURSES FOR UNDERGRADUATES

100 Introduction to Mathematical Thinking (2) **Staff**
Mathematical logic, algebraic structures, and number systems. For students taking freshman mathematics courses. Prerequisites, one year of high school algebra and one year of plane geometry.

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 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.

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).

106 Analytic Geometry (5) **Staff**
Straight lines, conics, and polar coordinates. Lines and planes in space, and quadric surfaces. Not open to students who have taken 153. Prerequisites, 104 and 105 (or exemption by qualifying test).

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).

153 Analytic Geometry and Calculus (5) **Staff**
Functional relations and loci; the straight line. Limits, derivatives and differentiation of elementary functions; integral concept; elementary applications of calculus. Not open to students who have taken 106. Prerequisites, 104 and 105 (or exemption by qualifying test).

155, 156 Mathematics for Architects (3,3) **Staff**
Selected topics from college algebra, analytic geometry, and calculus. Not open to students who have taken either 105, 106, or 153. Does not count toward a mathematics major. Prerequisites, 104 for 155; 155 for 156.

251, 252, 253 Analytic Geometry and Calculus (5,3,3) **Staff**
251: integration processes; the circle, conics, and coordinate transformations; parametric equations; further applications of differential calculus. Not open to students who have taken 307. Prerequisite, 153. 252: differential and integral calculus; application to problems in mechanics. Polar coordinates, lines and planes in space, and infinite series. Not open to students who have taken 308. Prerequisite, 251. 253: space curves and surfaces, partial differentiation, and multiple integration. Not open to students who have taken 309. Prerequisite, 252.

281 Elements of Statistical Method (5) **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.

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, 106 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, 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; elements of matrices; Jacobians; implicit function theorem. Prerequisite, 309 or 253.

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, 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.

441 Foundations of Geometry (3) **Staff**
Axiomatic treatment of the foundations of projective and Euclidean geometries. Introduction to non-Euclidean geometry. Prerequisite, 309.

442 Advanced Analytic Geometry (3) **Staff**
Advanced topics in plane analytic geometry; solid analytic geometry, including analysis of quadric surfaces; homogeneous coordinates. Prerequisites, 309 and 401, or permission.

443 Differential Geometry (3) **Staff**
Elementary differential geometry of curves and surfaces. Prerequisites, 421 and 442.

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, 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; nth order difference; divided differences and valcepts; remainders; solution of equations, numerical integration of functions and differential equations of first and second orders. Prerequisites, differential calculus for 462; 462 or permission for 463. (Offered 1954-55.)

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. Prerequisite, 421; recommended, 401. (Offered alternate years; offered 1953-54.)

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, 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

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.

511, 512, 513 Special Topics in Algebra (3,3,3) **Staff**
Each may be repeated twice for credit.

521, 522, 523 Functions of a Complex Variable (3,3,3) **Staff**
Analytic functions, contour integration, power series, conformal representation, analytic continuation, and other topics. Prerequisite, 426, 429, or equivalent.

524, 525, 526 Functions of a Real Variable (3,3,3) **Staff**
Real numbers; cardinal numbers; theory of sets; topological spaces; sequences; functions; advanced topics in series; measure; theory of integration, including Lebesgue and Stieltjes integrals. Prerequisite, 426 or equivalent.

527, 528, 529 Methods of Mathematical Physics (5,5,5) **Staff**
Real and complex functions, Fourier analysis, Fuchsian differential equations, linear algebra, and eigen value theory. Special functions, second-order linear partial differential equations, and approximate solutions of Schrödinger equation. Prerequisite, 426, 429, or equivalent.

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.

544, 545, 546 Differential Geometry (3,3,3) **Staff**
Differential geometry of curves and surfaces in ordinary space and in n-space. Riemannian geometry. (Offered alternate years; offered 1953-54.)

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.)

551, 552, 553 Special Topics in Geometry (3,3,3) **Staff**
Each may be repeated twice for credit.

581 General Theory of Estimation and Testing Hypotheses (5) **Staff**
The Neyman-Pearson theory; maximum likelihood statistics; general theory of confidence regions; elements of decision theory. Prerequisite, 484.

582 Analysis of Variance and Design of Experiments (5) **Staff**
Analysis of variance and covariance to determine factors producing variation; use of randomized blocks, Latin squares, and other techniques in planning experiments. Prerequisite, 482.

590 Seminar in Probability and Statistics (*, 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**

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.

BACHELOR OF SCIENCE IN MEDICAL TECHNOLOGY

Students must choose their electives in the humanities and the social sciences.

First Year

FIRST QUARTER	CREDITS
Chem. 111 or 115 General	5
Engl. 101 Composition	3
Math. 101 Algebra or 104 Plane Trig.	5 or 3
Phys. Educ. 110 or 175 Health	2
Phys. Educ. activity	1
ROTC	2–3
	14–19

SECOND QUARTER	CREDITS
Chem. 112 General	5
Engl. 102 Composition	3
Zool. 111 General	5
Electives	2
Phys. Educ. activity	1
ROTC	2–3
	16–19

THIRD QUARTER	CREDITS
Anat. 301 General	4
Chem. 113 Qualitative	5
Engl. 103 Composition	3
Zool. 112 General	5
Phys. Educ. activity	1
ROTC	2–3
	18–21

Second Year

FIRST QUARTER	CREDITS
Chem. 221 Quantitative	5
Physics 100 Survey or 170 For Nurses	5
Zool. 381 Microtechnique	4
Phys. Educ. activity	1
ROTC	2–3
	15–18

SECOND QUARTER	CREDITS
Chem. 231 Organic	3
Chem. 241 Lab.	2
Electives	10
Phys. Educ. activity	1
ROTC	2–3
	16–19

THIRD QUARTER	CREDITS
Chem. 232 Organic	3
Chem. 242 Lab.	2
Zool. 208 Physiology	5
Electives	5
Phys. Educ. activity	1
ROTC	2–3
	16–19

Third Year

FIRST QUARTER	CREDITS
Biochem. 401 Biochem.	6
Micro. 441- Med. Bacter.	6
Psychol. 100 General	5
	17

SECOND QUARTER	CREDITS
Biochem. 402 Biochem.	6
Micro. -442 Med. Bacter.	6
Electives	3
	15

THIRD QUARTER	CREDITS
Micro. 443 Mycology	2
Micro. 444 Parasit.	4
Speech 120 Pub. Speaking	5
Electives	4
	15

Third-year students register for biochemistry and microbiology courses at the Medical School Office. Permission is required. Students take Biochemistry 481, 482, and 483 if 401 and 402 classes are filled.

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

COURSES FOR UNDERGRADUATES

BIOCHEMISTRY

401, 402 Biochemistry (6,6) **Staff**

Lectures in the first quarter cover an introduction to physical biochemistry, a review of the properties of biologically important compounds, and metabolism at a cellular level; those of the second quarter emphasize metabolism in the intact mammal, including man. Laboratory exercises and conferences. 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.

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, and various biological sciences; recommended also as a preparation for those intending to take advanced biochemistry courses. 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).

MICROBIOLOGY

441-442 Medical Bacteriology (*, maximum 6-*, maximum 6) **Evans, Henry, Weiser**
441 includes a survey of microorganisms and a general consideration of the morphology and physiology of bacteria; an introduction to immunology, formation and properties of antibodies, nature of antigen-antibody reactions, blood groups, allergies, and an analysis of factors of innate and acquired immunity. During the last part of 441 and throughout 442, specific pathogenic bacteria and viruses are studied in detail. Students who have had previous work in bacteriology may by special permission be allowed to take 441 or 442 for less than the full 6 credits. Required for second-year medical students. Open to nonmedical students.

443 Medical Mycology (*, 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) **Gustafson**
Consideration of medically important parasites with emphasis on pathology, immunology, life cycles, and epidemiological and public health aspects. Offered last eight weeks of quarter. Required for second-year medical students. Open to nonmedical students. Prerequisites, 441-442 or equivalent, and permission.

MEDICINE, PREPROFESSIONAL PROGRAM

Adviser: VICTORIAN SIVERTZ, 121 Education Hall

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

The minimum requirement for admission to most medical schools is three years of college training (135 academic quarter credits) with a grade-point average of at least 2.5. As recommended by the Association of American Medical Colleges, the course should include at least 9 credits in English composition, 12 credits in inorganic chemistry, 6 credits in organic chemistry, 12 credits in physics, 12 credits in biology, and the required quarters of physical education activity and military training. Some schools require a knowledge of a modern foreign language, and a few require a bachelor's degree.

Students who are interested in attending a particular medical school should complete its entrance requirements early in their college work. In general, medical school admissions committees favor a broad program of studies with the inclusion of as much work in the humanities and social sciences as possible. Students who have an aptitude for and an interest in the sciences, especially those who plan to do medical research or to become specialists in certain branches of medicine, are advised to take thorough training in a science such as chemistry, zoology, physics, or microbiology.

Because many premedical students are not admitted to a medical school, all students in this program must select a major by the end of their second year. Each student, with an adviser in his major department and the premedical adviser, then plans a program that will enable him to complete the requirements for entrance into medical school by the end of the third year, and to complete the requirements for the bachelor's degree, either through his major department or through the first year's work in medical school (see Basic Medical Science, page 63), at the end of the fourth year.

During the third year the premedical adviser should be consulted about taking a medical aptitude test and applying for admission to medical school.

METEOROLOGY AND CLIMATOLOGY

Executive Officer: PHIL E. CHURCH, 201F Meteorology Building

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

A minimum of 36 credits in courses numbered 300 or above, mathematics through calculus, Mathematics 281 or the equivalent, and one year of college physics are required. A grade of C or better must be earned in each of the required courses.

All students' courses must be approved by the Department.

ADVANCED DEGREES

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

MASTER OF SCIENCE. The requirements are: 27 credits exclusive of research and thesis, at least 18 in approved meteorology courses and the remainder in minor or supporting courses.

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 Koeppen and Thornthwaite classification systems. Prerequisite, 101.

328 Applied Climatology (5) — **Church**

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. Prerequisite, one year of college physics and

Mathematics 307, 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 308, or permission.

350 Meteorological Laboratory (5) **Schallert, McClain**
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) **Schallert, McClain**
414: conservative meteorological elements; atmospheric stability and instability and related phenomena; North American air masses; clouds and hydrometers; formation and characteristics of fronts. Prerequisite, 442 (which may be taken concurrently). 415: the field of motion; frontal characteristics and cyclone structure; displacement and development of pressure systems. Prerequisite, 414.

442 Introduction to Atmospheric Motions (5) **Fleagle**
Meteorological forces and the dimensions of atmospheric motions; equations of motion; geostrophic flow; thermal wind; zonal flow; curved horizontal flow; moving streamline systems; equation of continuity; horizontal divergence in wave-shaped streamline systems; vertical component of velocity; mechanism of pressure change; frontal surfaces; circulation theorem; potential vorticity theorem. Prerequisites, 341 and Mathematics 309, or permission.

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) **Schallert, McClain**
451: continuation of 350. Analysis of current weather maps using teletype data; routine three-dimensional atmospheric analysis utilizing upper-air charts, aerological diagrams, and cross sections. Prerequisite, 442. 452: continuation of 451. Analysis of weather maps and application of practical rules for estimating movement and development of pressure systems. Practice forecasting for selected stations. Prerequisite, 451.

462 Oceanographic Meteorology (6) **Fleagle**
Energy exchange between atmosphere and ocean, moisture gradients above water surface, and marine wind structure. Prerequisite, 442 or permission. (Offered at Friday Harbor during Summer Quarter only.)

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.

495 Climatological 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.

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. Prerequisite, 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

constant vorticity trajectories, relation of pressure and velocity fields, and stability criteria; use of characteristics; energy transformation; divergenceless waves in barotropic atmosphere. Prerequisite, 541 or permission.

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. Prerequisite, 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) **Schallert**
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. Prerequisite, permission. (Offered Summer Quarter only.)

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; Physics 101, 102, and 103, or 104, 105, and 106 (General); Chemistry 115 and 116, or 111, 112, and 113 (General), 221 or 325 (Quantitative Analysis), 231, 232, 241, 242 or 335, 337, 345, and 346 (Organic); and Mathematics 104 (Plane Trigonometry), 105 (College Algebra), and 106 (Analytic Geometry).

A combined grade-point average of 2.5 in biology and chemistry courses is required for admission to Microbiology 300 and 441-; a grade-point average of 2.0 in microbiology courses is required for graduation.

During their third and fourth years most students specialize in either general or medical microbiology.

GENERAL OPTION. Recommended courses are: Microbiology 235, 320, 430, 431, and 499; Biology 451 (Genetics); Botany 461 (Yeasts and Molds); Biochemistry 401 and 402 (Biochemistry); Chemistry 355, 356, and 357 (Physical); and Public Health 477 (Statistical Methods in Biological Assay).

MEDICAL OPTION. Recommended courses are: Microbiology 320, 322, 430 or 431, 441-442, 443, and 444; Biochemistry 401 and 402 (Biochemistry); Biology 451 (Genetics); Botany 461 (Yeasts and Molds); Anatomy 330 (Microscopic) and 301 (General); and Pathology 231 (General).

ADVANCED DEGREES

Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate School Bulletin.*

Candidates for advanced degrees are selected primarily upon the basis of scholarship and motivation. An undergraduate record of at least a B average is highly desirable as an indication that the student is capable of more advanced work. While the academic background of students entering graduate work in microbiology is quite variable, it is generally agreed that a strong background in chemistry and biology is essential. One year of physics is required, and mathematics through analytical geometry is recommended.

COURSES FOR UNDERGRADUATES

204 Medical Parasitology for Sanitarians (4) **Gustafson**
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 Microbiology for Students of Dentistry (6) **Groman**
Lecture and laboratory work introducing the student to the principles of microbiology. Major emphasis is on taxonomy, morphology, physiology, immunology, and infectious properties of the bacteria, but other microbiological groups are considered. Prerequisites, Chemistry 232; Biochemistry 361 or its equivalent; 10 credits in botany or zoology; and, for nondental students, permission of the instructor.

236 Microbiology for Students of Dentistry (1) **Groman**
Specific applications of microbiology to dental problems. Prerequisite, 235.

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.

435J Parasitology (5) **Gustafson and Osterud**
A general course on the principles of parasitism and the major groups of animal parasites. Offered jointly with the Department of Zoology. Prerequisite, Zoology 112 or permission. (Offered alternate years; offered 1953-54.)

441-442 Medical Bacteriology (*, maximum 6-*, maximum 6) **Evans, Henry, Weiser**
441 includes a survey of microorganisms and a general consideration of the morphology and physiology of bacteria; an introduction to immunology, formation and properties of antibodies, nature of antigen-antibody reactions, blood groups, allergies, and an analysis of factors of innate and acquired immunity. During the last part of 441 and throughout 442 specific pathogenic bacteria and viruses are studied in detail. Students who have had previous work in bacteriology may by special permission be allowed to take 441 or 442 for less than the full 6 credits. 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) **Gustafson**
Consideration of medically important parasites with emphasis on pathology, immunology, and epidemiology of the medically important fungi. 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 (4) **Douglas, Groman, Klein, Ordal**
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: Nitrobacteriacae, Rhodobacteriineae, Caulobacteriineae, Actinomycetales, Myxobacteriales, Chlamydobacteriales, Caryophanaes, and Borrelomycetaceae. Prerequisite, permission. (Offered alternate years; offered 1953-54.)

540 Filterable Viruses (4) **Evans**
Consideration of the physical, chemical, and biological properties of viruses and methods of working with them. Prerequisites, 442 and permission; histology is recommended. (Offered alternate years; offered 1953-54.)

550 Advanced Immunology (*, maximum 4) **Weiser**
Prerequisites, 441 and permission. (Offered alternate years; offered 1954-55.)

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, and Master of Arts in Music. For undergraduate students, the School provides one nonprofessional curriculum, which leads to the degree of Bachelor of Arts; four professional 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 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 2.5 in music courses is required for graduation.

BACHELOR OF ARTS

In the nonprofessional curriculum, minimum requirements are: 24 credits in first- and second-year theory and literature; 12 credits in vocal or instrumental instruction; 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 professional 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

	CREDITS
Music 101, 102, 103 Theory	9
Vocal or Instrumental Instruction	6
Music Ensemble	0
Engl. 101, 102, 103 Composition	9
Phys. Educ. 110 or 175 Health	2
Electives	19
Phys. Educ. activity	3
ROTC	6–9
	48–57

Second Year

	CREDITS
Music 124, 125, 126 Orch. Instruments	3
Music 201, 202, 203 Theory	9
Music 207, 208, 209 Music Literature	6
Vocal or Instrumental Instruction	6
Music Ensemble	0
Electives	21
Phys. Educ. activity	3
ROTC	6–9
	48–57

Third Year

	CREDITS
Music 224, 225, 226 Orch. Instruments	3
Music 301, 302 Contemp. Idioms	6
Music 304 Choral Literature	2
Music 311, 312 Modal Counterpoint	6
Music 384, 385, 386 Conducting	4
Music 491 Composer's Lab.	6
Music Ensemble	3
Electives	15
	45

Fourth Year

	CREDITS
Music 408, 409 Music Literature	6
Music 411, 412 Counterpoint	6
Music 461, 462 Orchestration	6
Music 484, 485, 486 Orch. Conducting	4
Music 491 Composer's Lab.	9
Music Ensemble	3
Electives	11
	45

CURRICULUM IN VOCAL OR INSTRUMENTAL MUSIC. The student must show a talent for performance. The four years must include 36 credits in applied instruction, of which 30 credits must be in the major, beginning with Music 150, and 6 credits in another instrument or voice. If the major instrument is organ, the 6 credits must be in voice (Music 110C and 120C, or 130).

PIANO. To become a piano major the student must take an examination in which he is required to play three two-part inventions by Bach, one memorized, or three compositions of equal difficulty from the pre-Haydn period; to play one complete sonata by Haydn, Mozart, or Beethoven; to play two short compositions, one each from romantic and contemporary periods; to read at sight an easy accompaniment;

to play all major and all harmonic and melodic minor scales, four octaves, hands together (M.80, four notes to the beat); and to play major and minor arpeggios, root positions, and inversions.

First Year

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

Second Year

	CREDITS
Music 150A Piano	9
Music 201, 202, 203 Theory	9
Music 207, 208, 209 Music Lit.	6
Music Ensemble	0
Electives	18
Phys. Educ. activity	3
ROTC	6-9
	45–54

Third Year

	CREDITS
Music 304 Choral Lit.	2
Music 331, 332, 333 Keyboard	6
Music 334, 335 Accompanying	6
Music 337, 338, 339 Repertoire	6
Music 350 Vocal or Instrumental Instr.	9
Music Theory, upper division	6
Music Ensemble	5
Electives	5
	45

Fourth Year

	CREDITS
Music 350 Vocal or Instrumental Instr.	9
Music 380 Adv. Chamber Music	3
Music 434, 435, 436 Piano Teaching	6
Music History or Theory	6
Music Ensemble	3
Electives	18
Senior Recital	0
	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
Eng. 101, 102, 103 Composition	9
Phys. Educ. 110 or 175 Health	2
Electives	16
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
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

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

Organ

First Year

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

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
Phys. Educ. activity	3
ROTC	6-9
	45–54

Third Year

	CREDITS
Music 304 Choral Lit.	2
Music 337, 338, 339 Repertoire	6
Music 350 Vocal or Instrumental Instr.	9
Music 384 Conducting	1
Music 411, 412 Counterpoint	6
Music Theory, upper division	6
Ensemble	6
Electives	9
	45

Fourth Year

	CREDITS
Music 350 Vocal or Instrumental Instr.	9
Music 357 Church Music	2
Music History or Theory	6
Ensemble	6
Electives	22
Senior Recital	0
	45

VOICE. To become a voice major the student must take an examination in which he is required to sing 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 150C Voice	9
Ensemble	0
Engl. 101, 102, 103 Composition	9
Phys. Educ. 110 or 175 Health	2
Electives or foreign language	16
Phys. Educ. activity	3
ROTC	6-9
	48–57

Second Year

	CREDITS
Music 150C Voice	9
Music 201, 202, 203 Theory	9
Music 207, 208, 209 Music Lit.	6
Music Ensemble	0
Electives or foreign language	21
Phys. Educ. activity	3
ROTC	6-9
	48–57

Third Year

	CREDITS
Music 304 Choral Lit.	2
Music 337, 338, 339 Repertoire	6
Music 350 Vocal or Instrumental Instr.	9
Music 384 Conducting	1
Music Theory, upper division	6
Ensemble	3
Engl. 257 or 320 Poetry	5
Electives	13
	45

Fourth Year

	CREDITS
Music 334 Accompanying	3
Music 350 Vocal or Instrumental Instr.	9
Music History or Theory	6
Ensemble	6
Electives	21
	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 songs and art songs; (2) sing at sight one part in two- and four-part songs; (3) analyze the vocal performances of other students and give constructive criticisms.

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), 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

	CREDITS
Music 101, 102, 103 Theory	9
Vocal or Instrumental Instruction	6
Music Ensemble	0
Engl. 101, 102, 103 Composition	9
Psychol. 100 General	5
Speech 100 Basic	5
Phy. Educ. 110 or 175 Health	2
Electives	9
Phys. Educ. activity	3
ROTC	6-9
	48–57

Second Year

	CREDITS
Music 124, 125, 126 Orch. Instruments	3
Music 201, 202, 203 Theory	9
Music 207, 208, 209 Music Lit.	6
Vocal or Instrumental Instruction	6
Music Ensemble	0
Psychol. 306 Child Psychol.	5
Educ. 209 and 370 Psychol. & Intro.	8
Electives	8
Phys. Educ. activity	3
ROTC	6-9
	48–57

Third Year

	CREDITS
Music 224, 225, 226 Orch. Instruments	3
Music Theory, upper division	6
Music 304 Choral Lit.	2
Music 384, 385, 386 Conducting	4
Vocal or Instrumental Instruction	6
Music Ensemble	3
Art 329 Design	2
Educ. 370E Elementary School Methods	5
Educ. 373 State Manual	2
Educ. 374 Reading Instruction	5
Educ. 390 Evaluation	3
Electives	4
	45

Fourth Year

	CREDITS
Music 244 Orch. Lab.	1
Music 344, 345, 346J Elementary, Junior High, and Senior High School Music	9
Vocal or Instrumental Instruction	6
Music Ensemble	3
Educ. 371S Directed Teaching	8
Educ. 372E Prof. Lab. Experiences	3
Educ. 360 Principles	3
History 464 Wash. & Pacific NW	5
Public Health 461 School and Community Programs	5
Electives	2
	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
Music 101, 102, 103 Theory	9
Vocal or Instrumental Instruction	6
Music Ensemble	0
Engl. 101, 102, 103 Composition	9
Phys. Educ. 110 or 175 Health	2
Electives	19
Phys. Educ. activity	3
ROTC	6-9
	48–57

Second Year

	CREDITS
Music 201, 202, 203 Theory	9
Music 207, 208, 209 Music Lit.	6
Vocal or Instrumental Instruction	6
Music Ensemble	0
French or German	15
Electives	9
Phys. Educ. activity	3
ROTC	6-9
	48–57

Upper-division minimum requirements are: 18 credits in music history and literature, to include some work in each of five fields (renaissance, baroque, classic, romantic, contemporary); and 18 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, 300, 340, 360, 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 and no new students are admitted during Spring Quarter. All ensemble courses except Music 100 require auditions.

MASTER OF ARTS IN MUSIC

Students who plan to work toward the master's degree must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. The School of Music offers majors in composition, music education, musicology, music performance (piano, violin, voice, organ, conducting), and opera. Undergraduate prerequisites for each major are listed in the leaflets on "Graduate Studies" prepared by the School of Music.

All candidates must demonstrate proficiency in piano and in sight reading, and show a satisfactory general knowledge of music theory and music literature.

Musicology is the only major which requires a reading knowledge of either French or German.

A major in composition, music education, or musicology requires 39 credits, 18 of which must be in courses in the major field numbered 500 or above. Not more than 12 credits of the 39 may be in supporting courses in the 300's in music, or supporting courses numbered 300 or above in other fields. The thesis must be in addition to the 39 credits.

A major in music performance or opera requires four quarters of graduate study with 42 credits, 18 of which must be in courses in the major field numbered 500 or above. Not more than 12 credits of the 42 may be in supporting courses in the 300's in music, or supporting courses numbered 300 or above in other fields. The thesis must be in addition to the 42 credits.

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) — **Hall**

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) — **Bostwick in charge**
Primarily for majors who cannot meet the entrance requirements in piano. Prerequisite, permission. Fee, $5.

110C Class Instruction: Voice (1-1-1, maximum 3) — **Root in charge**
Primarily for majors. Prerequisite, permission. Fee, $5.

110Y Class Instruction: Piano (1) — **Bostwick in charge**
For elementary education students. Prerequisite for Education 377X. Fee, $5.

110Z Class Instruction: Voice (1) — **Root in charge**
For elementary education students. Prerequisite for Education 377X. Fee, $5.

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) — **Kinscella, Hokanson, Sokol**
For nonmajors. Prerequisite, 107 or 108.

119 Music Appreciation: Symphonic Music, Contemporary (2) — **Kinscella, Hokanson, Sokol**
For nonmajors. Prerequisite, 107 or 108.

120A Class Instruction: Piano (1-1-1, maximum 3) — **Bostwick in charge**
Primarily for majors. Prerequisite, 110A or equivalent. Fee, $5.

120C Class Instruction: Voice (1-1-1, maximum 3) — **Root in charge**
Primarily for majors. Prerequisite, 110C or equivalent. Fee, $5.

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. Prerequisite, examination. Fee, $25 for 2 credits or $37.50 for 3 credits. For description and teacher designation, see 150.

131, 132, 133 Piano Sight Reading Laboratory (1,1,1) — **Moore**
For majors in piano and organ; exemption by examination. Others by permission.

140 University Band (1, maximum 6)

150 Vocal or Instrumental Instruction (2-3, maximum 18)
One or two individual half-hour lessons per week; weekly studio class in interpretation. Fee, $25 for 2 credits or $37.50 for 3 credits.

A. PIANO. Jacobson (A1), Woodcock (A2), Bostwick (A3), Normann (A4), Geissmar (A5), Moore (A6), Hokanson (A7)
B. VIOLIN or VIOLA. Zetlin (B1), Sokol (B2), Kantner (B3)
C. VOICE. Werner (C1), Lawrence (C2), Wilson (C3), Root (C4), Harris (C5)
D. VIOLONCELLO. Kirchner (D1), Heinitz (D2), Martin (double bass, D3)
E. ORGAN. Eichinger (E)
F. WOODWIND. Horsfall (flute, F1), Allport (oboe, F2), Phillips (clarinet, F3), Peterson (bassoon, F4)
G. BRASS. Schardt (horn, G1), Krenz (trumpet, G2), Cloud (trombone, G3), Welke (G4)
H. HARP. Graf (H1), Lundgren (H2)

160 University Orchestra (1, maximum 6) — **Chapple**

180 Chamber Music (1, maximum 6) — **Staff**
Small instrumental and vocal groups.

Section A. PIANO	Section E. ORGAN
Section B. STRING	Section F. WOODWIND
Section C. MADRIGAL	Section G. BRASS
Section D. OPERA	Section H. SMALL VOCAL ENSEMBLE

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**
Formerly 100B, A Capella Choir, and 100C, Men's Group. Prerequisite, permission.

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) — **Bostwick in charge**
Primarily for majors not specializing in performance. Prerequisite, examination. Fee, $10.

210C Class Instruction: Voice (2, maximum 12) — **Wilson**
Primarily for majors not specializing in performance. Prerequisite, examination. Fee, $10.

211, 212, 213 Advanced Rhythmic Movement (1,1,1) — **Rosinbum**
Muscular coordination with musical rhythms. Prerequisite, 113.

217, 218, 219 Music Appreciation: Opera (2,2,2) — **Werner**
Survey of opera. For nonmajors.

224, 225, 226 Orchestral Instruments Laboratory (1,1,1) Kirchner, Sokol, Normann, 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, six 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, 302 Contemporary Idioms (3,3) — **McKay**
Analytical study of present-day composition techniques. Prerequisite, 203 or permission.

304 Choral Literature (2) — **Hall, Terry**
Interpretation and analysis of choral music through performance. Prerequisite, 203 or permission.

307, 308, 309 Music Literature and History (3,3,3) — **Terry**
307: classic period; 308: early romantic period; 309: late romantic period. Prerequisites, 203 and 209, or permission.

311, 312 Modal Counterpoint (3,3) — **Risegari**
Studies in sixteenth-century style. Prerequisite, 203 or permission.

314 Music in Broadcasting (3) — **Welty**
Program planning; adaption and selection of music for various types of broadcasts; development and care of score and record library. Prerequisite, 107.

317 Music Appreciation: Chamber Music (2) — **Heinitz**
Survey of literature for chamber music ensembles. For nonmajors. Prerequisite, 107 or 108.

330 Vocal or Instrumental Instruction (2-3, maximum 18) — **Staff**
For majors not specializing in performance. Fee, $25 for 2 credits or $37.50 for 3 credits. For description and teacher designation, see 150.

331, 332, 333 Keyboard Transposition and Improvisation (2,2,2) — **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 B. STRING
Section C. SONG
Section D. ORGAN

340 University Concert Band (1, maximum 6) **Welke**
Prerequisite, audition.

344, 345, 346J Elementary, Junior High, Senior High School Music (4,2,3) **Sorensen, Hall, Normann**
The development of the music program in the public schools from grade one through twelve. Not open to students who have taken 324, 326, and Education 337. Prerequisites, 385, Education 370, and qualifying examination in piano and voice. 346J is offered jointly with the College of Education.

347 Music in the Americas (3) **Kinscella**
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) **Kinscella**
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. Prerequisite, examination. Fee, $25 for 2 credits or $37.50 for 3 credits. For description and teacher designation, see 150.

354 Band Arranging (2) **Welke**
Study of tone color, voicing, transposition, and arranging. Prerequisite, 203.

356 Instrumental Music in the Schools (2) **Normann**
Methods of instruction; organization; equipment; instrumentation; rehearsal techniques; materials; technical problems of band and orchestra instruments. Prerequisite, 203.

357 Church Music (2) **Root**
Survey of liturgy, chant, hymn, anthem, and solo. Prerequisites, 203 and 209, or permission.

360 University Symphony Orchestra (1, maximum 6) **Chapple**
Prerequisite, audition.

361, 362 Musical Form (3,3) **Woodcock**
Analysis of the principal forms of music composition. Prerequisite, 203 or permission.

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, 385, 386 Conducting (1,2,1) **Munro, Chapple, Kirchner, Welke**
Score analysis; musical styles; hand and baton technique. 384 to be concurrent with 304.

407, 408, 409 Music Literature and History (3,3,3) **Irvine, Munro, McKay**
407: Renaissance; 408: baroque; 409: contemporary. Prerequisites, 203 and 209, or permission.

411, 412 Counterpoint (3,3) **Verrall**
Polyphonic composition: canon, invention, and fugue. Prerequisite, 203 or permission.

417 Music of the Middle Ages (3) **Irvine**
Prerequisites, 203 and 209, or permission. Not open to students who took 479 in Autumn Quarter, 1952.

428 Beethoven (3) **Woodcock**
Prerequisites, 203 and 209, or permission. Not open to students who took 478 in Autumn Quarter, 1952.

430 Vocal or Instrumental Instruction (2-3, maximum 18) **Staff**
For majors not specializing in performance. Fee, $25 for 2 credits or $37.50 for 3 credits. For description and teacher designation, see 150.

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.

447 Schumann (3) **Woodcock**
Prerequisites, 203 and 209, or permission.

450 Vocal or Instrumental Instruction (2-3, maximum 18) **Staff**
Fee, $25 for 2 credits or $37.50 for 3 credits. For description and teacher designation, see 150.

460 Sinfonietta (1, maximum 9) **Chapple**
Prerequisite, audition.

461, 462 Orchestration (3,3) **Verrall**
Technique of writing for orchestra and other large ensembles; analytical and historical approach to problems of organization and sonority. Prerequisite, 203.

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 Theater (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**
Prerequisite, 203 or permission. (Offered Summer Quarter only.)

484, 485, 486 Orchestral Conducting (2,1,1) — **Chapple, Munro, Welke**
Experience with choral and instrumental ensembles.

487, 488 History of Opera (3,3) — **Munro, Wilson, Irvine**
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.

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) — **Irvine**
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.

524, 525, 526 Seminar in Music Education (3,3,3) — **Normann, Sorensen**
524: special problems in the teaching and supervision of music in the elementary grades and junior high school; 525: selected topics in secondary school and junior college music; 526: special problems of a more general nature in music education and related fields.

550 Vocal or Instrumental Instruction (3, maximum 12) — **Staff**
Prerequisite, 30 credits in the same branch of music. Fee, $37.50. For description and teacher designation, see 150.

561 Problems in Choral and Orchestral Scoring (2-5) — **Verrall**
Studies in special techniques of choral, orchestral, and dramatic composition. Original composition and research, with emphasis on the evolution of ensemble types and forms.

564, 565, 566 Opera Direction and Producton (4,4,4) — **Rosinbum**
Practical experience with problems of the opera theater.

568, 569 Historiography and Criticism (3,3) — **Irvine**

577, 578 Seminar in Theory and Notation (3,3) — **Irvine**
577: Middle Ages to 1450; 578: Renaissance through pre-classic.

579 Seminar in Musicology (3, maximum 6) — **Irvine**
Selected topics in music history, literature, and theory.

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**
Independent composition in larger forms.

600 Research (2-5) — **Irvine, Munro**
Individual study. Prerequisite, permission.

Thesis (*) — **Staff**

NURSERY SCHOOL

Acting Director: ELEANOR EVANS, Nursery School Building

A major in nursery school is offered through the Division of General Studies (see page 103) in cooperation with the Institute of Child Development in the Department of Psychology.

NURSING, PREPROFESSIONAL PROGRAM

Adviser, 121 Education Hall

The prenursing curriculum covers three quarters, during which the student earns 48 credits in the College of Arts and Sciences. It prepares the student for admission to the School of Nursing and provides a general educational background. The elective courses allowed in this program may be chosen in accordance with the student's individual interest.

FIRST QUARTER	CREDITS
Engl. 101 Composition	3
Phys. Educ. 110 Health	2
Sociol. 110 Survey or Anthro. 103 Principles	5
Electives	5
Phys. Educ. activity	1
	16

SECOND QUARTER	CREDITS
Engl. 102 Composition	3
Chem. 101 General	5
Electives	7
Phys. Educ. activity	1
	16

THIRD QUARTER	CREDITS
Engl. 103 Composition	3
Chem. 230 Organic	5
Psychol. 100 General	5
Electives	2
Phys. Educ. activity	1
	16

The School of Nursing is conducting a curriculum study of the educational program for professional nurses. In conjunction with this, a research program has been established at the Virginia Mason Hospital Division. The objectives of the basic program in nursing and the research program in basic nursing education are the same. A research staff is working closely with faculty and students in the design of the program and in evaluation to determine the most effective methods of preparing nurses. The preprofessional requirements and organization of the research program are different from those of the basic program at Harborview and Swedish Divisions. Prospective students should write to the Dean of the School of Nursing for further information.

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 curricula leading to bachelor's degrees: an elective curriculum which provides a basic introduction and allows a wide choice of electives in other fields, and a prescribed curriculum which permits intensive study in preparation for a professional career.

Instruction and training are given in the Oceanographic Laboratories on the campus and also during the summer 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.

All courses offered during Summer Quarter are held at the Friday Harbor 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 entrance requirements and have a total of 1½ units of algebra and 1 unit each of plane geometry, chemistry, and physics.

In the prescribed curriculum, the following program is required:

First Year

FIRST QUARTER	CREDITS
Oceanog. 110- Lectures	1
Chem. 115 General	5
Math. 104 Plane Trig.	3
Physics 121 General	5
Phys. Educ. 175 or 110 Health	2
Phys. Educ. activity	1
ROTC	2–3
	17–20

SECOND QUARTER	CREDITS
Oceanog. -111- Lectures	1
Chem. 116 General	5
Math. 105 Algebra	5
Physics 122 General	5
Phys. Educ. activity	1
ROTC	2–3
	17–20

THIRD QUARTER	CREDITS
Oceanog. -112 Lectures	1
Chem. 325 Quantitative	5
Math. 153 Analytic Geom. & Calc.	5
Physics 123 General	5
Phys. Educ. activity	1
ROTC	2–3
	17–20

Second Year

FIRST QUARTER	CREDITS
Chem. 335 Organic or 355 Physical	3
Engl. 101 Composition	3
Math. 251 Analytic Geom. & Calc.	5
Zool. 111 General	5
Phys. Educ. activity	1
ROTC	2–3
	17–20

SECOND QUARTER	CREDITS
Chem. 336 Organic or 356 Physical	3–4
Engl. 102 Composition	3
Math. 252 Analytic Geom. & Calc.	3
Zool. 112 General	5
Phys. Educ. activity	1
ROTC	2–3
	15–19

THIRD QUARTER	CREDITS
Oceanog. 203 Intro.	5
Chem. 337 Organic or 357 Physical	3
Engl. 103 Composition	3
Math. 253 Analytic Geom. & Calc.	3
Phys. Educ. activity	1
ROTC	2–3
	15–18

Third Year

FIRST QUARTER	CREDITS
Oceanog. 410 Physical	3
Oceanog. 450 Oceans	3
German 110 First Year	5
Meteorol. 340 Physical or 442 Atmospheric Motions	5
	16

SECOND QUARTER	CREDITS
Oceanog. 411 Tides	3
German 111 First Year	5
Social science electives	5
	13

THIRD QUARTER	CREDITS
Oceanog. 360 Methods	3
Oceanog. 412 Currents	3
German 112 First Year	5
Electives	5
	16

Summer at Friday Harbor

Oceanog. 361 Field Exp... 6

Fourth Year

FIRST QUARTER	CREDITS
Oceanog. 430 Cond. of Life	3
Oceanog. 440 Seminar	2
Oceanog. 451 Marine Sed.	3
German 204, or 205 and 206 Second Year	5
	13

SECOND QUARTER	CREDITS
Oceanog. 421- Chemical	3
Oceanog. 432 Biol.	3
Oceanog. 441 Seminar	2
German 260 Scientific	3
Electives	3
	14

THIRD QUARTER	CREDITS
Oceanog. -422 Chemical	3
Oceanog. 431 Biol.	3
Oceanog. 442 Seminar	2
Social science electives	5
Electives	3
	16

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 in either physical, chemical, geological, or biological oceanography is permitted. However, students without an undergraduate major in oceanography must take oral and/or written tests covering the contents of courses required of undergraduate majors in oceanography. Such tests are in addition to those normally required for postgraduate degrees and should be passed before advancement to candidacy.

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, Barnes**
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) — **Staff**
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.

401-402 General Physical Oceanography (3-3) — **Barnes**
Nature of the oceans, their physical and chemical properties, processes, and currents; interaction with the atmosphere, the coasts, and the sea floor; characteristic environments; oceanographic theories, methods, and equipment. Primarily for fisheries students and those majoring in physical and biological sciences.

410 Physical Oceanography (3) — **Barnes**
Physical properties, processes, and the theory of the distribution of variables in the sea; mass and energy budgets. Prerequisite, 203 or graduate standing.

411 Ocean Tides and Waves (3) — **Rattray**
Cause, nature, measurement, analysis, and prediction of tides and tidal currents and of surface waves. Prerequisite, 203 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. Prerequisites, Chemistry 221 or 325, or graduate standing; Oceanography 360 is recommended.

430 Conditions of Life in the Sea (3) — **Fleming**
The physical and chemical factors that characterize the marine environment and that may limit populations and production; regional and seasonal variations; methods of investigation and analysis. Prerequisite, 203.

431 Biological Oceanography of the Plankton (3) — **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, 430 and Zoology 112.

432 Biological Oceanography of the Nekton and Benthos (3) — **Frolander**
Marine vertebrates; the plant and animal population of the sea bottom; factors controlling population and production; regional distributions; methods of sampling, analysis, and identification. Prerequisites, 430 and Zoology 112.

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.

450 Origin of the Oceans (3) — **Staff**
Historical geology and physiography of the ocean basins; tectonics, glaciation, erosion, and deposition that have shaped the oceans and their coasts; character of sediments; origin of water and salts; oceans of the past; geochemistry and geophysics of the oceans. Prerequisite, 203 or graduate standing.

451 Marine Sedimentation (3) — **Staff**
Sources, nature, and means of transportation of marine sedimentary material; characteristics of marine sediments and environments of deposition; constituents of ocean sediments. Prerequisites, 203 and 450, or graduate standing.

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. Prerequisite, a major in a physical science or permission. (Offered in Summer Quarter when demand is sufficient.)

515 Waves (2) **Rattray**
Application of marine hydrodynamics principles to the wave motion in the oceans. Prerequisites, 511, 512, and 513, or equivalents.

516 Underwater Sound (2) **Rattray**
Application of marine hydrodynamics principles to sound transmission in the oceans. Prerequisites, 511, 512, and 513, or equivalents.

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) **Staff**
Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisites, 430, 431, 432.

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) **Staff**
Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisites, 450 and 451.

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 Bachelor of Arts, Master of Arts, and Doctor of Philosophy. Students majoring in other fields will find Philosophy 100, 110, 115, and 120 of particular interest.

BACHELOR OF ARTS

In the elective curriculum, the requirements are: 45 credits in philosophy, including Philosophy 110 or 115, 120, 320-321, and 455-456; and 10 credits in each of the following fields of science: biological, physical, and social. Humanities 103 and 203, in the General Education program, may be counted toward a major, but not both Philosophy 100 and Humanities 103.

ADVANCED DEGREES

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

COURSES FOR UNDERGRADUATES

100 Introduction to Philosophy (5) **Matson, Melden, Murphy, Rader, Smullyan, Turbayne**
Reading and discussion of writings of the great philosophers on issues of lasting importance. Nature and limits of knowledge: the appeals to reason and experience. Relations of science and religion: naturalism and supernaturalism. Conceptions of reality: materialism, idealism, and skepticism. Conceptions of morality: the appeals to duty and happiness. Conflict of social ideals.

110 Introduction to Social Ethics (5) **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.

115 Introduction to Ethics (5) **Murphy**
Systematic study of typical analyses of the distinctions between good and evil, right and wrong. Special attention is directed to the appeals to custom, theology, reason, human nature, and happiness as standards for the solution of moral problems. Readings in Plato, Hume, Kant, Bentham, and Mill.

120 Introduction to Logic (5) **Crombie, Matson, Melden, 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 in the sciences. Application of logic to other fields.

320-321 History of Philosophy (5-5) **Matson**
The development of Western philosophy from the sixth century B.C. to the late nineteenth century; reading and discussion of the works of the great philosophers, with attention to their historical and cultural background.

330 Philosophic Issues in World Affairs (3) **Rader**
Philosophical basis of the United Nations Declaration of Human Rights. Philosophic issues in the conflict between soviet and liberal interpretations of democracy, and the bearing of these differences on world order. Ideals of a world society.

347 Philosophy in Literature (5) **Matson**
Study of philosophical ideas expressed in such great literature as Aeschylus' *Prometheus Bound,* The Book of Job, Lucretius' *On the Nature of Things,* Dante's *Comedy,* Goethe's *Faust,* Voltaire's *Candide,* and Lewis Carroll's *Alice* books.

423 Recent Philosophical Tendencies (5) **Turbayne**
The revival of the Hegelian philosophy in England and America and the consequent development of pragmatism and positivism, and of realistic tendencies. Readings in Bradley, Peirce, James, Dewey, Russell, Santayana, and Whitehead. Prerequisite, 100 or Humanities 103.

424 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. The freedom of the will in Jonathan Edwards; Emerson's transcendentalism; the pragmatism of Peirce, James, and Dewey; the pluralism of James; mysticism in James; Santayana's doctrine of essences; twentieth-century realism, naturalism, and positivism. Prerequisite, 100 or Humanities 103.

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; and re-evalution of them in the light of new trends of thought after contact with the West.

431 Philosophy of Plato (5) **Matson**
The social, political, educational, ethical, and metaphysical doctrines in a representative selection of Plato's dialogues. Plato is studied as the first and greatest defender of an outlook—absolutism—that today has influential adherents in all spheres of thought. Prerequisite, 100 or 320, or Humanities 103 or 203, or permission.

433 Philosophy of Aristotle (5) **Matson**
Survey of the Aristotelian writings, with emphasis on the *Metaphysics* and *Ethics;* the influence of Aristotle on modern thought. Prerequisite, at least one course in philosophy, or Humanities 103.

435 Hellenistic Philosophy (5) **Staff**
(Not offered 1953-54.)

436 British Empiricism (5) **Staff**
(Not offered 1953-54.)

437 Philosophy of Hume (5) **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 (5) **Staff**
(Not offered 1953-54.)

440 Advanced Ethics (5) **Melden**
A critical examination of the concepts and judgments of value, including an analytical treatment of the notions of right and wrong, obligation, good and bad, and the relationship between ethical and aesthetic value. Prerequisite, 110 or 115.

445 Philosophy of Art (5) **Rader**
The principal systems of aesthetics; interpretations of the creative activity of the artist, the work of art, the contemplation and criticism of art objects, and the relationship of art to the social order.

450 Epistemology (5) **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) **Smullyan**
The main theories of the origin and functions of language, including its logical, descriptive, emotive, and expressive uses; attention to semantical problems of the social sciences and of the humanities. Prerequisite, 120.

455-456 Metaphysics (3-3) **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) **Crombie, Smullyan**
Concepts and methods which are fundamental in mathematics and in the physical and social sciences. The relations of the sciences to each other as well as to art, religion, and philosophy. Speculations on the nature of the world which have been suggested by past and present scientific theories. Operationist tendencies in recent interpretations of science. Prerequisite, 100 or 120, or Humanities 103.

463 Philosophy of Mind (5) **Turbayne**
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**
Analysis of the basic concepts employed in historical interpretation, and an introduction to some of the principal philosophers of history: Plato, Saint Augustine, Hegel, Marx, Spengler, Toynbee, etc.

467 Philosophy of Religion (5) **Rader**
Origin, nature, and types of religion. The grounds of religious belief; mysticism, faith, reason, and evidence. The main religious problems: free will, immortality, the existence and nature of God, the problem of evil, religion as a basis of ethics, and the social implications of religion.

470, 471 Advanced Logic (5,5) **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. Prerequisites, 120 for 470; 470 for 471.

472-473 History of Scientific Thought (5-5) **Crombie**
Historical development of scientific theories and methods from pre-Greek civilization to the present, in relation to the general history of ideas. Prerequisites, 120 and either 100, 321, Humanities 103, or permission.

484 Reading in Philosophy (1-4, maximum 12) **Staff**
Reading of approved philosophical works. Primarily for graduate students, though under special conditions advanced undergraduates are permitted to register for this course. Credit is granted only when a written examination is passed on the reading. Prerequisite, permission of Executive Officer of the Department of Philosophy.

487 Contemporary Analytic Philosophy (5) **Melden**
A critical study of the development of the contemporary analytic movement in England and America. Particular attention is given to the methods of analysis employed by Moore, Wittgenstein, Carnap, and the contemporary Oxford analysts. Prerequisite, permission of instructor.

490 Philosophy of Leibniz (5) **Melden**
An examination of the basic principles employed by Leibniz in the development of his systematic philosophy. Attention is given to the importance of Leibniz for the historical development of logic, the theory of knowledge, the philosophy of science, and metaphysics. Prerequisite, 321.

COURSES FOR GRADUATES ONLY

514-515-516 Seminar in Logic (2-4-2-4-2-4) **Staff**
(Not offered 1953-54.)

517-518 Seminar in Logic and Scientific Method (2-2) **Crombie**
Selected problems concerning the nature and use of hypotheses, explanation, proof, and scientific laws. Prerequisite, 120 or permission.

521-522-523 Seminar in Metaphysics (2-2-2) **Staff**
(Not offered 1953-54.)

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 48); 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 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. 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 a basic academic field in physical education and a second teaching area 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

	CREDITS
Phys. Educ. 161, 162, 163, 264, 265, 266 Activities for Majors	6
Phys. Educ. 181, 182, 183, 284, 285, 286 Phys. Educ. Backgrounds	6
Anat. 301 General	4
Chem. 101 General, 230 Organic (or one year of high school chemistry) or approved substitute.	10
Engl. 101, 102, 103 Composition	9
Psychol. 100 General	5
Sociol. 110 Survey	5
Speech 100 Basic Speech Improvement	5
Zool. 111 General or Biol. 101J General	5
Zool. 112 General or Biol. 102J General	5
Zool. 114 Evolution	2
Zool. 118 & 118L, or 208 Physiol. (or approved substitute)	5-6
Electives	30-31
ROTC	12-18
	110-116

WOMEN

	CREDITS
Phys. Educ. 110 Health Educ.	2
Phys. Educ. 115, 121, 157 Archery, Bowling, Canoeing	3
Phys. Educ. 176, 177, 178 Activities for Freshman Majors	6
Phys. Educ. 281, 282, 283, 284 Phys. Educ. Backgrounds	4
Anat. 301 General	4
Phys. Sci. 102 The Physical Universe or Chem. 101 General (or one year of high school chemistry)	5
Engl. 101, 102, 103 Composition	9
Physics (approved introductory course)	5
Psychol. 100 Introduction	5
Sociol. 110 Survey	5
Speech 100 Basic Speech Improvement	5
Zool. 118 & 118L or 208 Physiol. (or approved substitute)	5-6
Electives	40-41
	99

The professional requirements are:

MEN

	CREDITS
Phys. Educ. 190 Introduction	2
Phys. Educ. 291 Personal & General Hygiene	3
Phys. Educ. 292 First Aid & Safety	3
Phys. Educ. 293 Physiol. of Muscular Exercise	3
Phys. Educ. 294 Introduction to Recreation	2
Phys. Educ. 309 The School Dance Program	2
Phys. Educ. 324 Playground Program	3
Phys. Educ. 340 Admin. of Intramural Sports	3

WOMEN

	CREDITS
Phys. Educ. 190 Introduction	2
Phys. Educ. 292 First Aid & Safety	3
Phys. Educ. 293 Physiol. of Muscular Exercise	3
Phys. Educ. 311 Rhythmic Activities for Small Children	2
Phys. Educ. 312 Elem. School Athletic Program	3
Phys. Educ. 318 Analysis of Rhythm	3
Phys. Educ. 344 Organization & Admin. of Camp Programs	3
Phys. Educ. 345 Principles of Phys. Educ.	3

Phys. Educ. 345 Principles of Phys. Educ. 3
Phys. Educ. 363 Methods & Materials in Teaching Sports 2
Phys. Educ. 370 Teaching Football 2
Phys. Educ. 371 Teaching Basketball 2
Phys. Educ. 450 The School Phys. Educ. Program 3
Phys. Educ. 465 The School Health Educ. Program 3
Phys. Educ. 493 Problems in Athletics . 3

Phys. Educ. 465 The School Health Educ. Program 3
Four of the Following:
Phys. Educ. 301 Methods & Materials in Gymnastics, Stunts, & Tumbling .. 3
Phys. Educ. 356 Methods & Materials in Teaching Modern Dance 2
Phys. Educ. 362 Methods & Materials in Teaching Folk, Tap, & Clog Dancing 2
Phys. Educ. 363 Methods & Materials in Teaching Sports 3
Phys. Educ. 364 Methods in Teaching Swimming 3
Home Ec. 300 Nutrition 2

CURRICULUM IN RECREATIONAL LEADERSHIP. The total required credits to be earned in the various subjects which make up the curriculum are as follows: English, 9; science, 15; history and government, 5; speech, 8; psychology, 10; education and nursery school, 5; communications, 3; sociology, 15; business, 5; physical education activities, health education, sports activities, and professional physical education, 40; recreation theory, 12; cultural skills, 25. Courses in music, art, drama, librarianship, and photography, and certain outdoor education courses are included in these requirements. 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.

MEN

First Year

FIRST QUARTER	CREDITS
Phys. Educ. 161 Activ. for Majors, 181 Backgrounds	2
Engl. 101 Composition	3
Science electives	5
Sociol. 110 Survey	5
ROTC	2-3
	17-18

SECOND QUARTER	CREDITS
Phys. Educ. 162 Activ. for Majors, 182 Backgrounds	2
Engl. 102 Composition	3
Science electives	5
Speech 100 Basic	5
ROTC	2-3
	17-18

THIRD QUARTER	CREDITS
Phys. Educ. 163 Activ. for Majors, 183 Backgrounds	2
Engl. 103 Composition	3
Psychol. 100 General	5
Science electives	5
ROTC	2-3
	17-18

Second Year

FIRST QUARTER	CREDITS
Phys. Educ. 292 First Aid & Safety	3
Phys. Educ. 294 Intro. to Recreation	2
Phys. Educ. activity electives	1
Phys. Educ. electives	2
Drama 437 Creative	3
Sociol. electives	5
ROTC	2-3
	18-19

SECOND QUARTER	CREDITS
Phys. Educ. 265 Activ. for Majors, 285 Backgrounds	2
Phys. Educ. 290 Officiating	2
Phys. Educ. 291 Hygiene	3
Art 300 Crafts	2
Music electives	3-5
Electives	2-3
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Phys. Educ. 266 Activ. for Majors, 286 Backgrounds	2
Phys. Educ. 334 Playground Mgmt.	2
Drama electives	3-5
Hist. or gov. electives	5
Electives	2-3
ROTC	2-3
	16-19

Third Year

FIRST QUARTER	CREDITS
Phys. Educ. 309 Dance	2
Librnship. 452 Story Telling	3
Psychol. electives	5
Sociol. electives	5
Speech 332 Group Discussion	3
	18

SECOND QUARTER	CREDITS
Phys. Educ. 324 Playground Programs	3
Phys. Educ. 340 Intramurals	3
Phys. Educ. 358 Teaching Tumbling & Appar.	2
Phys. Educ. electives	2-3
Communications electives	3-5
Cultural skills electives	3-5
	16-19

THIRD QUARTER	CREDITS
Phys. Educ. 344 Camp Programs	3
Phys. Educ. 363 Teaching Sports	2
Phys. Educ. electives	3-5
Bus. Admin. electives	5
Cultural skills electives	3-5
	16-19

Fourth Year

FIRST QUARTER	CREDITS
Educ. electives	5-10
Gov. electives	5
Electives	5-10
	15-19

SECOND QUARTER	CREDITS
Phys. Educ. 424 Observation & Practice Teaching	2
Bus. electives	5-10
Educ. electives	5-10
	12-19

THIRD QUARTER	CREDITS
Phys. Educ. 364 Teaching Swimming	2
Educ., bus., or gov. electives	15
	17

WOMEN

First Year

	CREDITS
Engl. 101, 102, 103 Composition	9
Phys. Educ. 110 Health Educ.	2
Phys. Educ. 176, 177, 178 Activities for Freshman Majors	6
Phys. Educ. 190 Introduction	2
Phys. Educ. 281 or 284 Backgrounds	1
Phys. Educ. 282, 283 Backgrounds	2
Science electives	10
Sociol. 110 Survey	5
Speech 100 Basic	5
Electives	9
	51

Second Year

	CREDITS
Anat. 301 General	4
Phys. Educ. 121 Bowling, 157 Canoeing	2
Phys. Educ. 281 or 284 Backgrounds	1
Phys. Educ. 292 First Aid & Safety	3
Phys. Educ. 312 Elem. School Athletic Program	3
Phys. Educ. 318 Analysis of Rhythm	3
Phys. Educ. 344 Org. & Admin. of Camp Programs	3
Psychol. 100 Introduction	5
Sociol. electives	5
Electives	18
	47

Third Year

	CREDITS
Art 300 Elem. Crafts or Educ. 376 Art in the Elem. School	2-5
Phys. Educ. 115 Archery	1
Phys. Educ. 293 Physiol. of Muscular Exercise	3
Phys. Educ. 294 Intro. to Recreation	2
Phys. Educ. 301 Methods	3
Phys. Educ. 311 Rhythmic Activities for Small Children	2
Phys. Educ. 324 Playground Program	3
Phys. Educ. 362 Teaching Dancing	2
Phys. Educ. 363 Teaching Sports	3
Phys. Educ. 364 Teaching Swimming	3
Sociol. electives	5
Electives	14-17
	46

Fourth Year

	CREDITS
Drama 437 Creative Dramatics	3
Librnship 452 Story Telling	3
Phys. Educ. 345 Principles of Phys. Educ.	3
Phys. Educ. 356 Teaching Modern Dance	2
Phys. Educ. 465 The School Health Educ. Program	3
Phys. Educ. 466 (3 quarters) Coaching	0
Sociol. electives	5
Drama, forestry, music, officiating, dance production electives	5
Electives	24
	48

CURRICULUM IN PREPHYSICAL THERAPY FOR WOMEN. The requirements are:

First Year

	CREDITS
Engl. 101, 102, 103 Composition	9
Phys. Educ. 110 Health Educ.	2
Phys. Educ. 176, 177, 178 Activities for Freshman Majors	6
Phys. Educ. 190 Introduction	2
Phys. Educ. 281 or 284 Backgrounds	1
Phys. Educ. 282, 283 Backgrounds	2
Sociol. 110 Survey	5
Speech 100 Basic, 110 The Speaking Voice, or 120 Intro.	5
Zool. 111, 112, or Biol. 101J-102J General, or Chem. 101 General, 230 Organic	10
Electives	9
	51

Second Year

	CREDITS
Anat. 301 General	4
Phys. Educ. 121, Bowling, 157, Canoeing	2
Phys. Educ. 281 or 284 Backgrounds	1
Phys. Educ. 292 First Aid & Safety	3
Phys. Educ. 312 Elem. School Athletic Program	3
Phys. Educ. 318 Analysis of Rhythm	3
Physics 100 Survey, or 170 for Nurses	5
Psychol. 100 Introduction	5
Electives	21
	47

Third Year

	CREDITS
Phys. Educ. 115 Archery	1
Phys. Educ. 293 Physiol. of Muscular Exercise	3
Phys. Educ. 301 Methods & Matls. in Gym., Stunts, & Tumbling	3
Phys. Educ. 311 Rhythmic Activities for Small Children	2
Phys. Educ. 362 Teaching Dancing	2
Phys. Educ. 363 Teaching Sports	3
Phys. Educ. 364 Teaching Swimming	3
Zool. 118 & 118L, or 208 Physiol., or 358 Vertebrate Physiol	5-6
Electives	23-24
	46

Fourth Year

	CREDITS
Phys. Educ. 322 Kinesiology	3
Phys. Educ. 345 Principles	3
Phys. Educ. 435 Adapted Activities	3
Phys. Educ. 465 School Health Educ.	3
Phys. Educ. 466 (3 quarters) Coaching	0
Phys. Educ. 480 Principles of Movement	3
Psych. 101 Psychol. of Adjustment	5
Psych. 306 Child Psychol.	5
Electives	20
	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), Education 402 (Child Development), or Nursery School 305 (Personality Growth of the Preschool Child); History 464 (Washington and the Pacific Northwest); Music 107 (Survey) or Education 377 (Music for Elementary Teachers) or approved substitute; Art 100 (Introduction) or Education 376 (Art in the Elementary School) or approved substitute; Public Health 461 (School and Community Health Programs); Education 209 (Educational Psychology), 373 (Washington Manual), and 370 (Introduction to Teaching Procedures) concurrently; Education 370E (Elementary School Methods); Education 339 (Physical Education for Men) or 340 (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, and includes a second teaching area in social studies. Students may choose electives to complete an additional second area in another subject.

The 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

FIRST QUARTER	CREDITS
Phys. Educ. 161 Activ. for Majors, 181 Backgrounds	2
Phys. Educ. 190 Introduction	2
Engl. 101 Composition	3
Sociol. 110 Survey	5
Zool. 111 or Biol. 101J-General	5
ROTC	2-3
	19-20

SECOND QUARTER	CREDITS
Phys. Educ. 162 Activ. for Majors, 182 Backgrounds	2
Engl. 102 Composition	3
Speech 120 Public Speaking or humanities elective	5
Zool. 112 or Biol. -102J General	5
Electives	2
ROTC	2-3
	19-20

THIRD QUARTER	CREDITS
Phys. Educ. 163 Activ. for Majors, 183 Backgrounds	2
Engl. 103 Composition	3
Psychol. 100 Introduction	5
Speech 100 Basic	5
Electives	2
ROTC	2-3
	19-20

Second Year

FIRST QUARTER	CREDITS
Phys. Educ. 264 Activ. for Majors, 284 Backgrounds	2
Phys. Educ. 292 First Aid & Safety	3
Phys. Educ. 294 Intro. to Rec.	2
Zool. 114 Evolution	2
Zool. 118, 118L Physiol.	6
Electives	2
ROTC	2-3
	19-20

SECOND QUARTER	CREDITS
Phys. Educ. 265 Activ. for Majors, 285 Backgrounds	2
Phys. Educ. 291 Hygiene	3
Art 300 Crafts, or 329 Appreciation	2
Music 107 Survey, 108 Orchestra, or 217 Appreciation	2-5
Electives	5
ROTC	2-3
	16-20

THIRD QUARTER	CREDITS
Phys. Educ. 266 Activ. 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
	19-20

Third Year

FIRST QUARTER	CREDITS
Phys. Educ. 309 School Dance Prog.	2
Phys. Educ. 322 Kinesiology	3
Phys. Educ. 345 Principles	3
Phys. Educ. 371 Teaching Basketball	2
Phys. Educ. 372 Teaching Track & Field, or elective	5
Educ. 373 State Manual	2
Electives	2
	19

SECOND QUARTER	CREDITS
Phys. Educ. 324 Playground Programs	3
Phys. Educ. 370 Teaching Football	2
Educ. 370E Elem. Methods	5
Educ. 390 Evaluation	3
Electives	5
	18

THIRD QUARTER	CREDITS
Electives from 334 Playground Mgmt., 336 Train. & Cond., 344 Camp Programs	4
Phys. Educ. 340 Intramural	3
Phys. Educ. 363 Teaching Sports	2
Phys. Educ. 373 Teaching Baseball	2
Educ. 339 Phys. Educ.	2
Educ. 374 Reading Instr.	5
	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 Phys. Educ. for Men or elective	2
	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 Prof. Lab. Exp.	3
	17

THIRD QUARTER	CREDITS
Phys. Educ. 364 Teaching Swimming	2
Phys. Educ. 435 Adapted Activ.	2
Phys. Educ. 493 Problems	3
Educ. 402 Child Development, Nursery School 305 Pers. Growth, or Psychol. 306 Child Psychol.	3-5
Hist. 464 Wash. & Pac. NW	5
Electives	3
	18-20

WOMEN

First Year

	CREDITS
Engl. 101, 102, 103 Composition	9
Phys. Educ. 110 Health Educ.	2
Phys. Educ. 176, 177, 178 Activities for Freshman Majors	6
Phys. Educ. 190 Introduction	2
Phys. Educ. 281 or 284 Backgrounds	1
Phys. Educ. 282, 283 Backgrounds	2
Phys. Science 102 Physical Universe, or Chem. 101 General (or 1 yr. high school chem.)	5
Physics 104 General or 170 For Nurses	5
Sociol. 110 Survey	5
Speech 100 Basic	5
Electives and teacher training requirements	9
	51

Second Year

	CREDITS
Anat. 301 General	4
Phys. Educ. 121 Bowling, 157 Canoeing	2
Phys. Educ. 281 or 284 Backgrounds	1
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 Org. & Admin. of Camp Prog.	3
Psych. 100 Introduction	5
Electives and professional education requirements	21
	47

Third Year

	CREDITS
Home Ec. 300 Nutrition	2
Phys. Educ. 115 Archery	1
Phys. Educ. 293 Physiol. of Muscular Exercise	3
Phys. Educ. 301 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. 466 (2 quarters) Coaching	0
Public Health 301 Communicable Diseases (if not accompanied by health educ. area)	3
Zool. 118 & 118L Physiol.	6
Electives and professional education requirements	18
	46

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. 466 Coaching	0
Phys. Educ. 480 Principles of Movement	3
Electives and professional education requirements	26
	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 155), 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 174).

MEN AND WOMEN

First Year

	CREDITS
Engl. 101, 102, 103 Composition	9
Phys. Educ. 110 or 175 Health Educ., Personal Health	2
Phys. Educ. activities	3
Zool. 111, 112 or Biol. 101J-102J General	10
Chem. 101 General, or 230 Organic	10
Sociol. 110 General	5
Speech 100 Basic	5
Electives	4
ROTC	6-9
	48-57

Second Year

	CREDITS
Anat. 301 General or Conjoint 317-318 Anat.	4-12
Phys. Educ. activities	3
Phys. Educ. 291 Hygiene	3
Phys. Educ. 292 First Aid & Safety	3
Psychol. 100 Introduction	5
Electives	19-27
ROTC	6-9
	45-54

Third Year

	CREDITS
Home Ec. 300 Nutrition	2
Micro. (or approved substitute)	5
Phys. Educ. 345 Principles	3
Public Health 402 Commun. Dis. Control or 301 Commun. Dis.	3
Psychiatry 450 Principles of Pers. Develop. or Educ. 408 Mental Hygiene for Teachers	2-3
Zool. 208 or 358 Physiol. or Conjoint 317-318 Anat.	5-12
Electives	17-25
	45-46

Fourth Year

	CREDITS
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	20
	45

Recommended electives are:

MEN AND WOMEN

	CREDITS
Anthro. 280 Race	2
Econ. 211 General, or Pol. Sci. 376 State & Local Government & Admin. or 475 Municipal Government & Admin.	3 or 5
Journ. 200 News Writing or 303 Pub. Relations	5 or 3
Nursing 100 Care & Prevention of Illness	3
Nursing 380 Pub. Health & Community Nursing	3
Phys. Educ. 293 Physiol. of Muscular Exercise	3
Phys. Educ. 322 Kinesiology	3
Phys. Educ. 429 First Aid & Safety	2
Phys. Educ. 435 Adapted Activities	3
Pol. Sci. 100 Survey	5
Psychiatry 468 Counseling	2
Psychol. 101 Adjustment	5
Psychol. 135 Applied	2
Public Health 330 Environmental Sanitation	3
Public Health 460J Field Training in Health Educ.	5
Public Health 463 Community Organization for Health Educ.	3
Public Health 470 Introduction to Public Health Statistics	2
Public Health 482, 483, 484 Field Practice	4-12
Radio 200 Introduction	5
Sociol. 270 Contemporary Social Problems	5
Sociol. 352 The Family	5
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) (1,1,1,1,1,1) **Hinrichs**
Gymnastics, games, and sports to meet the needs of the individual. For physically handicapped students.

104 through 174; 206 through 250 Physical Education Activities (MEN) (1 each) **Staff**
104, 105, basic and swimming (required in first two quarters); 106, 206, handball; 107, 207, basketball; 108, 208, tennis; 109, 209, softball; 110, 210, golf (fee, $3 Autumn and Spring, $1.50 Winter); 111, 211, track; 112, 212, crew (class), prerequisite, swimming; 113, 213, fencing; 114, 214, boxing; 115, 215, tumbling; 117, 217, wrestling; 118, 218, volleyball; 119, 219, swimming; 120, 220, soccer; 121, 221, touch football; 122, 222, badminton; 123, 223, archery; 124, 224, calisthenics; 125, 225, skiing (fee, $15); 126, 226, speedball; 127, 227, bowling (fee, $3); 128, 228, weight lifting; 129, 229, sailing; 133, 233, Pack Forest; 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; 231, folk and square dancing; 234, intermediate folk and square dancing.

110 Health Education (WOMEN) (2) **McLellan, Gunn, Horne, Waters**
Health problems of freshman women. Required of all freshmen.

111 through 170; 211 through 270 Physical Education Activities (WOMEN) (1 each) **Staff**
111, adapted activities; 113-114, basic activities; 115, archery; 118, badminton; 121, bowling (fee, $3); 124, fencing; 126, golf (fee, $3 Autumn and Spring, $1.50 Winter); 128, riding (fee); 131, dry skiing; 132, beginning 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; 160, adapted swimming; 161, beginning swimming; 162, elementary swimming; 215, intermediate archery; 218, intermediate badminton; 221, intermediate bowling (fee, $3); 222 advanced bowling (fee, $3); 224, intermediate fencing; 228, intermediate riding (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; 263, intermediate swimming; 264, advanced swimming; 265, rhythmic swimming; 266, diving; 267, lifesaving; 268, water safety instruction.

161, 162, 163, 264, 265, 266 Physical Education Activities for Majors (MEN) (1,1,1,1,1,1) Staff

175 Personal Health (MEN) (2) **Reeves, Staff**
Health information that affords a basis for intelligent guidance in the formation of health habits and attitudes. Required of all freshmen; exemption by examination.

176, 177, 178 Physical Education Activities for Freshman Majors (WOMEN) (2,2,2) **MacLean, Kidwell, Rulifson**
Hockey; soccer; speedball; basketball; badminton; tennis; stunts and tumbling.

PROFESSIONAL COURSES

181, 182, 183, 284, 285, 286 Physical Education Backgrounds (MEN) (1,1,1,1,1,1) **Torney, Reeves, Kunde, Stevens, Mills, Smith, Palmer**
Fundamental information on methods and materials in swimming, lifesaving, tumbling, apparatus, individual games, boxing, wrestling, recreational games, and group games.

190 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, leadership in communities and organizations, coaching (men), and physical therapy (women).

281, 282, 283, 284 Physical Education Backgrounds (WOMEN) (1,1,1,1) **Broer, Horne, Kidwell, de Vries, MacLean**
Fundamental information for methods and materials in the presentation of gymnastics, tap dance, folk dance, social dance, modern dance, swimming, and lifesaving. Basic skills with emphasis for professional training.

290 Officiating (MEN) (2) **Mills, Stevens**
Techniques of officiating football, basketball, baseball, track and field, swimming, tennis, volleyball, softball, speedball, and soccer.

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) **Reeves, Hinrichs, MacLean**
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) **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) (2) **Buckley**
(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, American Red Cross life-saving card, or permission.

301 Methods and Materials in Gymnastics, Stunts, and Tumbling (WOMEN) (3) **MacLean, Broer**
Methods and opportunities for presentation of these activities, including marching tactics. Prerequisites, 292, Anatomy 301, and Zoology 118 or 208 (which may be taken concurrently).

304, 305, 306 Officiating (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, 324.

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, McLellan**
The educational and social significance of camping; organization of activities and problems of administration. Prerequisites, junior standing, Psychology 100, and Sociology 110, or permission.

345 Principles of Physical Education (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.

355 Dance Composition (WOMEN) (2) **de Vries**
Practice in modern dance; analysis of choreography; creative work. Prerequisites, 151 and 318.

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) **Smith**
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) **Rulifson, MacLean, Peek**
Program planning; methods in teaching team and individual sports, including volleyball, basketball, field hockey, soccer, speedball and other field games, softball, tennis, and badminton. Prerequisites for men, 163, 183, 264, 265, 266, 284, 285, and 286, or permission; for women, 176, 177, 178, and 312.

364 Methods and Materials in Teaching Swimming (MEN 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) **Edmundson**

373 Methods in Teaching Baseball (MEN) (2) **Tappin**

424 Observation and Practice Teaching in Recreation (MEN) (2) **Kunde**
Forty hours of observation and participation in organized recreation for different age groups. Prerequisite, recreation major, senior standing, or permission.

429 Methods in Teaching First Aid and Safety (MEN AND WOMEN) (2) **Reeves**
The student may meet requirements for American Red Cross Instructor's First Aid Certification. Prerequisite, 292.

435 Adapted Activities (MEN AND WOMEN) (3) **Waters, Cutler**
Program for a typical case from the standpoint of individual needs. Prerequisites, 293, 322, and Zoology 118, 208, or 358.

447 Tests and Measurements (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) **McLellan**
Health instruction in elementary, junior and senior high schools, including subject matter, source material, and method. Prerequisites, 345, Public Health 461, and Zoology 118, 208, or 358.

459-460 Dance Production (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. Prerequisite, 151 and 251, or 283.

465 The School Health Education Program (MEN AND WOMEN) (3) **Reeves**
Schoolroom construction; lighting, heating, ventilation; sanitation of spaces; selection and location of equipment; medical inspection and supervision; communicable disease; the school lunch; fatigue, rest, and play. Prerequisite, 345.

466 Coaching (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 100, 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**
Prerequisites, 345 and 450.

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. Prerequisites, 345 and 450.

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, 504.

600 Research (MEN AND WOMEN) (2-5) **Kunde, Palmer, Staff**
A. Physical Education. C. Physiology of Exercise.
B. Tests and Measurements. 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 engineering 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 for those who have had high school physics, and Physics 104, 105, and 106 for those who have had plane geometry but no physics. Physics 100 (or Physical Sciences 101), a survey course, 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, effective Autumn Quarter, 1954, are high school physics, trigonometry, and 1½ units of algebra. High school chemistry

and a fourth term of algebra are 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 2.2 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 3.3 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), 321, 322, 323, 325, 326, 360, and 361.

BACHELOR OF SCIENCE IN PHYSICS

The total requirements for the prescribed curriculum are:

First Year

FIRST QUARTER	CREDITS
Physics 121 General	5
Chem. 105 General	3
Math. 100 Math. Thinking	2
Math 105 Algebra	5
Phys. Educ. activity	1
ROTC	2-3
	16-19

SECOND QUARTER	CREDITS
Physics 122 General	5
Chem. 106 General	3
Engl. 101 Composition	3
Math. 106 Analyt. Geom.	5
Phys. Educ. activity	1
ROTC	2-3
	17-20

THIRD QUARTER	CREDITS
Physics 123 General	5
Chem. 107 General	3
Engl. 102 Composition	3
Math. 307 Calc.	5
Phys. Educ. activity	1
ROTC	2-3
	17-20

Second Year

FIRST QUARTER	CREDITS
Physics 321 Intro. Mod.	3
Engl. 103 Composition	3
Math. 308 Calc.	5
Electives	5
Phys. Educ. activity	1
ROTC	2-3
	17-20

SECOND QUARTER	CREDITS
Physics 322 Intro. Mod.	3
Physics 340 Sound	3
Math. 309 Calc.	5
Electives	5
Phys. Educ. activity	1
ROTC	2-3
	17-20

THIRD QUARTER	CREDITS
Physics 323 Intro. Nuclear	3
Physics 350 Heat	3
Phys. Educ. 110 or 175 Health	2
Electives	8
Phys. Educ. activity	1
ROTC	2-3
	17-20

Third Year

FIRST QUARTER	CREDITS
Physics. 325 Electricity	3
Chem. 355 Physical	3
Math. 423 Adv. Calc. & Vector Analysis	3
Mech. Engr. 203 Metal Machining	1
Electives	6
	16

SECOND QUARTER	CREDITS
Physics 326 Electricity	3
Physics 360 Optics	3
Chem. 356 Physical	4
Math. 421 Diff. Equations	3
Electives	3
	16

THIRD QUARTER	CREDITS
Physics 327 Freq. Meas.	4
Physics 361 Optics	3
Math. 422 Diff. Equations	3
Electives	6
	16

Fourth Year

FIRST QUARTER	CREDITS
Physics 491 Mechanics	4
Physics 495 Exp. Atomic	3
Math. 427 Applied Analysis	3
Electives	5
	15

SECOND QUARTER	CREDITS
Physics 492 Mechanics	4
Physics 496 Exp. Atomic	3
Math. 428 Applied Analysis	3
Electives	6
	16

THIRD QUARTER	CREDITS
Physics 497 Exp. Nuclear	3
Math. 429 Applied Analysis	3
Electives	10
	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, 103 and Mechanical Engineering 201, 202, 203. For third-year electives take Mechanical Engineering 260 or Metallurgical Engineering 441, and Electrical Engineering 301. For fourth-year electives take Electrical Engineering 420, 440, 457. Physics 327 and Mathematics 427, 428, 429 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
Physics 321 Intro. Mod.	3
Physics 325 Electricity	3
Chem. 355 Physical	3
Engl. 102 Composition	3
Math. 423 Adv. Calc. & Vect. Anal.	3
Mech. Engr. 201 Metal Castings	1
	16

SECOND QUARTER	CREDITS
Physics 322 Intro. Mod.	3
Physics 326 Electricity	3
Physics 340 Sound	3
Chem. 356 Physical	4
Math. 421 Diff. Equations	3
	16

THIRD QUARTER	CREDITS
Physics 323 Intro. Nuclear	3
Elect. Engr. 301 Alt. Currents	5
Engl. 103 Composition	3
Math. 422 Diff. Equations	3
Mech. Engr. 202 Welding	1
Mech. Engr. 203 Metal Mach.	1
	16

Fourth Year

FIRST QUARTER	CREDITS
Physics 491 Mechanics	4
Physics 495 Exp. Atomic	3
Elect. Engr. 420 Vac. Tubes	4
Mech. Engr. 260 Mechanism or Met. Engr. 441 Phys. Met.	3-4
	14-15

SECOND QUARTER	CREDITS
Physics 360 Optics	3
Physics 492 Mechanics	4
Physics 496 Exp. Atomic	3
Elect. Engr. 457 Indust. Control	3
Electives	3
	16

THIRD QUARTER	CREDITS
Physics 361 Optics	3
Physics 497 Exp. Nuclear	3
Elect. Engr. 440 Vac. Tubes	6
Electives	4
	16

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

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.*

The graduate student who is majoring in physics is expected to have an undergraduate preparation in physics equivalent to that given by the prescribed curriculum. He should have an undergraduate scholastic average of B or better and this average must be maintained if he is to continue his graduate work. A good reading knowledge of French and German is of considerable value, and deficiencies in this respect should be made up at an early date.

In addition to other requirements, the student working toward an advanced degree will satisfactorily complete a basic program of graduate studies; acquire a general understanding of the problems of current research in physics as described in the current literature and at the numerous meetings of physical societies; and complete a selected research program leading to a definite contribution to knowledge.

Students majoring in other fields who wish to complete work leading to a graduate minor in physics for a master's degree must fulfill the following requirements: 18 credits beyond general physics selected from Physics 321, 322 or 455, 325, 326, 340, 350, 360, 361, 491, 492, 495, 496, and 497; and at least one graduate course in physics. A minor for a doctor's degree requires the equivalent of the undergraduate elective curriculum and three graduate courses selected from Physics 505, 509, 510, 517, 524, 550, 552, 558, and 564.

COURSES FOR UNDERGRADUATES

100 Survey of Physics (5) — **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.

112, 113 Physics for Architecture Students (5,5) — **Sanderman**
General physics with special emphasis on acoustics, heating, ventilating, and illumination. Prerequisite, 101 or 104.

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. Prerequisite, 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. Prerequisite, 217 and calculus.

229 Pyrometric Measurements (2) — **Utterback**
Prerequisite, 103, 106, or 123.

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.

321, 322 Introduction to Modern Physics (3,3) — **Utterback**
Concepts of the particles of modern physics; the atomic character of electricity; the photon character of radiation; the positron; the neutron; the meson; the existence of isotopes; the nature of cosmic rays; natural radioactivity. Prerequisite, 103, 106, or 123.

323 Introductory Nuclear Physics (3) **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 (3,3) **Streib**
Elementary theory of direct, alternating, and transient currents in linear circuits. Electrostatics and electromagnetism. Laboratory use of meters, potentiometers, bridges, and electronic instruments. Prerequisites, 103, 106, or 123, and calculus. Concurrent registration in Mathematics 423 is recommended.

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, or 123.

350 Heat and Introduction to Thermodynamics and Kinetic Theory (3) **Utterback**
Concepts of heat and energy changes; experimental laws of heat and thermal reactions; ideas of reversibility, entropy, etc.; application of general principles to specific cases. Laboratory. Prerequisite, 103, 106, or 123.

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, or 123, and calculus.

367, 368, 369 Special Problems (*,*,*) **Staff**
Prerequisite, permission.

370 Spectrometry (3) **Staff**
Theory and use of spectroscopic equipment; qualitative and quantitative spectrum analysis. Laboratory. Prerequisite, 360 or permission.

380 History of Physics (2) **Staff**
Prerequisite, 103, 106, or 123.

455 Introduction to Modern Physics for Engineers (3) **Schmidt**
Emphasis is placed upon discoveries in modern physics which are particularly basic to applications in engineering. The electrical nature of matter, elementary particles, interaction of radiation with matter, nuclear disintegration, and related topics. Prerequisite, senior standing in engineering or permission.

491, 492 Mechanics (4,4) **Geballe**
Lectures and laboratory work in classical mechanics. Prerequisites, Mathematics 253 or 309, 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) **Jakobson**
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, 323 or 455 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 (*, maximum 6 each) **Staff**
Dynamics of a particle and of rigid bodies; generalized coordinates and Lagrangian theory; variational principles. Hamilton's equations of motion, vibration, and normal coordinates.

509, 510 Atomic, Molecular, and Nuclear Structure (*, maximum 6 each) **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 (*, 6 each) **Staff**
The properties of electric and magnetic fields as boundary value problems; application of harmonic function and conformal representation; electrodynamics and electromagnetic waves in empty space and material media.

517, 518, 519 Quantum Mechanics (*, maximum 6 each) **Staff**
Prerequisite, 513 for 518.

520 Seminar (1-2) **Staff**

524 Thermodynamics (*, maximum 6) **Staff**

525 Statistical Mechanics (*, maximum 6) **Staff**
Prerequisite, 517.

528 Current Problems in Physics (*, maximum 6) **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 (*, maximum 6) **Staff**
Prerequisite, 509.

552 Conduction Through Gases (*, maximum 6) **Staff**
Prerequisite, 509.

558 Cosmic Rays (*, maximum 6) **Staff**
Prerequisite, 510.

560 Nuclear Physics (*, maximum 6) **Staff**
Prerequisites, 510 and 518.

562 Theory of Spectra (*, maximum 6) **Staff**
Prerequisites, 509 and 518. (Offered alternate years; offered 1954-55.)

564 Relativity (*, maximum 6) **Staff**
Prerequisites, 506 and 515. (Offered alternate years; offered 1953-54.)

566 Theory of Collisions (*, maximum 6) **Staff**
Prerequisite, 518. (Offered alternate years; offered 1953-54.)

568 Theory of Solids (*, maximum 6) **Staff**
Prerequisite, 518.

570 Radiation Theory (*, maximum 6) **Staff**
Prerequisite, 519.

572 Foundations of Statistical Mechanics (5)
(Offered alternate years; offered 1954-55.)

574 Atomic and Molecular Interaction (5)
(Offered alternate years; offered 1954-55.)

576 Selected Topics in Experimental Physics (*, maximum 6)
(Offered when demand is sufficient.)

578 Selected Topics in Theoretical Physics (*, maximum 6) **Staff**
Prerequisite, permission. (Offered when demand is sufficient.)

600 Research (*) **Staff**

Thesis (*) **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, 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

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; Geography 100; and Sociology 110.

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; Economics 200, 201, 301, 350, and 451; Business Statistics 201 or Mathematics 281; Psychology 100; and History 241. The program should be supplemented by at least four other upper-division courses in the social sciences selected in consultation with an adviser.

ADVANCED DEGREES

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

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 a special regional political science field in either the Far East or the U.S.S.R. for comparative government as either a field of concentration or a supporting field. Candidates may be permitted to substitute special regional political science fields in United Kingdom, Western Europe, or Middle or Near East for comparative government as a supporting field only. Candidates may also be permitted to substitute a related field in history, economics, sociology, psychology, geography, or regional studies for any one of the above fields, but only as a supporting field.

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 substitute Far Eastern or Russian political science for comparative government 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 substitute Far Eastern or Russian political science for comparative government 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) — **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.

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, authorities, 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) — **Bone, 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**
Goverment 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) **Bone**
Organization and implementation of opinion in controlling government, and public opinion as a force in the development of public policy; public relations activities of government agencies.

470 Introduction to Public Administration (5) **Gore**
Includes relationship of administration to other agencies of government.

471 Administrative Management (5) **Shipman**
Introduction to problems of public service, emphasizing managerial supervision and control, personnel administration, budgetary and fiscal administration, administrative analysis, and program planning and reporting.

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) **Riley**
Major policies as modified by recent developments; international cooperation.

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) **Staff**
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-Prosperity Sphere." Offered jointly with the Far Eastern and Russian Institute.

336 National Power and International Politics (5) **Martin**
Geographical, economic, and political foundations of the major powers as factors in international relations of the world.

420 Foreign Relations of the Soviet Union (5) **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

342 Comparative Governments of the Far East (5) **Staff**
(Not offered 1953-55.)

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; the East European reproductions: Hungary, Rumania, Bulgaria, and Albania; the East European variants: 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) **Staff**
Selected topics, historical and conceptual, national, regional, and universal.

515 Methods and Research in Political Science (3-5) **Staff**
Political science and the social sciences; methods of research; bibliography of general and special fields.

521 Seminar in the Theory of International Relations (3) **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, Staff**
Regionalism in the world order and economy; the "region" as a basis of foreign policy; foreign interests and policies of the major regions of the world: the U.S.S.R., Central Europe, Western Europe, the British Empire, the Middle and Near East, the Far East, and Latin America.

540J Seminar on the Soviet Union: Government and Diplomacy (4, maximum 8) **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) **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. Prerequisite, admission to graduate curriculum in public administration or special approval.

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) **Staff**
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 (2-5) **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, which provides graduate and undergraduate training and conducts research on problems of child behavior and development. Graduate courses are offered in child clinical psychology; undergraduate courses include directed observations of the preschool child and nursery school training.

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 2.5 in all psychology courses.

ADVANCED DEGREES

Students who intend to work toward the degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School 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 (2) — **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**
(Not offered 1953-54.)

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. Prerequisite, 100, and a major in psychology or sociology.

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. Prerequisite, Humanistic-Social Studies 263 or 265.

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**
(Not offered 1953-54.)

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. Prerequisite, 100 and permission. Not open to students who have had 401.

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, Loucks**
Principles of animal behavior in relation to human behavior, with special emphasis upon the principles underlying the organism's mode of adjusting to its environment. Prerequisite, permission.

421 The Neural Basis of Behavior (3) — **Esper**
Anatomical and physiological principles underlying the integrative action of the nervous system, and the relationship of these principles to the problems of behavior. Prerequisites, 10 credits in biology and permission.

422 Physiological Psychology (5) — **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.

425 Advanced Experimental Psychology (5) — **Staff**
(Not offered 1953-54.)

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.

444 Psychology of Exceptional Children (3) — **Bijou**
Behavior patterns of exceptional children, such as the mentally retarded, the physically handicapped, and superior children. Prerequisites, 100, 101, and 306.

446 Public Opinion Analysis (5) — **Edwards**
(Not offered 1953-54.)

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 3) — **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**
(Not offered 1953-54.)

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. Prerequisites, permission and registration in postgraduate dental education.

509 Problems in Developmental Psychology (3) — **Bijou**
A critical analysis of current theoretical problems and 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 (3-2) — **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. Prerequisite, permission.

521 Seminar in Statistics (2) — **Staff**
May be repeated. Prerequisite, permission.

522 Seminar in General Psychology (2) — **McKeever**
May be repeated. Prerequisite, permission.

523 Seminar in the History of Psychology (2) — **Esper**
May be repeated. Prerequisite, permission.

524 Seminar in Physiological Psychology (2) — **Horton, Loucks**
May be repeated. Prerequisite, permission.

525 Seminar in Genetic and Comparative Psychology (2) **Horton**
May be repeated. Prerequisite, permission.

526 Seminar in Applied Psychology (2) **Staff**
May be repeated. Prerequisite, permission.

527 Seminar in Social Psychology (2) **Edwards**
May be repeated. Prerequisite, permission.

528 Seminar in Experimental Psychology (2) **Hormans**
May be repeated. Prerequisite, permission.

529 Seminar in Clinical Psychology (2) **Bijou**
May be repeated. Prerequisite, permission.

530 Seminar in Theory (2) **Staff**
May be repeated. Prerequisite, permission.

531 Seminar in Learning and Motivation (2) **Guthrie**
May be repeated. Prerequisite, permission.

544-545 Psychology of Social Attitudes (2-3) **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.

547 Psychology of Language (3) **Esper**
Psychological principles applied to linguistic development and organization; relation of symbolism to human behavior. Prerequisite, permission.

548 Thinking and Problem Solving (3) **Esper**
A survey of the experimental literature of concept formation and problem solving. Prerequisite, 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 **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. 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. Prerequisite, 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: LELAND E. POWERS, E301 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 or in a science or a social science. For combinations with physical education, counseling is provided by the School of Physical and Health Education (see page 155); 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 bulletin of the School of Dentistry). 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
	16-19

SECOND QUARTER	CREDITS
Engl. 102 Composition	3
Speech 120 Intro.	5
Chem. 101 General	5
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Engl. 103 Composition	3
Chem. 230 Organic	5
Phys. Educ. 110 or 175 Health	2
Electives	5
Phys. Educ. activity	1
ROTC	2-3
	16-19

Second Year

FIRST QUARTER	CREDITS
Biol. 101J- or Zool. 111 General	5
Econ. 211 General	3
Math. 104 Plane Trig.	5
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	16-19

SECOND QUARTER	CREDITS
Biol. 102J or Zool. 112 General	5
Math. 105 Algebra	5
Electives	5
Phys. Educ. activity	1
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Psychol. 101 Adjustment	5
Sociol. 223 Survey	5
Math. 106 Analyt. Geom.	5
Phys. Educ. activity	1
ROTC	2-3
	16-19

Third Year

FIRST QUARTER	CREDITS
Public Health 330 Environ. San.	3
Public Health 461 Health Prog.	5
Electives	7
	15

SECOND QUARTER	CREDITS
Micro. 301 General	5
Electives	10
	15

THIRD QUARTER	CREDITS
Public Health 402 Comm. Disease	3
Public Health 412 Public Health Org.	3
Electives	9
	15

Fourth Year

FIRST QUARTER	CREDITS
Public Health 470 Stat.	3
Public Health 472 Applied Stat.	4
Electives	8
	15

SECOND QUARTER	CREDITS
Public Health 464 Educ. Tech.	3
Biol. 351 Hum. Genetics	3
Electives	9
	15

THIRD QUARTER	CREDITS
Public Health 476 Adv. Stat.	5
Public Health 477 Biol. Assay	3
Sociol. 331 Population	5
Electives	2
	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, 104, or 121 General	5
Phys. Educ. 110 or 175 Health	2
Phys. Educ. activity	1
ROTC	2-3
	16-19

SECOND QUARTER	CREDITS
Chem. 112 or 116 General	5
Engl. 102 Composition	3
Physics 102, 105, or 122 General	5
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Chem. 113 Elem. Qual.	5
Engl. 103 Composition	3
Physics 103, 106, or 123 General	5
Math. 104 Plane Trig.	3
Phys. Educ. activity	1
ROTC	2-3
	17-20

Second Year

FIRST QUARTER	CREDITS
Chem. 221 Quant. Anal.	5
Zool. 111 General	5
Electives or Speech 120 Intro.	5
Phys. Educ. activity	1
ROTC	2-3
	16-19

SECOND QUARTER	CREDITS
Chem. 231 Organic	3
Chem. 241 Organic Lab.	2
Zool. 112 General	5
Electives or Sociol. 110 Survey	5
Phys. Educ. activity	1
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Chem. 232 Organic	3
Chem. 241 Organic Lab.	2
Zool. 456 Vert. Embryol.	5
Electives or Psychol. 100 General	5
Phys. Educ. activity	1
ROTC	2-3
	16-19

Third Year

FIRST QUARTER	CREDITS
Micro. 301 General	5
Pol. Sci. 201 Mod. Gov.	5
Public Health 402 Comm. Disease	3
Electives	2
	15

SECOND QUARTER	CREDITS
Econ. 201 Principles	5
Geology 215	3
Civil Engr. 350 Intro. San. Engr.	3
Electives	6
	17

THIRD QUARTER	CREDITS
Public Health 412 Public Health Org.	3
Public Health 470 Stat.	2
Bus. Law 307 Bus. Law	3
Micro. 204 Parasitol.	4
Electives	2
	14

Fourth Year

FIRST QUARTER	CREDITS
Public Health 432 Food San.	3
Public Health 438 Fac. Design	4
Arch. 435 Mech. Equip.	2
Public Health 461 School & Comm. Health or elective	5-6
	14-15

SECOND QUARTER	CREDITS
Public Health 434 Milk San.	3
Public Health 439 Env. Utilities	2
Public Health 464 Educ. Tech.	3
Arch. 436 Mech. Equip.	2
Electives	5
	15

THIRD QUARTER	CREDITS
Public Health 435 Vector Control	3
Public Health 451 Indust. Hyg.	3
Arch. 437 Mech. Equip.	2
Electives	7
	15

Summer

	CREDITS
Public Health 482, 483, 484 Field Practice	15

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
	16-19

SECOND QUARTER	CREDITS
Engl. 102 Composition	3
Speech 100 Basic	5
Chem. 101 General	5
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Engl. 103 Composition	3
Chem. 230 Organic	5
Phys. Educ. 110 or 175 Health	2
Speech 120 Intro.	5
Phys. Educ. activity	1
ROTC	2-3
	16-19

Second Year

FIRST QUARTER	CREDITS
Biology 101J- or Zool. 111 General	5
Physics 100 Survey	5
Economics 211 General	3
Phys. Educ. 292 First Aid	3
Phys. Educ. activity	1
ROTC	2-3
	17-20

SECOND QUARTER	CREDITS
Biology 102J or Zool. 112 General	5
Psychol. 101 General	5
Phys. Educ. 291 Hygiene	3
Electives	2
Phys. Educ. activity	1
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Psychol. 102 Adjustment	5
Anatomy 301 General	4
Zool. 208 Elem. Human	5
Electives	1
Phys. Educ. activity	1
ROTC	2-3
	16-19

Third Year

FIRST QUARTER	CREDITS
Public Health 330 Env. San.	3
Public Health 461 Health Prog.	5
Speech 332 Group Discussion	3
Electives	5
	16

SECOND QUARTER	CREDITS
Micro. 301 General	5
Home Ec. 300 Nutrition	2
Electives	8
	15

THIRD QUARTER	CREDITS
Public Health 402 Comm. Disease	3
Public Health 412 Public Health Org.	3
Conjoint 496 Concept of Child	3
Electives	6
	15

Fourth Year

FIRST QUARTER	CREDITS
Psychiatry 450	2
Public Health 470 Stat.	2
Public Health 492J Intern. Health	2
Electives	9
	15

SECOND QUARTER	CREDITS
Public Health 451 Indust. Hyg.	3
Public Health 463 Comm. Org.	3
Public Health 464 Educ. Tech.	3
Electives	6
	15

THIRD QUARTER	CREDITS
Public Health 482, 483, 484 Field Practice	15

COURSES FOR UNDERGRADUATES

Conjoint 295 Introduction to Normal Growth and Development (2) — **Deisher**
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. Prerequisite, permission.

301 Causes and Control of Communicable Diseases (3) — **Lazarus**
Introductory course for students without laboratory training. Prerequisite, junior standing or permission.

330 Introduction to Environmental Sanitation (3) — **Green**
Environmental control of disease transmission. Prerequisite, 412 or permission.

402 Communicable Disease Control (3) — **Lazarus**
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) — **Powers**
Study of local, national, and international public health services. Prerequisite, 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) — **Green**
Mechanical design of public health facilities and equipment for sanitation. Prerequisite, 412 or permission.

439 Environmental Utilities (2) — **Green**
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.

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) **Reeves, Vavra**
Organizational structure, function, and services of official and non-official 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. Prerequisites, 470 and 472. (Offered alternate years; offered 1954-55.)

477 Statistical Methods in Biological Assay (3) **Bennett**
Methods appropriate to estimation of the dose-effect relationship; biological standardization; microbiological assay; design of experiments. Prerequisite, permission. (Offered alternate years; offered 1953-54.)

480 Public Health Problems (2-6) **Staff**
Special assignments in the field of public health for interested students. Prerequisite, permission. (Offered by arrangement.)

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) **Powers, 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**
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.

RADIO-TELEVISION

(See School of Communications, page 73)

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 an elective curriculum with a major in French, Italian, or Spanish, as well as courses in Portuguese and literature courses in English. It also offers first and second teaching areas in French and Spanish for stu-

dents 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 103).

The first two high school years of French or Spanish correspond to courses 101-102, and 103; the third high school year corresponds to courses 201, 202, and 203; and a fourth high school year, if devoted to advanced composition and conversation, corresponds to courses 301, 302, and 303. Students who have had one high school semester of French should begin with 101; two or three semesters, 103; four semesters, 201. Students who have had one high school semester of Spanish should begin with 101; two semesters, 121-201; three semesters, 103 or 121-201; four semesters, 201.

Students who are uncertain about proper placement in beginning courses may take a departmental language test. Any of the prerequisites for these courses may be waived at the instructor's discretion, and students with A or high B standing are encouraged to skip one or more quarters between 101 and 301.

The Department may grant terminal credit for courses numbered 101, but not 121, to students not majoring in language.

BACHELOR OF ARTS

The general requirements for graduation with a major in a Romance language are proficiency in the language and knowledge of the literature and culture of France, Spain, or Italy, as outlined in syllabi obtainable from the Department.

In all curricula, credits may be arranged for study abroad, preferably during the junior year, subject to the regulations governing transfer credit and provided the student's plan is approved in advance by the Registrar's Office and by the departments in which he is studying. Summer study abroad is encouraged and the Department of Romance Languages and Literature sponsors one set of study tours.

The Department recommends that students majoring in a Romance language elect the natural and social science sequences in the General Education program to fulfill group requirements, and the art and philosophy sequences in that program to acquire a background for literature courses.

FRENCH MAJOR. Forty-five credits in French are required, including courses 201, 202, and 203 (or a third high school year of French); 301, 302, and 303 (or a fourth high school year of French); 304, 305, and 306; either 327, 328, 329, or 330; 341, 358, and 359; and 12 elective credits in courses numbered above 400. Some directed reading is also required.

ITALIAN MAJOR. A program of studies is made for each student. The programs are similar to those in French and Spanish, but include more supervised study and courses offered in English, supplemented by reading and conferences in Italian and by work in the language laboratory.

SPANISH MAJOR. Forty-five credits in Spanish are required, including courses 201, 202, and 203; 212, 213, or 214; 301, 302, and 303; 304, 305, and 306; 358 and 359; and 15 elective credits in courses numbered above 400. Some directed reading is also required.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin*. A knowledge of Latin and an acquaintance with masterpieces of other literatures are strongly recommended for all candidates. The Department requires that every thesis be submitted at least four weeks before the end of the quarter in which the degree is to be granted.

MASTER OF ARTS. The requirements are: at least 36 credits divided between major and minor subjects, 20 of which must be in courses numbered 500 or above; a

knowledge of representative literary works such as those listed in syllabi obtainable from the Department (the M.A. and B.A. syllabi for an M.A. major and the B.A. syllabus for an M.A. minor); and oral proficiency in the major language.

DOCTOR OF PHILOSOPHY. The requirements are: at least 90 credits, 45 of which must be in the major subject, 30 in the first minor, and 15 in the second minor (two-thirds of these credits must be in courses numbered 500 or above); a knowledge of the history of two Romance languages (this requirement may be fulfilled by completion of Romance Linguistics 505, 506, and 507, supplemented by French 512 and 513, Spanish 511, 512, and 513, or Italian 512 and 513); the history of three Romance literatures as outlined in at least the B.A. syllabus; a knowledge of representative literary works such as those listed in the syllabi (the Ph.D., M.A. and B.A. syllabi for the Ph.D. major, the M.A. and B.A. syllabi for the first minor, and the B.A. syllabus for the second minor); and oral proficiency in the major language.

When a Romance language is used as a minor for the doctoral degree, the requirements are at least the same as for the undergraduate major in that language and literature.

COURSES FOR UNDERGRADUATES

FRENCH

101-102, 103 Elementary (5-5,5) — **Staff**
Prerequisite for 103 is 102, or two or three high school semesters, or equivalent.

101-102 Elementary (10) — **Staff**

105-106 Elementary (5-5) — **Staff**
Designed for the rapid acquisition of a reading knowledge of French. No auditors. Prerequisite, graduate standing or permission. See 207.

130 Conversational French (1-2) — **Iverson**
For participants in the group living programs only. Prerequisite, 103. (Offered Summer Quarter only.)

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) — **Whittlesey**
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) — **Chessex, David**
For majors and others admitted by the instructor. Prerequisite, 301 or equivalent.

330 Conversational French (1-2) — **Staff**
For participants in the group living program only. Prerequisite, 203. (Offered Summer Quarter only.)

337, 338, 339 Upper-Division Scientific French (2,2,2) — **Whittlesey**
Individual conferences; students read material in their own fields. Prerequisite, 237, 238, or 239 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) **Keller, C. Wilson, Guiguet**
421: Classical Prose. (Offered 1953-54.)
422: Eighteenth-Century and Romantic Prose. (Offered 1953-54.)
423: Contemporary Prose. (Offered 1954-55.)
Prerequisite, 203 or equivalent.

424, 425, 426 Modern Prose Fiction (3,3,3) **David, C. Wilson, Nostrand**
424: The Novel, 1800-1850. (Offered 1954-55.)
425: The Novel, 1850-1900. (Offered when demand is sufficient.)
426: The Novel, 1900-1950. (Offered when demand is sufficient.)
Prerequisite, 203 or equivalent.

431, 432, 433 Lyric Poetry (3,3,3) **Creore, Nostrand, David**
431: Renaissance Poetry. (Offered 1953-54.)
432: Romantic Poetry. (Offered 1954-55.)
433: Parnassians, Symbolists, and Contemporary Poetry. (Offered when demand is sufficient.)
Prerequisite, 203 or equivalent.

441, 442, 443 Drama (3,3,3) **Chessex, Nostrand, Creore**
441: Classical Tragedy. (Offered when demand is sufficient.)
442: Romantic Drama. (Offered when demand is sufficient.)
443: Modern Drama. (Offered 1953-54.)
Prerequisite, 203 or equivalent.

444, 445, 446 Drama (3,3,3) **Chessex, C. Wilson**
444: Molière. (Offered 1953-54.)
445: Eighteenth-Century Comedy. (Offered 1954-55.)
446: Modern Comedy. (Offered 1954-55.)
Prerequisite, 203 or equivalent.

451, 452, 453 Moralists and Essayists (3,3,3) **Keller, David, Guiguet**
451: Montaigne. (Offered 1954-55.)
452: From Montesquieu to Comte. (Offered 1954-55.)
453: Essayists of the Twentieth Century. (Offered when demand is sufficient.)

482 French Literary Criticism (2) **Nostrand**
(Offered alternate years; offered 1953-54.)

ITALIAN

101-102, 103 Elementary (5-5,5) **Goggio**

210, 211 Elementary Italian Conversation (2,2) **Goggio**
Prerequisites, 103 or permission for 210; 210 for 211.

311, 312, 313 Modern Italian Literature (2-3,2-3,2-3) **Goggio**
Prose and poetry of the eighteenth and nineteenth centuries; composition. Prerequisites, 103 or 102 with a grade of B, or permission. (Offered alternate years; offered 1954-55.)

321, 322, 323 Masterpieces of Italian Literature (2,2,2) **Goggio**
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. Prerequisite, 102 or permission. (Offered alternate years; offered 1953-54.)

390 Supervised Study (2-5, maximum 20) **Goggio**
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

301 Romance Linguistics (3) **Peruzzi**
The origin and development of the Romance languages, with particular emphasis on their contribution to English. The main principles of linguistics as applied in the Romance languages. Prerequisite, junior standing or the equivalent of one college year of a Romance language or Latin.

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.

105-106 Elementary (5-5) **Staff**
Designed for the rapid acquisition of a reading knowledge of Spanish. No auditors. Prerequisite, graduate standing or permission. (Offered alternate years; offered 1954-55.)

121- Basic Grammar Review (5-) **Staff**
Refresher course; should be taken instead of 103 by students who have received a grade lower than C in 102 and by students with two semesters of Spanish in high school. No student may receive credit for both 103 and 121-; nor will credit be granted for 121- until 201 or equivalent has been completed.

130 Conversational Spanish (1-2) — **Staff**
For participants in the group living program only. Prerequisite, 103. (Offered Summer Quarter only.)

201, 202, 203 Intermediate (3,3,3) — **Staff**
Modern texts, composition and functional grammar. Prerequisite for 201 is Spanish 103 or 121, or four high school semesters or equivalent.

210, 211 Elementary Spanish Conversation (2,2) — **W. Wilson**
Prerequisites, 103 or 121 or equivalent for 210; 210 or permission for 211.

212, 213, 214 Modern Readings (2,2,2) — **Staff**
Intensive reading of modern prose and drama; acquisition of an extensive passive vocabulary. Prerequisite, 203 (which may be taken concurrently).

301, 302, 303 Advanced Composition and Conversation (3,3,3) — **W. Wilson**
Prerequisite, 203 or equivalent.

304, 305, 306 Survey of Spanish Literature (2,2,2) — **Staff**
From early times to the present. Prerequisite, 212 (which may be taken concurrently with 304).

327, 328, 329 Advanced Conversation (2,2,2) — **Staff**
Prerequisite, 302 or permission.

330 Conversational Spanish (1-2) — **Chang-Rodriguez**
For participants in the group living program only. Prerequisite, 203 or equivalent. (Offered Summer Quarter only.)

358, 359 Advanced Syntax (2,2) — **W. Wilson**
Elementary principles of philology and their application to teaching; difficulties of Spanish grammar from the teacher's point of view. Prerequisite, 302 or equivalent.

390 Supervised Study (2-5, maximum 20) — **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. Prerequisite, 203 or equivalent. (Offered alternate years; offered 1954-55.)

451, 452, 453 Spanish Literature Since 1700 (3,3,3) — **W. Wilson**
Prerequisite, 203 or equivalent. (Offered alternate years; offered 1953-54.)

461, 462, 463 Spanish Literature of the Golden Era (3,3,3) — **W. Wilson**
Poetry, drama, historical narrative, prose fiction. Prerequisite, 203 or equivalent. (Offered alternate years; offered 1953-54.)

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. Prerequisite, 203 or equivalent. (Offered alternate years; offered 1954-55.)

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.
Prerequisite, 203 or equivalent. (Offered alternate years; offered 1953-54.)

484 The Romantic Movement in Spanish-American Literature (3) — **Garcia-Prada**
A study of the leading romantic writers of Spanish America (1830-1890). Prerequisite, 203 or equivalent. (Offered alternate years; offered 1953-54.)

485 The Costumbrista Movement in Spanish-American Literature (3) — **Garcia-Prada**
A study of the leading Costumbrista writers of Spanish America (1860-1900). Prerequisite, 203 or equivalent. (Offered alternate years; offered 1954-55.)

486 The Modernista Movement in Spanish-American Literature (3) — **Garcia-Prada**
A study of the leading poets, essayists, and novelists of Spanish America (1890-1920). Prerequisite, 203 or equivalent. (Offered alternate years; offered 1954-55.)

487 The Contemporary Spanish-American Novel (3) — **Garcia-Prada**
Prerequisite, 203 or equivalent. (Offered alternate years; offered 1954-55.)

COURSES IN ENGLISH

French

218 French Literature in English (5) — **Chessex**
A study of the evolution of ideas in France through the reading of outstanding French masterpieces.

Italian

218 Italian Literature in English (5) — **Peruzzi**
A study of the evolution of ideas in Italy through the reading of outstanding Italian masterpieces.

384 Renaissance Literature of Italy in English (2) **Goggio**
Lectures and collateral reading. May be counted as an elective in an English major or minor.

481, 482 Dante in English (2,2) **Goggio**
The thought and expression of the *Divine Comedy* against its background of medieval philosophy and art. May be counted as an elective in an English major 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.

COURSES FOR GRADUATES ONLY

FRENCH

501 Studies in Renaissance Prose (5) **Keller**
Rabelais and Montaigne. (Offered 1954-55.)

502 Studies in Renaissance Poetry (5) **Creore**
The Pléiade. (Offered 1953-54.)

512 Old French Reading (3) **Peruzzi**
Reading of material illustrative of phonological and morphological principles.

513 Old French Literature (3) **Simpson**
Literary backgrounds; reading and discussion of selected texts.

531 Literary Problems (2-5, maximum 20) **Staff**
Work to be done through conference. Field must be indicated in registration.
A. Middle Ages C. Classic Period E. Nineteenth Century
B. Renaissance D. Eighteenth Century F. Twentieth Century

580 Explication de Texte (3) **Guiguet**
Close study of short pieces of French prose and poetry to develop a method of literary analysis which relates biographical, historical, and aesthetic details and brings them all to bear upon the appreciation of a literary selection. Lectures, discussions, and student *explications.*

600 Research (2-5, maximum 20) **Staff**

Thesis (*) **Staff**

ITALIAN

512 Old Italian Reading (3) **Peruzzi**
Reading of material illustrative of phonological and morphological principles. Supplements Romance Linguistics 505, 506, and 507.

521, 522, 523 Italian Literature of the Twelfth to Fifteenth Centuries (2-5,2-5,2-5) **Goggio**
(Offered alternate years; offered 1954-55.)

531, 532, 533 History of Old Italian Literature (2-5,2-5,2-5) **Goggio**
(Offered alternate years; offered 1953-54.)

600 Research (2-5, maximum 20) **Staff**

Thesis (*) **Staff**

PROVENCAL

534 Old Provencal (3) **Simpson**

ROMANCE LINGUISTICS AND LITERATURE

505, 506, 507 Romance Linguistics (2,2,2) **Peruzzi**
Linguistics as a physical and social science. Brief history of the Romance languages and present-day problems of Romance linguistics.

581, 582, 583 Problems and Methods of Literary History (2,2,2) **Nostrand**
The philosophies of literary history and of 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 1954-55.)

590 Research in Comparative Romance Literature (2-5, maximum 20) — **Staff**

599 Research in Romance Linguistics (2-5, maximum 20) — **Peruzzi**

Thesis (*) — **Staff**

SPANISH

511 The Poema de Mio Cid (3) — **W. Wilson**
An intensive study of the *Poema de Mio Cid.*

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 1953-54.)

513 The Spanish Ballad (3) — **Staff**
The origin and evolution of the Spanish ballad. (Offered 1954-55.)

521 The Renaissance in Spain (5) — **Staff**
(Offered alternate years; offered 1953-54.)

531 Literary Problems (2-5, maximum 20) — **Staff**
Work to be done through conference. Field must be indicated in registration.
A. Middle Ages
B. Renaissance
C. Golden Age
D. Eighteenth Century
E. Nineteenth Century
F. Twentieth Century
G. Spanish Colonial Literature
H. Latin America

581 Spanish Historical Grammar (5) — **Staff**
(Offered alternate years; offered 1953-54.)

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 100-101 and 102 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 100-101, 102, 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 100-101, 102, 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

100-101, 102 Elementary Danish (3-3,3) — **Staff**
Fundamentals of oral and written Danish (Offered alternate years; offered 1953-1954)

104-105, 106 Danish Reading (2-2,2) — **Staff**
(Offered alternate years; offered 1954-1955.)

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

100-101, 102 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

100-101, 102 Elementary Norwegian (3-3,3) **Arestad**
Fundamentals of oral and written Norwegian.

104-105, 106 Norwegian Reading (2-2,2) **Staff**

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

100-101, 102 Elementary Swedish (3-3,3) **Johnson**
Fundamentals of oral and written Swedish.

104-105, 106 Swedish Reading (2,2,2) **Staff**

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, Johnson**

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 in physiology or biology be included in undergraduate work.

A number of social work courses are available to upper-division students. These courses are intended for students who have a general interest in the study of social welfare services as well as those who are interested in employment in social agencies.

Seniors planning to enter the School of Social Work should make application early in the spring preceding the fall in which they wish to begin their professional training, because enrollment is limited (see 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.

301 Social Security and Social Work (3) — **McCullough**
Changing concepts as reflected in reports on, and legislation for, the care and treatment of dependent persons; development and present responsibility of welfare agencies, with special reference to the state of Washington.

302 Problems of Child Welfare (3) — **Staff**
Social welfare programs relating to the well-being of children, including standards and objectives of foster home care, adoptions, and institutional placements, as well as measures affecting children in their own homes.

303 Introduction to Case Work in Public Assistance (3) — **Staff**
Application of principles and policies in effective public assistance practice.

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.

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.

SOCIOLOGY

Executive Officer: GEORGE A. LUNDBERG, 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, involving a state-wide staff of trained interviewers who survey samples of the population, 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 of Sociology 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 2.0 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 organization; and social disorganization.

MASTER OF ARTS. Candidates must complete an approved program in advanced sociology courses and a minor in a related field. At least 10 of the sociology credits must be in courses numbered 500 and above. Candidates must take a final examination in two fields of sociology and a separate examination in the minor given by the department in which the minor courses are 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 those two languages are the usual requirement. The language requirement must be met at least nine months before the degree is to be granted.

Candidates take a preliminary written examination covering four fields of specialization, 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) — **Schrag, Staff**
Basic principles of social relationships. Primarily for freshmen and sophomores. Not open to students who have taken 310.

223 Social Statistics (5) — **Cohen, Bowerman, Miyamoto, Dornbusch**
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, Dornbusch**
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. Primarily for architecture students, but open to others.

270 Survey of Contemporary Social Problems (5) — **Faris, Staff**
Analysis of the processes of social and personal disorganization and reorganization in relation to poverty, crime, suicide, family disorganization, mental disorders, and similar social problems. Prerequisite, 110 or 310.

310 General Sociology (5) — **Schrag, Staff**
Major concepts and the scientific point of view in dealing with social phenomena. Primarily for juniors and seniors. Not open to students who have taken 110.

324 Machine Techniques in Research (3) — **Staff**
Theory and practice of mechanical and electronic tabulating and calculating machines in statistics and research. Prerequisite, 10 credits in statistics. (Not offered 1953-54.)

331 Population Problems (5) — **Graalfs**
Major quantitative and qualitative problems of population in contemporary society. Prerequisite, 110 or 310.

352 The Family (5) — **Bowerman, Dornbusch**
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) — **Armstrong**
Interracial contacts and conflicts. Prerequisite, 10 credits in social science.

364 Rural Community (5) — **Armstrong**
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) — **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) — **Dornbusch**
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.

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) **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. Prerequisite, Sociology 223 or approved equivalent. Offered jointly with the Department of Geography.

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, Measurement, and Prediction (3) **Camilleri**
Application of statistical principles and methods to problems of classification, measurement, and prediction in social research. Prerequisite, 423 or equivalent.

428 Sampling and Experimentation (5) **Camilleri**
Application of statistical principles and methods to problems of sampling and experimentation in social research. Prerequisite, 423 or equivalent.

430 Human Ecology (5) **Schmid, Cohen**
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 1953-54.)

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**
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) **Staff**
(Not offered 1953-54.)

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) **Staff**
(Not offered 1953-54.)

457 Japanese Social Institutions (3) **Staff**
(Not offered 1953-54.)

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 (3) **Armstrong**
Analysis of societal organization based on sex, age, residence, occupation, community, class, caste, and race. Prerequisite, 110 or 310.

463 American Negro Community (3) **Armstrong**
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) — **Staff**
(Not offered 1953-54.)

472 Juvenile Delinquency (5) — **Schrag**
Family and community backgrounds; institutional treatment; juvenile court and probation; programs for prevention. Prerequisite, 371 or equivalent.

473 Penology (5) — **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) — **Staff**
Monthly meetings with reports on independent research by graduate students and staff members.

517 Systematic Sociology Seminar (3) — **Lundberg**
(Not offered 1953-54.)

521, 522 Seminar in Methods of Sociological Research (3,3) — **Lundberg**
Prerequisites, 223, 414, and 420, or equivalents.

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 1953-54.)

543 Communications Seminar (2) — **Staff**
(Not offered 1953-54.)

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) — **Staff**
(Not offered 1953-54.)

562 World Survey of Race Relations (3) — **Armstrong**
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.

572 Analysis of Criminal Careers (3) — **Schrag**
Personal and social factors in criminal maturation and reformation. Prerequisite, 371 or equivalent.

573 Crime Prevention (3) — **Hayner**
Prerequisite, 371 or equivalent.

599 Readings in Selected Fields (2-5, maximum 5) — **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 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.

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 train-

ing 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 50 credits in approved speech courses are required. These must include: Speech 100, 120, 210, 400, 498, and one of the workshop courses (339, 349, 369, 474, or 484). In addition, the student takes approved courses in humanities, social sciences, and natural sciences. During the junior and senior years he may specialize in one or more of the areas of speech study.

MASTER OF ARTS

Students who intend to work toward the master's degree must meet the requirements of the Graduate School as outlined in the *Graduate School Bulletin.*

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.

498 Senior Seminar in Speech (2) — **Rahskopf, Nelson**

499 Undergraduate Research (2-5) — **Staff**
Prerequisite, permission. Field must be indicated in registration.

A. Voice and Phonetics
B. Public Address
C. Oral Interpretation
D. Radio Speech
E. Speech Correction and Hearing

VOICE AND PHONETICS

110 Voice and Articulation Improvement (3) — **Tiffany in Charge**
Training in voice and articulation.

210 Introduction to Phonetics (5) — **Tiffany**
An introduction to the sound system of English, with a description of the speech mechanism and the phenomena of vocal tone. 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 Speech 495. Prerequisite, 5 credits in anatomy, physiology, or zoology. (Offered alternate years; offered 1954-55.)

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 Speech 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 and on psychological factors in public speaking. Prerequisite, 120.

425, 426 Public Speaking in America (5,5) **Baskervillo**
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; 426 offered 1953-54.)

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) **Goldstein in Charge**
Development of fundamental techniques for analysis and reading aloud of prose and poetry.

345 Choral Speaking (3) **Goldstein**
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 1953-54.)

349 Workshop in Oral Interpretation (2, maximum 6) **Goldstein**
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) **Goldstein**
Problems of interpretation peculiar to various types of literature. Needs and interests of specific audiences, and definite themes or points of view. Includes directed listening projects. Prerequisite, 240 or permission.

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) **Staff**
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 (5) **Grayum**
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, Hogan**
Basic microphone techniques, reading of scripts, announcing, interviews, and talks. Special attention to voice and diction. Prerequisite, 110 or 240.

361 Advanced Radio Speech (3) **Bird, Hogan**
Analysis of audience situations, group discussions, and audience participation programs. Prerequisite, 260.

369 Radio Speech Workshop (2, maximum 6) **Bird, Hogan**
Radio speech performance, with an opportunity for supervised experience in actual broadcasting. No more than 4 credits may be earned in one year. Prerequisites, 261 and permission.

462 Radio Production Methods (3) **Bird**
Sound effects, music in broadcasts, studio setup, timing, cutting of scripts, and direction of programs. Prerequisites, 260 and 361.

463 Radio Program Building (3) **Bird**
Adaptation of literary, informational, and persuasive material for radio. Prerequisites, 260 and 361.

SPEECH CORRECTION

N79 Speech Clinic (0) — **Staff**
A. Articulation Problems
B. Foreign Dialect
C. Stuttering
D. Voice Problems
E. Hearing Problems

470, 471 Speech Correction (5,5) — **Carroll, 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.

473 Diagnostic Methods in Speech Correction (2) — **Holliday**

474 Clinical Training in Speech Correction (1-5, maximum 15) — **Staff**
Total undergraduate credits in 474 and 484 together cannot exceed 20. Prerequisites, 471 and 473 (473 may be taken concurrently).

475 Stuttering (2) — **Carroll**
Nature, etiology, and treatment of stuttering. Prerequisite, 470 or permission.

HEARING

480 Introduction to Hearing (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.

481 Methods in Aural Rehabilitation (5) — **Palmer**
Prerequisite, 480.

484 Clinical Practice in Aural Rehabilitation (1-5, maximum 15) — **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.

522 Studies in Modern Rhetoric (5) — **Pence**
Critical analysis of writings on rhetoric by Cox, Wilson, Bacon, Campbell, Blair, Whately, and others. Prerequisite, 521.

540 Studies in Oral Interpretation (3) — **Goldstein**
Critical analysis of writings by Sheridan, Walker, Rush, Delsarte, Bell, Curry, Emerson, and others. Prerequisite, 440.

571, 572, 573, 574 Organic Disorders of Speech (3,3,3,3) — **Carroll**
Etiology, diagnosis, and therapy. 571: dysarthria, especially cerebral palsy. (Offered alternate years; offered 1953-54.) 572: aphasia. (Offered alternate years; offered 1954-55.) 573: pathologic disorders of voice. (Offered alternate years; offered 1953-54.) 574: morphogenic disorders, especially cleft palate and dental malocclusions. (Offered alternate years; offered 1954-55.) 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. Under-

graduate 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, 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, 402, and 403 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, 453-454 or 456, 400, and Biology 351 or 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.

A year of college mathematics and a reading knowledge of a second modern foreign language are highly recommended.

Students in this curriculum must present an over-all grade-point average of 2.5 and a 3.0 grade-point average in all courses in zoology.

ADVANCED DEGREES

Students who intend to work toward the advanced degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School 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.

351 Human Genetics (3) — **Roman**
Genetics of man for premedical students and those majoring in anthropology, psychology, and related fields dealing with human variation. Prerequisites, Botany or Zoology 111, or equivalent, and junior standing.

401 Cytology (3) — **Hsu**
Structure and function of the cell. Prerequisite, permission.

401L Cytology Laboratory (2) — **Hsu**
Must be accompanied by 401.

408 Cellular Physiology (3) — **Whiteley**
Functional aspects of protoplasmic structures. Prerequisite, Zoology 400 or permission.

408L Cellular Physiology Laboratory (2) — **Whiteley**
Must be accompanied by 408. Prerequisite, permission.

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. 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 1953-54.)

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.

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, inheritance, evolution, and ecology of animals. 111: cellular biology, invertebrate phyla through molluscs. 112: annelids, anthropods, echinoderms, chordates. Prerequisite, 111 or equivalent.

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.

208 Elementary Human Physiology (5) **Staff**
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. Prerequisites, 112 or 10 credits in biological sciences. (Offered Summer Quarter only.)

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 (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.

416 Chemical Embryology (3) **Whiteley**
Prerequisite, permission. (Offered alternate years; offered 1954-55.)

416L Chemical Embryology Laboratory (2) **Whiteley**
Must be accompanied by 416.

417 Chemical Embryology (3) **Whiteley**
Prerequisite, permission. (Offered alternate years; offered 1953-54.)

417L Chemical Embryology Laboratory (2) **Whiteley**
Must be accompanied by 417.

423 General Protozoology (5) **Osterud**
Introduction to the morphology, classification, and life histories of the Protozoa. Prerequisite, 112 or permission.

433, 434 Invertebrate Zoology (5,5) **Illg, Ray**
Morphology and phylogeny of invertebrates exclusive of terrestrial arthropods. Prerequisites, 111 and 112.

435J Parasitology (5) **Osterud, Gustafson**
A general course covering the principles of parasitism and the major groups of animal parasites. Prerequisite, 112 or permission. Offered jointly with the Department of Microbiology. (Offered alternate years; offered 1953-54.)

438 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.

438L Comparative Invertebrate Physiology Laboratory (2) **Passano**
Must be accompanied by 438.

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**
Prerequisite, permission.

463 Natural History of Amphibia and Reptiles (5) **Svihla**
Systematics, distribution, and speciation. Prerequisites, 111 and 112. (Offered alternate years; offered 1953-54.)

464 Natural History of Birds (Ornithology) (5) **Staff**
Prerequisites, 111 and 112. (Offered alternate years; offered 1954-55.)

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 (3-5) **Staff**
Prerequisites, 30 credits in zoology and permission.

COURSES FOR GRADUATES ONLY

BIOLOGY

501 Advanced Cytology (5) **Staff**
(Offered alternate years; offered 1953-54.)

ZOOLOGY

506 Topics in Experimental Embryology (6, maximum 12) **Staff**
Prerequisite, permission. (Offered at Friday Harbor during Summer Quarter only.)

520, 521, 522 Seminar (1,1,1) **Staff**

528 Experimental Protozoology (4) **Osterud**
Cultivation; identification; cytology; physiology and genetics; general literature and current research in protozoology. Prerequisite, 423 or equivalent. (Offered alternate years; offered 1954-55.)

533 Advanced Invertebrate Zoology (6) **Staff**
The rich and varied invertebrate fauna of the San Juan Archipelago, emphasizing systematics and ecology; opportunity for developing individual research problems. Prerequisite, 10 credits in invertebrate zoology or equivalent. (Offered at Friday Harbor during Summer Quarter only.)

536 Advanced Invertebrate Embryology (6) **Staff**
Morphological and experimental studies of development of selected types of marine invertebrates. Prerequisites, 433, 434, and 456. (Offered at Friday Harbor during Summer Quarter only.)

538 Advanced Invertebrate Physiology (6) **Staff**
Physiological bases of ecology, evolution, and tolerance to stress, as illustrated by many diverse forms. Prerequisites, chemistry through organic and 10 credits in invertebrate zoology or equivalent. (Offered at Friday Harbor during Summer Quarter only.)

558 Comparative Vertebrate Physiology (6) **Martin**
Advanced studies with particular reference to cold-blooded vertebrates and to birds. Prerequisite, 400 or equivalent.

573 Topics in Limnology (2) **Edmondson**
May be repeated for credit.

600 Research (*) **Staff**

Thesis (*) **Staff**

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 48). 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, then serve two years on active duty when called and six additional years in a reserve organization.

First-year Air Force ROTC students are given a thorough indoctrination course in aviation, 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 produce professionally qualified 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 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. In the first quarter of the second year, students specialize in flight operations, technical training, communications, maintenance engineering, or administration and supply. 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 a month. While attending summer camp they are paid at the rate of $75 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 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; moral and statutory 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, the air ocean, bases, and people; 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.

451 Air Science IV—Advanced (Flight Operations) (3) **Staff**
Air navigation; meteorology; theory of radar; electronic countermeasure methods; atomic energy and radiological defense; field laboratory for leadership.

461 Air Science IV—Advanced (Air Force General Technical Training) (3) **Staff**
Atomic theory and radiological defenses; guided missiles; new technological developments; familiarization and use of technical publications; Air Force technical research and development; field laboratory for leadership.

471 Air Science IV—Advanced (Air Force Communications) (3) **Staff**
Communications organization; command and administration; inspection; training; communications centers and systems; field laboratory for leadership.

481 Air Science IV—Advanced (Aircraft Maintenance Engineering) (3) **Staff**
Aircraft maintenance engineering; the air inspector and service equipment; engine operation and conditioning; cruise control and test flight; field laboratory for leadership.

491 Air Science IV—Advanced (Administration and Supply) (3) **Staff**
Air Force management; military teaching methods; the air inspector general; military law and boards; officer development; career development; staff; personnel administration; the air comptroller; field laboratory for leadership.

492, 493 Air Science IV—Advanced (General) (3,3) **Staff**
Air Force administration; Air Force inspector general; military teaching methods; Air Force career development; military law and boards; Air Force management; military customs; field laboratory for leadership.

MILITARY SCIENCE AND TACTICS

Professor of Military Science and Tactics: RAY M. O'DAY, 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.

The Department of Military Science and Tactics also offers a series of courses in Medical Corps subjects for students in the School of Medicine. (These courses are described in the bulletin of the School of Medicine.)

Courses in the first year of the basic program require classroom attendance two hours each week. First-year students are also introduced to the principles of leadership and exercise of command through practice of basic elements of drill one hour each week. Second-year students may specialize in Infantry, Antiaircraft Artillery, Quartermaster Corps, Transportation Corps, or Corps of Engineers. 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.

A further requirement for students who intend to enter the Corps of Engineers is enrollment in a curriculum leading to an engineering or other scientific degree.

Courses in the advanced program are continuations of the specialties selected in the second year of the basic program. These courses require classroom attendance four hours a week, plus one hour of practice in leadership, drill, and exercise of command. 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 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, 121, 141 Military Science I—Basic (Infantry, Antiaircraft, Artillery, Quartermaster Corps, Transportation Corps, Corps of Engineers) (2,2,2) **Staff**
Military organization; military policy of the United States; the National Defense Act and ROTC; evolution of warfare; map reading; individual weapons and marksmanship; first aid and hygiene; leadership, drill, and exercise of command.

201, 221, 241 Military Science II—Basic (Infantry) (2,2,2) **Staff**
Leadership, drill, and exercise of command; organization; weapons; marksmanship; technique of fire of the rifle squad; combat formations; observing and patrolling; tactics of the rifle squad.

202, 222, 242 Military Science II—Basic (Antiaircraft Artillery) (2,2,2) **Staff**
Leadership, drill, and exercise of command; introduction to antiaircraft artillery automatic weapons; characteristics, capabilities, and limitations of antiaircraft artillery automatic weapons; service of the automatic weapons fire unit; introduction to antiaircraft artillery guns; characteristics, capablities, and limitations of 90-mm. antiaircraft artillery guns; service of 90-mm. antiaircraft artillery guns; map reading; introduction to field artillery.

203, 223, 243, Military Science II—Basic (Quartermaster Corps) (2,2,2) **Staff**
Leadership, drill, and exercise of command; organization for supply; organization and functions of the Quartermaster Corps; classification of supplies; use of supply catalogues and bases of allowances; property accountability and responsibility; research and development of supply in the Quartermaster Corps; organization, functions, and operation of quartermaster units; unit and organizational supply.

204, 224, 244 Military Science II—Basic (Transportation Corps) (2,2,2) **Staff**
Leadership, drill, and exercise of command; introduction to the Transportation Corps; economics of transportation; military highway transport; convoy operation; organization and operation of railroads (continental United States); tactics of the individual soldier.

205, 225, 245 Military Science II—Basic (Corps of Engineers) (2,2,2) **Staff**
Leadership, drill, and exercise of command; history and traditions of the Corps of Engineers; characteristics of weapons; camouflage; defense against chemicals; explosives and demolitions; hand tools and rigging; mines and booby traps; organization and tactics of small units; organization of ground and field fortifications.

301, 321, 341 Military Science III—Advanced (Infantry) (3,3,3) **Staff**
Leadership, drill, and exercise of command; organization; weapons; gunnery; communications; combat intelligence; estimates of battle situations and combat orders; field fortifications; tactics of the rifle and heavy weapons platoon and companies.

302, 322, 342 Military Science III—Advanced (Antiaircraft Artillery) (3,3,3) **Staff**
Leadership, drill, and exercise of command; antiaircraft artillery tactics; basic gunnery—antiaircraft guns and automatic weapons; communications; motors and transportation; organization; troop movements; map reading; field artillery tactics.

303, 323, 343 Military Science III—Advanced (Quartermaster Corps) (3,3,3) **Staff**
Leadership, drill, and exercise of command; storage and warehousing; procurement, storage, and distribution of petroleum products; food service, bakery, commissary, laundry, and salvage operations; graves registration; station and depot supply; individual weapons and marksmanship.

304, 324, 344 Military Science III—Advanced (Transportation Corps) (3,3,3) **Staff**
Leadership, drill, and exercise of command; organization of a theater of war and transportation staff sections; military railway service; movements; airlift planning and operations; port operations in continental United States and overseas; stevedore operations; harborcraft and marine maintenance; highway transport service operations; individual weapons and marksmanship; tactics of a rifle squad; tactics of the rifle and heavy weapons platoons and companies.

305, 325, 345 Military Science III—Advanced (Corps of Engineers) (3,3,3) **Staff**
Leadership, drill, and exercise of command; bridge design and classification; engineer signal communications; engineer combat intelligence; engineer supply; military roads and runways; organization of engineer units; organization of combat divisions; tactics of engineer units; vehicle operation and maintenance; water supply; barrier planning; technique of fire.

360 Military Science III—Advanced Camp (3) **Staff**
Six weeks' training at an army base; intensive study in the field of specialization. (Offered Summer Quarter only.)

401, 421, 441 Military Science IV—Advanced (Infantry) (3,3,3) **Staff**
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; organization; command and staff; communications; motors and transportation; supply and evacuation; troop movements; new developments in weapons, aircraft, and naval craft; the military team; tactics of the infantry battalion in attack and defense.

402, 422, 442 Military Science IV—Advanced (Antiaircraft Artillery) (3,3,3) **Staff**
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; antiaircraft artillery matériel; advanced antiaircraft artillery tactics; command and staff; combat intelligence; gunnery; the military team; new developments in artillery matériel and guided missiles; Air Force and Navy developments; supply and evacuation; field artillery capabilities and use; map reading.

403, 423, 443 Military Science IV—Advanced (Quartermaster Corps) (3,3,3) **Staff**
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; fiscal procedures; procurement procedures; command and staff; combat intelligence; technical intelligence; organization and functions of the combatant arms; organization and funtions of the technical services; quartermaster operations in the zone of the interior; quartermaster operations in the theater of operations.

404, 424, 444 Military Science IV—Advanced (Transportation Corps) (3,3,3) **Staff**
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; military railway service in a theater of operations; highway regulation and traffic planning; movement control in a theater of operations; logistics; supply and property; command and staff; combat and transportation intelligence; the Transportation Corps officer; special defensive operations.

405, 425, 445 Military Science IV—Advanced (Corps of Engineers) (3,3,3) **Staff**
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; engineer support for the Air Force; engineer support for the communication zone; engineer support for the field army; command and staff; construction, utilities, and job management; motor movements; river crossing operations.

NAVAL SCIENCE

Professor of Naval Science: ARTHUR C. WOOD, 309 Clark Hall

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 a hundred 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 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

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 engnes; 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.

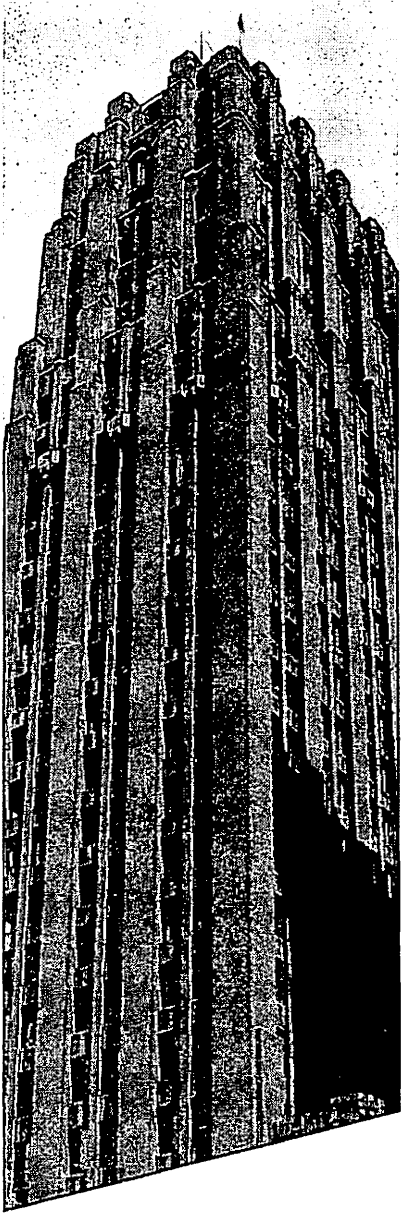
312S Advanced Naval Accounting, Basic Supply Afloat (4) **Staff**
Reports and returns; property and stores accounting; organization and administration of supply afloat; material identification, classification, and allowance.

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 **BUSINESS ADMINISTRATION** 1953-1955

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 home 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
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
DIVISION OF HEALTH SCIENCES
  SCHOOL OF DENTISTRY
  SCHOOL OF MEDICINE
  SCHOOL OF NURSING
  COLLEGE OF PHARMACY
SCHOOL OF LAW

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT
SUMMER QUARTER ANNOUNCEMENT
HOME STUDY
EXTENSION CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 875
November, 1953

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

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

AUTUMN QUARTER, 1953

REGISTRATION PERIOD

SEPT. 8-SEPT. 29	Registration for students in residence Spring Quarter, 1953. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 25, but no later than September 18.*)
SEPT. 11-SEPT. 29	Registration for former students not in residence Spring Quarter, 1953. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 25, but no later than September 18.*)
SEPT. 14-SEPT. 25	Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (*August 28 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. 14-SEPT. 29	Registration for new transfer students with at least full sophomore standing. (*August 28 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—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—WEDNESDAY	Instruction begins (8 a.m.) for all other students
OCT. 2—FRIDAY	President's Convocation (11 a.m.)
OCT. 6—TUESDAY	Last day to add a course
NOV. 11—WEDNESDAY	Armistice and Admission Day holiday
NOV. 26-NOV. 29	Thanksgiving recess
DEC. 18—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1954

REGISTRATION PERIOD

NOV. 23-DEC. 11	Registration for students in residence Autumn Quarter, 1953. (*Registration appointments will be issued on presentation of ASUW cards beginning October 23.*)
DEC. 29-DEC. 31	Registration for former students not in residence Autumn Quarter, 1953. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 19.*)
DEC. 29-DEC. 31	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. 4—MONDAY	Instruction begins
JAN. 8—FRIDAY	Last day to add a course
FEB. 22—MONDAY	Washington's Birthday and Founder's Day holiday
MAR. 19—FRIDAY	Instruction ends

SPRING QUARTER, 1954

REGISTRATION PERIOD

FEB. 24-MAR. 12	Registration for students in residence Winter Quarter, 1954. (*Registration appointments will be issued on presentation of ASUW cards beginning January 22.*)
MAR. 24-MAR. 26	Registration for former students not in residence Winter Quarter, 1954. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 18.*)
MAR. 24-MAR. 26	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. 29—MONDAY	Instruction begins
APR. 2—FRIDAY	Last day to add a course
MAY 21—FRIDAY	Governor's Day
MAY 31—MONDAY	Memorial Day holiday
JUNE 6—SUNDAY	Baccalaureate Sunday
JUNE 11—FRIDAY	Instruction ends
JUNE 12—SATURDAY	Commencement

SUMMER QUARTER, 1954

REGISTRATION PERIOD

JUNE 2-JUNE 4 JUNE 14-JUNE 18	Registration for all students. (*Registration appointments for students in residence Spring Quarter, 1954, and for former students not in residence Spring Quarter, 1954, may be obtained from the Registrar's Office beginning April 19. 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 21—MONDAY	Instruction begins
JUNE 22—TUESDAY	Last day to add a course for the first term
JUNE 25—FRIDAY	Last day to add a course for the full quarter
JULY 5—MONDAY	Independence Day holiday
JULY 21—WEDNESDAY	First term ends
JULY 22—THURSDAY	Second term begins
JULY 23—FRIDAY	Last day to add a course for the second term
AUG. 20—FRIDAY	Instruction ends

AUTUMN QUARTER, 1954

REGISTRATION PERIOD

SEPT. 7-SEPT. 28	Registration for students in residence Spring Quarter, 1954. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 24, but no later than September 17.*)
SEPT. 10-SEPT. 28	Registration for former students not in residence Spring Quarter, 1954. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 24, but no later than September 17.*)
SEPT. 13-SEPT. 24	Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (*August 27 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. 13-SEPT. 28	Registration for new transfer students with at least full sophomore standing. (*August 27 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. 27—MONDAY	Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing.
SEPT. 29—WEDNESDAY	Instruction begins (8 a.m.) for all other students
OCT. 1—FRIDAY	President's Convocation (11 a.m.)
OCT. 5—TUESDAY	Last day to add a course
NOV. 11—THURSDAY	Armistice and Admission Day holiday
NOV. 25-NOV. 28	Thanksgiving recess
DEC. 17—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1955

REGISTRATION PERIOD

NOV. 22-DEC. 10	Registration for students in residence, Autumn Quarter, 1954. (*Registration appointments will be issued on presentation of ASUW cards beginning October 22.*)
DEC. 29-DEC. 31	Registration for former students not in residence Autumn Quarter, 1954. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 18.*)
DEC. 29-DEC. 31	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—MONDAY	Instruction begins
JAN. 7—FRIDAY	Last day to add a course
FEB. 22—TUESDAY	Washington's Birthday and Founder's Day holiday
MAR. 18—FRIDAY	Instruction ends

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

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

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MRS. J. HERBERT GARDNER	La Conner
JOHN L. KING	Seattle
WINLOCK W. MILLER	Seattle

John Spiller, *Secretary*

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HAROLD P. EVEREST, M.A.	*Vice-President of the University*
ETHELYN TONER, B.A.	*Registrar*
NELSON A. WAHLSTROM, B.B.A.	*Comptroller and Business Manager*
AUSTIN GRIMSHAW, D.C.S.	*Dean of the College of Business Administration*
MARGARET P. FENN, M.B.A.	*Assistant to the Dean*
LOUISE M. MARTIN, B.A.	*Assistant to the Dean*

COLLEGE OF BUSINESS ADMINISTRATION EXECUTIVE COMMITTEE

AUSTIN GRIMSHAW, D.C.S.	*Dean of the College of Business Administration*
EDWARD G. BROWN, M.B.A.	*Executive Officer, Department of Policy, Personnel Relations, and Production*
HENRY A. BURD, Ph.D.	*Executive Officer, Department of Marketing, Transportation, and Foreign Trade*
JOSEPH DEMMERY, M.A.	*Executive Officer, Department of General Business*
DONALD H. MACKENZIE, M.B.A.	*Executive Officer, Department of Accounting, Finance, and Statistics*

COLLEGE OF BUSINESS ADMINISTRATION FACULTY

ANTON, HECTOR R., 1950 ..... *Acting Assistant Professor of Accounting*
B.S., 1942; M.B.A., 1947, University of California, Los Angeles

BARNOWE, THEODORE J., 1947 (1951) ..... *Associate Professor of Human Relations*
B.A., 1939, Morningside College, Iowa; M.A., 1940; Ph.D., 1946, University of Washington

BERG, KENNETH B., 1950 ..... *Assistant Professor of Accounting*
B.S., 1939, North Dakota; M.S., 1941; Ph.D., 1950, University of Illinois

BLYTHE, HARRY, 1949 ..... *Instructor in Finance*
B.S., 1947; M.S., 1949, Columbia

BOTZER, WILLIAM H., 1946 ..... *Lecturer in Business Law*
B.A., 1935; LL.B., 1938, Washington

BREWER, STANLEY H., 1946 (1950) ..... *Associate Professor of Transportation*
B.A., 1942; M.B.A., 1943, Washington

BRIGGS, ROBERT, 1952 ..... *Acting Assistant Professor of Secretarial Training*
A.B., 1935; M.A., 1950, Washington

BROWN, EDWARD G., 1948 (1949)—*Professor of Business Policy; Executive Officer, Department of Policy, Personnel Relations, and Production*
A.B., 1929, Washington; M.B.A., 1932, Harvard

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

BURD, HENRY A., 1924 (1927)—*Professor of Marketing; Executive Officer, Department of Marketing, Transportation, and Foreign Trade*
B.S., 1910, Illinois Wesleyan; M.A., 1911; Ph.D., 1915, Illinois

BURRUS, MARY, 1943—*Lecturer in Business Law*
B.A., 1935; LL.B., 1937, Washington

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*
B.S., 1933; M.A., 1947, Oregon; CPA, 1936, State of Oregon (Washington)

COMISH, NEWEL W., 1949—*Acting Assistant Professor of Marketing*
B.S., 1947; M.S., 1948, Oregon

COX, WILLIAM E., 1919 (1923)—*Professor of Accounting and General Business*
B.A., 1909; M.A., 1910, Texas

DARBYSHIRE, LESLIE, 1950 (1952)—*Instructor in Finance*
B.A. in Com., 1950, Bristol

DELANEY, MARJORIE, 1950—*Instructor in Secretarial Training*
B.A., 1944, Washington State College; M.A., 1946, Columbia

DEMMERY, JOSEPH, 1928 (1934)—*Professor of General Business; Executive Officer, Department of General Business*
Ph.B., 1920; M.A., 1924, Chicago

DOWD, LAWRENCE P., 1950—*Acting Assistant Professor of Foreign Trade*
B.A., 1938, Washington; M.A., 1940, Hawaii

ENGLE, NATHANAEL H., 1941—*Professor of Marketing; Director, Bureau of Business Research*
B.A., 1925; M.A., 1926, Washington; Ph.D., 1929, Michigan

FOX, WILLIAM M., 1952—*Acting Assistant Professor of Personnel*
B.B.A., 1948; M.B.A., 1948, Michigan

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—*Instructor in Production*
B.A., 1942; M.B.A., 1948, Texas

HAMACK, FRANK H., 1921 (1942)—*Lecturer in Accounting*
LL.B., 1916, Georgetown

HANSON, KERMIT O., 1948 (1951)—*Associate Professor of Accounting, Finance, and Statistics*
A.B., 1938, Luther College, Iowa; M.S., 1940; Ph.D., 1950, Iowa State

HARLOW, JOHN S., 1948—*Lecturer in Business Law*
A.B., 1935, Princeton; LL.B., 1939, Harvard

HARWOOD, DALE, 1951—*Acting Instructor in Accounting*
B.S. in B.A., 1948, Oregon State

HASTINGS, DELBERT C., 1951—*Acting Assistant Professor and Industrial Analyst, Bureau of Business Research*
B.S., 1947; M.A., 1949, Minnesota

HAYNE, DONALD F., 1950—*Acting Assistant Professor of Insurance*
B.B.A., 1949; M.B.A., 1950, Wisconsin

HENNESSEY, JOHN W., 1950—*Instructor of Human Relations*
A.B., 1948, Princeton; M.B.A., 1950, Harvard

HENNING, CHARLES N., 1948—*Associate Professor of Finance*
B.A., 1938; M.A., 1940; Ph.D., 1952, University of California, Los Angeles

JOHNSON, FLETCHER O., 1950 ..... *Lecturer in Accounting*
B.B.A., 1924, Washington

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

KNIPE, RICHARD, 1952 ..... *Instructor in Transportation*
B.A., 1951; M.B.A., 1952, Washington

KOLDE, ENDEL J., 1951 ..... *Instructor in Marketing*
B.S., 1940, Estonia State Military College; M.A. 1951, Washington

LORIG, ARTHUR N., 1934 (1949) ..... *Professor of Accounting*
B.A., 1922, Wisconsin; M.A., 1932, Stanford;
Ph.D., 1936, Chicago; CPA, 1937, 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,*
CPA, 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

MURPHY, HERTA A., 1946 ..... *Lecturer in Business Writing*
B.B.A., 1930; M.A., 1942, Washington

PECK, CHARLES E., 1951 ..... *Assistant Professor of Business Writing*
B.A., 1935, Wichita; M.A., 1947; Ph.D., 1950, Iowa

PORTERFIELD, JAMES T. S., 1952 ..... *Acting Assistant Professor of Marketing*
A.B., 1942, California; M.B.A., 1948, Stanford

PUMROY, JEAN T. ..... *Acting Assistant Professor of Marketing*
B.Sc., 1949; M.A., 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

SCHRADER, WILLIAM J., 1951 ..... *Instructor in Finance*
B.B.A., 1950, Baylor; M.B.A., 1951, Indiana

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*

SNIDER, HAROLD WAYNE, 1952 ..... *Instructor in Insurance*
B.A., 1947; M.A., 1950, Washington

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

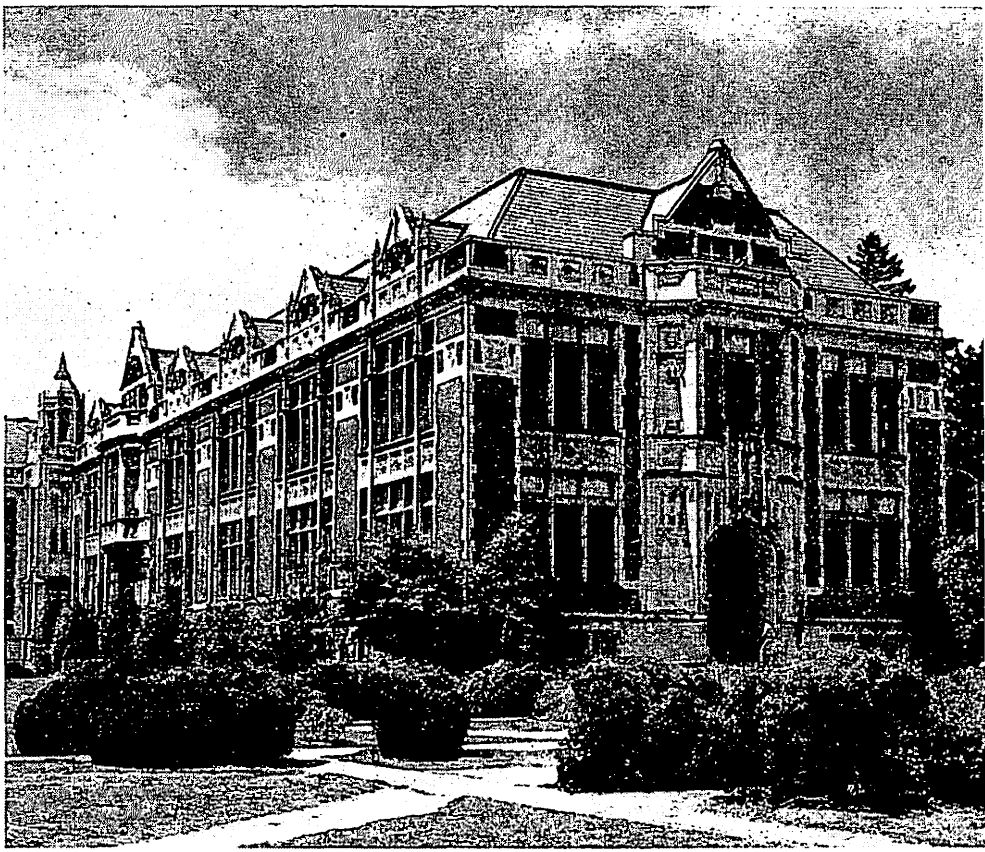
TIDWELL, M. FRED, 1948 ..... *Associate Professor of Secretarial Training*
B.S., 1933, Oklahoma Southwestern Institute of Technology;
M.A., 1936, Oklahoma A. & M.; Ed.D., 1947, Stanford

WAGNER, LOUIS C., 1947 ..... *Associate Professor of Marketing*
B.A., 1938, Washington; M.A., 1940, Minnesota

WALKER, LAUREN M., 1946 (1947) ..... *Associate Professor of Accounting*
B.A., 1939; M.B.A., 1943, Washington; CPA, 1943, State of Washington

WHEELER, BAYARD O., 1948 (1949) ..... *Professor of General Business*
A.B., 1928, California; M.A., 1930, Washington; Ph.D., 1942, California

ZOLL, ALLEN A., 1949 ..... *Instructor in Human Relations*
B.B.A., 1948, Southern Methodist; M.S., 1949, Columbia



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 1952 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 a seminar room. 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.

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 two 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 Frederick and Nelson Retail Scholarship Program gives students experience in most phases of department store operation. Both 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.

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 28, 1953, or August 27, 1954.* 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 16).

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 unit[1] requirement is 16 high school units

[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.

(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 United States history, or 1 unit of United States history and civics; and 2 units of mathematics, including elementary algebra and plane geometry or advanced algebra. Students should make every possible effort to complete this list of required subjects before entering the College. Under certain circumstances, however, and with the approval of the Dean of the College, deficiencies in admission requirements may be removed after entrance.

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. Those deficient in both first-year algebra and plane geometry are seldom admitted on this basis. 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. (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.) 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 per course). and do not carry University credit.

SCHOLARSHIP REQUIREMENT. The University scholarship requirement is a high school grade point of 2.0 (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 15).

Graduates of accredited high schools in Washington and Alaska who cannot meet the 2.0 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 academic credits with a 2.0 grade average, except that if he carries less than 12 hours in one quarter, he may not be removed from probation unless he has earned at

least a 2.0 average for the current quarter, as well as a minimum cumulative average of 2.0 for his total quarters in attendance. A student removed from probation under these provisions then is subject to the regular scholarship rules.

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 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 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 difficulty at his former school.

2. Applicants who have completed a year or more of college work must have a 2.0 grade-point average in their entire college records. Those with less than a year of college work must have a 2.0 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 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.

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.

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 when they appear for their appointments.

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 on campus each quarter.

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 all of the required steps for registration, including paying of 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) take achievement tests in English, social science, natural science, and mathematics, and a general aptitude test as part of the registration requirements. Test results do not affect admission but are used in advising and in assigning students to appropriate sections of English, mathematics, and other courses. 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.

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 two months before 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 consult a Veterans Administration regional office at least one month before the beginning of the quarter. 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, because allowances are not made until after monthly attendance is established.

Principal fees for each quarter (Autumn, Winter, and Spring) are listed below.

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 requiremnets pay one-half the nonresident tuition.

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 to $5 is charged for late registration; $2 for each change of registration; $5 for a late medical examination; and $1 for a late X ray. The fee for a special examination is $1; for an advanced-credit examination, $2 per credit; and for removal of an Incomplete, $2.

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.

ESTIMATE OF YEARLY EXPENSES

The figures given below are minimum estimates for an academic year, which includes Autumn, Winter, and Spring Quarters. Special charges and the cost of books and supplies vary according to the course program and may change from year to year of the same program. 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

Athletic Admission Ticket (optional)	5.00
Accident Insurance (optional)	4.95
Special Charges and Deposits	38.50
Military uniform deposit, breakage ticket, and locker fees.	
Books and Supplies	75.00
Board and Room	
Double room in campus temporary dormitory, with meals in University Commons and Student Union Cafeteria, or double room and meals in Men's Residence Hall	500-570.00
Room and meals in Women's Residence Halls—single, 600.00; double,	525.00
Room and meals in student cooperative house	445-460.00
Room and meals in fraternity or sorority house	660-700.00
Initial cost of joining is not included; this information may be obtained from the Interfraternity or Panhellenic Council.	
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.

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 successfully 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 Propellor 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, which is scheduled for completion in the fall of 1953, or in University-operated temporary dormitories, 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, Friends' Center, 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 the Korean conflict 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 SERVICES

The University Health Center helps to guard against infectious diseases and incipient ill health. Treatment is available for most cases of illness. A dispensary

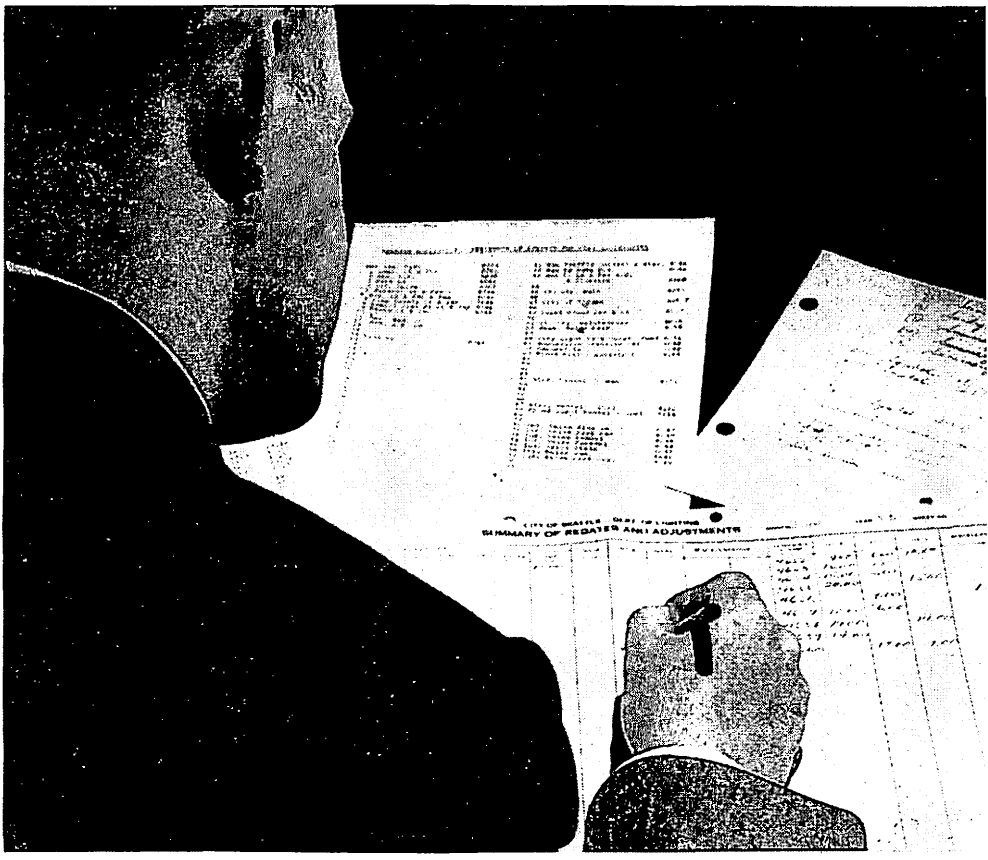
serves students during class hours, and an infirmary receives bed patients at any hour. Infirmary patients receive nursing care, medicine, and the attendance of a staff doctor up to one week each quarter without charge; after the first week, the cost is $2 a day. At their own expense, patients may consult any licensed physician in good standing.

To supplement the protection of the Health Center, the ASUW and the Board of Regents have approved a student accident insurance plan. This low-cost group policy is underwritten by a private insurance company, and provides twenty-four-hour coverage up to $500 for accidental injuries sustained on or off campus. Participation is optional. Detailed information about quarterly costs and limits of coverage is given to students during registration.

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 Commercial Science. 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 50-56).

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 take Physical Education 104, a basic skills course, in their first quarter, and swimming in their second or third quarter. In the other four quarters they may choose any four of a variety of gymnastics and sports, or may substitute freshman or varsity sports.

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 have attained the age of twenty-five.
2. Special students.
3. Part-time students, those registered for six credits or less.
4. Students who because of physical condition are exempted by the Graduation Committee upon the recommendation of the dean of their 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. For women transfer students with less than a normal year's credit, the question of imposing this requirement shall be referred to the Department of Physical Education for Women.

SCHOLARSHIP AND CREDITS

The University scholarship requirement is the maintenance of a 2.0 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 2.0 in any quarter are placed on probation the following quarter, regardless of their cumulative average (except that probation for a student with a cumulative average of 2.5 or higher is left to administrative discretion).
2. Freshmen are not placed on probation until after the second quarter. In the case of second- and third-quarter freshmen, a 1.8 current average applies rather than a 2.0.
3. Any student on probation who fails to obtain a current grade average of at least 1.66 in the subsequent quarter is dismissed from the College.
4. Any student on probation whose current grade average falls below 2.0 in each of three consecutive quarters is dismissed from the College. (In the case of second- and third-quarter freshmen, a grade average of 1.8 applies rather than 2.0.)
5. Any student on probation whose current grade average in any subsequent quarter is 2.0 or above is taken off probation, so far as this college is concerned, regardless of his cumulative average.
6. Any senior entering his last quarter is put on probation if his cumulative grade average is below 2.0.
7. A student in any course in the College of Business Administration who withdraws after the first thirty calendar days of the quarter with a grade of D or E at the time of withdrawal is considered to be doing failing work and is given an EW.
8. Nothing in the above will prevent immediate dismissal of any student at the end of any quarter in which his work is of such unsatisfactory caliber that continuation in the College is unjustified.

For graduation, a total of 180 academic credits with a cumulative grade-point average of 2.0 is required. Of these credits, 60 must be in upper-division courses.

Additional requirements of the College of Business Administration are: 72 credits earned in courses in business administration; 72 credits in courses which are not business administration (economic principles and economic history may be counted in either the business or nonbusiness groups); and no more than 18 credits in advanced ROTC subjects 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
Phys. Educ. Activity	3
ROTC	6-9
Electives to total 10 credits in *one* of the following groups: 10 credits in Physical Science 101 and 102 (Physical Universe), 10 credits in *one* laboratory science, 5 credits in Mathematics 101 or 105 and 5 credits in Mathematics 112 (Mathematics of Business)	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
Phys. Educ. Activity	3
ROTC	6-9
Electives to total 20 credits in *two* of the following groups: 10 credits from Social Science 101, 102, 103 (History of Civilization), 10 credits from Humanities 101, 201 (Literature), 102 (The Arts), 202 (Masterpieces of Art), 103 or 203 (Philosophy), 5 credits from Psychology 100 (General) or Sociology 110 (Survey of Sociology), 5 credits from Political Science 201 (Modern Government), 202 (American Government and Politics), 203 (International Relations), or Authropology 101, 102, 103 (Principles of Anthropology), and 10 credits from one foreign language.	20
	97-115

Before the beginning of his junior year, the student chooses a field of specialization. In addition to the requirements for his major, every student must complete the following courses before graduation:

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
	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 meet the requirements of the Graduate School (see the *Graduate School Bulletin*).

Graduate training is given in business policy and business administration and in these fields of specialization: accounting; business education; finance and banking; foreign trade; insurance; marketing; personnel and industrial relations; production; research and statistical control; and transportation.

As background for candidacy for a graduate degree, a student must either have a bachelor's degree in business administration from an approved school, or present not less than 45 quarter credits earned in accounting, business fluctuations, business law, business statistics, corporation finance, economics, human relations, production, and marketing. Candidates for the Master of Business Administration or

the Doctor of Commercial Science degree who are offering credits in the above subjects as background must include at least 9 credits in accounting and some credits in business statistics, corporation finance, human relations, production, and marketing.

To take graduate courses in the first quarter of graduate work, a student must have a 3.0 average in the last quarter of his senior year. If he does not maintain a 3.0 average in the first quarter of graduate work, he will not be permitted to take graduate courses in his second quarter of graduate work. A student who does not maintain a B average during the first two quarters of his graduate work will have his case reviewed by the Graduate Committee to determine whether he will be permitted to continue his work toward an advanced degree.

MASTER OF BUSINESS ADMINISTRATION. The program for the Master of Business Administration degree, with the minimum number of quarter credits required, is:

		CREDITS
Pol. and Ad. 560	Policy Determination and Administration	3
Pol. and Ad. 561	Policy Determination and Administration	3
Pol. and Ad. 590	Seminar in Administration	5
Acctg. 591 or 592	Seminar in Administrative Controls	3
Bus. Wrtg. 571	Business Studies (Thesis Course)	4
Electives (six in 500 or 600 series)		13
Thesis		5
		36

MASTER OF ARTS. Candidates must have a minimum of 36 credits with a major in one of the fields of graduate study offered by the College. Normally a minimum of 20 credits is earned in the area of the major, exclusive of the thesis. A minor may be taken in the College or in another college or department. Requirements for the minor are determined by the department which offers the courses.

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. Foreign students are required to present English as the language for the master's degree.

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 COMMERCIAL SCIENCE. To be considered for admission to the Doctor of Commercial Science program, an applicant must have had a 3.25 grade-point average during the senior year. In addition, the student must hold a bachelor's degree in business administration from a member of the American Association of Collegiate Schools of Business, or present not less than 45 quarter credits as follows: at least 9 credits in accounting; one course each in business statistics, corporation finance, human relations, industrial management, and marketing. The remaining credits may be in the fields listed above or in business fluctuations, business law, and economics. Some of the background courses may be taken after work toward the degree has begun, but they should be completed as early as possible.

The candidate must take a written and oral examination in business policy and business administration, and in three of the following fields: accounting, banking and finance, commercial education, foreign trade, insurance, marketing, personnel, production, research and statistical control, and transportation. In addition, he must earn as a minimum the indicated number of credits in courses numbered 500 or above in the following fields: business administration, 8; business policy, 8; finance, 3; marketing, 6; production, 3; and social sciences, 15. At least 9 of the credits earned in social sciences must be in economics.

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 accounting or comptrollership. 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 administrative accounting, or comptrollership, is for students who intend to obtain accounting positions with business firms or in government service, and for those who take accounting simply as general training for business.

PROFESSIONAL OR PUBLIC ACCOUNTING OPTION. The requirements are: Accounting 310, 320, 330, 340, 360, 420, 470, 471, 480, 485, 486, and Business Law 202 (Business Law) and 420 (Law in Accounting Practice).

ADMINISTRATIVE ACCOUNTING OR COMPTROLLERSHIP OPTION. The requirements are: Accounting 310, 320, 330, 340, 360, 450, 470, 485, and 6 credits elected from upper-division accounting courses, except Accounting 305.

COURSES FOR UNDERGRADUATES

150 Fundamentals of Accounting (4) — **Cannon, Mackenzie**
Basic principles, financial statements, double-entry principles, capital and revenue expenditures, depreciation, etc.

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) — **Anton**
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 I (3) **Cannon, Hamack**
System design and installation, with special emphasis upon internal control. Prerequisite, 310.

341 Systems for Mass Production (2) **Hamack**
Design of systems for accounting and statistical control to meet problems of mass production, involving use of tabulating equipment. Prerequisite, 310.

360 Advanced Accounting (5) **Anton, 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.

440 Accounting Systems II (3) **Staff**
Practice problems and report writing for systems. Prerequisite, 340.

450 Comptrollership (3) **Mackenzie**
The comptroller's position in planning and control; budgets, expense analysis, reports, and investigations for management. Prerequisites, 310 and 330.

470 Auditing I (3) **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.

481 Government Accounting II (2) **Lorig**
Treasurer's accounts, financial reporting, etc. Prerequisite, 480.

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) **Lorig**
Critical examinaton 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 accounting, 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) **Anton, Hanson**
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. (Acctg. 330 recommended; 591 not a prerequisite for 592.)

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 pro-

visional 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**
Basic statistical measures and methods in the solution of business problems. A nonmathematical course in the elements of descriptive statistics. Misuses of statistical measures; fallacies in methods of collecting and interpreting data. Prerequisite, General Business 101.

340 Advanced Statistical Analysis (5) — **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) **Butterbaugh**
Prerequisite, permission.

Thesis (*) **Butterbaugh**

BUSINESS WRITING

Executive Officer: HENRY A. BURD, 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; actual business letters in terms of their fundamentals. Prerequisites, General Business 101 and English 103.

410 Business Reports (3) **Peck**
Analysis of problems, cases, and topics, and the preparation of a series of written reports. Techniques of written presentation. Prerequisite, junior standing.

COURSES FOR GRADUATES ONLY

571 Business Studies (4) **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 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, 367, 410, 428, and 450; Insurance 301 (Principles); and Economics 350 (Public Finance and Taxation I).

COURSES FOR UNDERGRADUATES

201 Banking and Business (5) — **Darbyshire, 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) — **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**
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) — **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**
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: HENRY A. BURD, 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 310 and 460; Finance 367 (Foreign Exchange); Marketing 371 (Wholesaling); a minimum of 5 credits from Foreign Trade 450, 495, and 496; and a minimum of 10 upper-division credits from geography, political science, and far eastern courses, which must include at least two of these fields.

COURSES FOR UNDERGRADUATES

310 Foreign Trade Practices (5) **Dowd, Kolde**
Principles of foreign trade marketing; analytical survey of institutions, functions, and business policies in the distribution of goods in foreign markets; importance of trade to business organizations. Prerequisite, Marketing 301.

450 Far Eastern Foreign Trade Problems (5) **Dowd**
Analysis of export and import problems and techniques; problems of investment in the Far East. Prerequisite, 310.

460 Problems in Foreign Trade (5) **Dowd**
Practical training in the use of techniques and instruments of foreign trade; practices of pricing, merchandising, packaging, packing, and shipment; foreign trade analysis. Prerequisite, 310.

495, 496 Research in Foreign Trade (3,3) **Dowd**
Evaluation of actual business cases in foreign trade; compiling, organizing, and interpreting data from library and original sources, including contact with business organizations. Prerequisites, 460 and Finance 367 for 495; 495 for 496.

COURSES FOR GRADUATES ONLY

520, 521 Seminar (3,3) **Dowd**
Advanced research and analysis in problems and policies of exporting, importing, and related activities. Evaluations of buying; selling; physical supply; finance; risk and market research policies of business organizations engaged in foreign trade; effects of governmental policies on the conduct of trade; and continuing study of methods of improving the techniques of trade. Prerequisite, permission.

604 Research (*, maximum 10) **Dowd**
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 financing; managerial controls, such as accounting, statistics, and budgets; and the relation of business to government.

439 Business Fluctuations (5) — **Robinson, McGuire**
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

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.

595 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.

598 Current Problems in Business (5) — **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 IN BUSINESS

Executive Officer: EDWARD G. BROWN, 300G Commerce 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 insurance business or the insurance department of a banking, commercial, or industrial organization. Students majoring in insurance may choose either a life insurance or a property-casualty insurance option.

LIFE INSURANCE OPTION. The requirements are: Insurance 301, 360, 460, and 480; plus 10 or more credits from the following: Business Writing 410 (Business Correspondence); Accounting 310 (Intermediate Accounting); Finance 444 (Principles of Investment); Law 307 (Insurance) and 231 (Taxation); Marketing 351 (Principles of Salesmanship); and Policy and Administration 470 (Business Policy).

PROPERTY CASUALTY INSURANCE OPTION. The requirements are: Insurance 301, 370, 375, and 480; plus 10 or more credits from the following: Business Writing 410 (Business Correspondence); Accounting 310 (Intermediate Accounting); Finance 334 (Credit and Collections); Law 307 (Insurance); Real Estate 301 (Principles of Urban Real Estate); Transportation 452 (Transportation Insurance); Marketing 351 (Principles of Salesmanship); and Policy and Administration 470 (Business Policy).

COURSES FOR UNDERGRADUATES

301 Principles of Insurance (5) **Snider**
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 (5) **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 (5) **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) **Hayne**
Prerequisite, permission.

Thesis (*) **Hayne**

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 three years of undergraduate work (135 credits) with a 2.5 grade-point average; or by taking a special three-year course of prelegal training which leads to a bachelor's degree at the successful completion of the first year in the Law School.

Students who take the three-year course leading to a bachelor's degree after one year in the Law School have a choice of three curricula. The College of Arts and

Sciences provides an arts-law and a science-law curriculum (see 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 138 credits with a 2.5 grade-point average, and the required quarters in physical education activity and/or military training, if a degree is to be conferred by the college at the end of a year in the Law School.

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

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 138 credits before entering the Law School.

MARKETING

Executive Officer: HENRY A. BURD, 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, 395; a problems course (451, 461, or 471) and 5 hours recommended by the faculty adviser.

COURSES FOR UNDERGRADUATES

301 Principles of Marketing (5) — **Stanton, Staff**
Analytical survey of institutions, functions, problems, and policies in the distribution of goods from producer to consumer; pricing, marketing costs, and governmental regulations. Should be taken in sophomore year by marketing majors. Prerequisite, General Business 101.

351 Principles of Salesmanship (2) — **Staff**
Psychological, economic, and marketing foundations of sales activities. Effective sales techniques demonstrated by students in realistic situations. Prerequisite, 301.

361 Cooperative Marketing (3) — **Burd**
Principles, organization, and methods of operation of both producer and consumer cooperatives. Comparison with other marketing methods. Prerequisite, 301.

371 Wholesaling (5) — **Gordon, Staff**
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, and profit planning and control; coordination of store activities. Prerequisite, 301.

391 Advertising (5) — **Porterfield, Wagner**
Importance in our economy; utilization by business; advertising institutions; planning the program: analysis of media; budgets; research; economic and social aspects. Prerequisite, 301.

441 Retail Sales Promotion (3) — **Comish**
Analysis of methods used to promote the sale of merchandise in a retail store: store design and layout, display, advertising, publicity, personal salesmanship, store signs, the 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 marketing 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 Retail Field Work (2, maximum 8) **Miller, Comish**
Open to scholarship students only. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

520, 521, 522 Seminar (3,3,3) **Burd, Engle, Miller**
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), 341 (Systems for Mass Production), 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, 300G Commerce 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; Sociology 466 (Industrial); Economics 340 (Labor in the Economy); Mechanical Engineering 201 (Metal Castings), 202 (Welding), 203 (Metal Machining), 417 (Methods Analysis); and one of the following: Psychology 335 or 336 (Industrial), 337 (Vocational), 413 (Tests and Measurements); and Economics 441 (Union-Management Relations), 442 (American Labor History). (In some cases, substitutes are accepted for Mechanical Engineering 201, 202, and 203.)

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.

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, 345.

450 Industrial Relations Administration (5) **Bergren**
Negotiation and day-to-day administration of a labor contract; analysis of typical clauses, including their interpretation and application. Prerequisite, 310.

COURSES FOR GRADUATES ONLY

520 Seminar in Personnel Management (3) **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) **Sutermeister**

Thesis (*) **Sutermeister**

POLICY AND ADMINISTRATION

Executive Officer: EDWARD G. BROWN, 300G Commerce Hall

The Department of Policy and Administration provides courses that integrate and supplement the work in other departments of the College. Policy and administration courses approach this field from a top-management point of view, to encourage the habit of thinking about business problems in an over-all context.

COURSES FOR UNDERGRADUATES

463 Administrative Practices (3) — **Barnowe**
Administrative behavior and the administrative function in business and industry, studied through selected reading and the use of actual cases. Emphasis is on the development of skill in diagnosing concrete situations. Prerequisite, Human Relations 460.

470 Business Policy (5) — **Brown, Hennessey, Schrieber**
Problems of policy formulation at upper levels of management, requiring the over-all integration of the various aspects of business. Prerequisites, Finance 301, Marketing 301, and Production 301.

471 Problems of the Independent Businessman (3) — **Staff**
Case studies of problems faced by independent owner-managers of small business enterprises. Prerequisites, Finance 301, Marketing 301, and Production 301.

COURSES FOR GRADUATES ONLY

560, 561 Policy Determination and Administration (3,3) — **Brown**
Development of an appreciation for and skill in dealing with 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 administrative personnel to carry out the policies; control of operations; coordination of the organization; appraisal and adjustment to changes in the environment. Case study seminar. Prerequisites, Master of Business Administration candidacy and permission for 560; 560 for 561.

562 Responsibilities of Business Leadership (5) — **Brown, Goldberg**
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, 561 or permission.

590 Seminar in Administration (5) — **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, one major paper, and individual reports on special projects and research. Prerequisite, permission.

596 Seminar in Administrative Organization (3) — **Bryan**
Principles and application of organization are considered from the executive's viewpoint. Current organization concepts and theories examined and working principles are developed. Case materials developing typical problems are analyzed. Prerequisite, 590 and permission.

604 Research (*, maximum 10) — **Staff**

Thesis (*) — **Staff**

PRODUCTION

Executive Officer: EDWARD G. BROWN, 300G Commerce Hall

The Department of Production provides training in industrial organization and management, production planning and control, material procurement and control, and operation analysis. The requirements for a major are: Production 351, 355, and 460; Accounting 310 (Intermediate Accounting), and 330 (Cost Accounting); Personnel 310 (Personnel Management); Mechanical Engineering 201 (Metal Casting), 202 (Welding), 203 (Metal Machining), and 417 (Methods Analysis).

COURSES FOR UNDERGRADUATES

301 Principles of Production (5) — **Staff**
Principles and procedures of a manufacturing enterprise: organization; product development; plant and equipment; planning and control of materials, production, quality, wages, and personnel; methods of analysis and budgeting.

351 Production Planning and Control (5) **Schrieber**
Organization, procedures, and techniques for the production planning and control functions in continuous and intermittent types of production. Prerequisite, 301.

355 Industrial Procurement (5) **Bryan**
Principles involved in the purchasing function of a manufacturing business, including organization of the purchasing department and its relationship to other departments, and policies on quality, inventory control, negotiations with vendors, manufacturing versus buying, prices, and costs. Prerequisites, 301 and Marketing 301.

380 Field Work in Production (2, maximum 6) **Schrieber**
Part-time employment with pre-planned work programs, reports, and evaluation of experience. Prerequisites, 301 and permission.

460 Manufacturing Administration (5) **Bryan**
Operating problems of a manufacturing enterprise and the production decisions made at various levels of management. Prerequisite, 301.

470 Industrial Analysis of the Pacific Northwest (5) **Schrieber**
Production methods and problem analysis for manufacturing operations of selected industries in the Pacific Northwest. Prerequisite, 301.

499 Undergraduate Research (3, maximum 6) **Schrieber**
Individual study or special project in production field. Students compile, organize, and interpret data from original and reference courses. Open only to qualified students. Prerequisites, 301 and permission.

COURSES FOR GRADUATES ONLY

520, 521 Seminar (3,3) **Schrieber**
Problems and policies in manufacturing management. Each requires a substantial amount of individual reading on current problems and research in the field. 521, with operating decisions requiring frequent review and revaluation; product research and order, controlling material, method and wages, planning and scheduling, quality control, safety problems, industrial cost analysis and control, government regulation of production. 522, long-term decisions of factory management which are not readily changed, plant location, machinery and equipment, material handling, plant layout, industrial building and facilities, industrial power, automatic factory, maintenance problems. Each course a separate unit. Prerequisite, permission.

604 Research (*, maximum 10) **Schrieber**
Prerequisite, permission.

Thesis (*) **Schrieber**

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 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) **Demmery**
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**
Introduction; letter writing, manuscript writing, tabulation, and composition at the machine. No credit toward graduation.

111, 112 Secretarial Training (2,2) — **Staff**
Typewriting fundamentals, speed building, timed production of letters and tabulations, and the use of various business forms; high-speed drills, office production typewriting of legal forms, and stenographic short cuts; duplicating processes. Prerequisites, 10 or equivalent for 111; 111 for 112.

115 Office Machines (3) — **Delaney, Staff**
Laboratory instruction and practice in the operation of selected office machines, exclusive of secretarial machines.

120-121 Gregg Shorthand (3-3) — **Delaney, Staff**
Theory of Gregg shorthand. Students who present one or more units of shorthand as entrance credit may not receive credit for 120. Prerequisite for 121, 40 words per minute typing speed.

122 Advanced Gregg Shorthand (3) — **Staff**
Speed building and introduction to transcription. Prerequisite, 121.

310, 311 Advanced Secretarial Training (5,5) — **Tidwell**
Advanced shorthand dictation and transcription; general office practice and procedures; introduction to court reporting. Prerequisites, 122 for 310; 310 for 311.

320 Secretarial Practice (5) — **Tidwell**
Application of skills acquired in shorthand, typewriting, office machines, business letter writing, etc., to an integrated model office. One hour of recitation and one hour of laboratory work daily. Prerequisite, 122.

TRANSPORTATION

Executive Officer: HENRY A. BURD, 300C Commerce Hall

The Department of Transportation provides training for students who are planning careers in the field of transportation and for other business administration students who need an understanding of the methods of transportation and of industrial traffic management. The requirements for a major are Business Law 202 (Business Law); Transportation 301; and at least 25 credits from Transportation 311, 313, 315, 317, 440, 450, 452, 455, and 499.

COURSES FOR UNDERGRADUATES

301 Principles of Transportation (5) — **Brewer, Knipe, Staff**
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. Prerequisite, General Business 101.

311 Railroad Transportation (5) — **Brewer, Knipe**
Business policies and practices of railroad operating companies. Studies in financing equipment, labor management, pricing consideration, and practices for services offered. Control of the movement of equipment. National policy and regulatory control of the railroad industry. Prerequisite, 301.

313 Air Transportation (5) — **Brewer, Knipe**
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, Staff**
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) **Staff**
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 students who have had 301.

440 Industrial Traffic Management (5) **Brewer, Staff**
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, Knipe**
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) **Staff**
Contracts of affreightment, marine insurance, general and particular average, salvage, limited liability, and marine collision law.

455 Airport Management (3) **Brewer, Knipe**
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**
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 the 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.

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.

BOTANY

111 Elementary Botany (5) **Meeuse, Walker**
Structure, physiology, and reproduction of seed plants.

112 Elementary Botany (5) **Blaser**
Structure and relationships of the major plant groups. Prerequisites, 111, one year of high school botany, Biology 101J-102J, or Zoology 111 and 112.

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.

ECONOMICS

160 American Economic History (5) **Glickfeld, North**
American economic institutions, their European background and development; the impact of industrialization on the American economy from 1850 to the present.

200 Introduction to Economics (5) **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.

ENGLISH

101, 102, 103 Composition (3,3,3) **Leggett**
Fundamentals of effective exposition; collecting, organizing, and evaluating materials for writing; reading contemporary writings for meaning and form.

FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE

CHINESE

101 Chinese Language, Intensive A (10) **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) **Chang, Li**
Continuation of 101. Prerequisite, 101.

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. 101-102 not open to students who have taken 101-A; 103 not open to students who have taken 206-B.

KOREAN

302-303 Elementary Spoken Korean Language (5-5) **Lee**

RUSSIAN

101 Russian Language. Intensive A (10) **Gershevsky, Ifland**
Elementary.

102-103 Elementary Russian Language (5-5) **Novikow**

GENERAL EDUCATION

HUMANITIES

101 Literature (5) **Blankenship, Brown, Harrison, Stocks**
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, and Staff**
Painting, sculpture, music, architecture, the dance, and drama studied through example, discussion, and criticism.

103 Philosophy (5) **Rader, Smullyan, Turbayne**
Methods of reflective thinking and the use of them in considering such essential questions as the existence and nature of God, the meaning of a good life and a good social order, the nature and limits of human knowledge, the relationship between mind and body, and the nature of the universe. This course may be offered in partial fulfillment of the requirements for a major in philosophy.

201 Literature (5) **Staff**
Reading and critical discussion of some of the greatest works in world literature.

202 Masterpieces of Art (5) **Moseley, Verrall, and Staff**

203 Philosophy (5) **Turbayne**
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) **Beatty, Cecil, Jansen, Katz, Savelle**

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) **Beatty, Cecil, Jansen, Katz, Savelle**

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) **Beatty, Cecil, Jansen, Katz, Savelle**

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.

PHYSICAL SCIENCE

101, 102 The Physical Universe (5,5) **Clark, Coombs, Cross, Kenworthy**

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.

GEOGRAPHY

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

A world survey of major occupations; their distribution, resources used, and commodities produced.

GEOLOGY

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) **Mallory**

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.

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).

PHYSICAL EDUCATION

104 through 174; 206 through 250 Physical Education Activities (Men) (1 each) **Staff**

104, 105, basic and swimming (required in first two quarters); 106, 206, handball; 107, 207, basketball; 108, 208, tennis; 109, 209, softball; 110, 210, golf (fee, $3 Autumn and Spring, $1.50 Winter); 111, 211, track; 112, 212, crew (class), prerequisite, swimming; 113, 213,

fencing; 114, 214, boxing; 115, 215, tumbling; 117, 217, wrestling; 118, 218, volleyball; 119, 219, swimming; 120, 220, soccer; 121, 221, touch football; 122, 222, badminton; 123, 223, archery; 124, 224, calisthenics; 125, 225, skiing (fee, $15); 126, 226, speedball; 127, 227, bowling (fee, $3); 128, 228, weight lifting; 129, 229, sailing; 133, 233, Pack Forest; 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; 231, folk and square dancing; 234, intermediate folk and square dancing.

110 Health Education (Women) (2) — **Gunn, Horne, McLellan, Waters**
Health problems of freshman women. Required of all freshmen.

111 through 170; 211 through 270 Physical Education Activities (Women) (1 each) — **Staff**
111, adapted activities; 113-114, basic activities; 115, archery; 118, badminton; 121, bowling (fee, $3); 124, fencing; 126, golf (fee, $3 Autumn and Spring, $1.50 Winter); 128, riding (fee); 131, dry skiing; 132, beginning 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; 160, adapted swimming; 161, beginning swimming; 162, elementary swimming; 215, intermediate archery; 218, intermediate badminton; 221, intermediate bowling (fee, $3); 222 advanced bowling (fee, $3); 224, intermediate fencing; 228, intermediate riding (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; 263, intermediate swimming; 264, advanced swimming; 265, rhythmic swimming; 266, diving; 267, lifesaving; 268, water safety instruction.

175 Personal Health (Men) (2) — **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.

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) — **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.

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,

ITALIAN

101-102, 103 Elementary (5-5,5) — **Goggio**

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

100-101, 102 Elementary Norwegian (3-3,3) **Arestad**
Fundamentals of oral and written Norwegian.

SWEDISH

100-101, 102 Elementary Swedish (3-3,3) **Johnson**
Fundamentals of oral and written Swedish.

SOCIOLOGY

110 Survey of Sociology (5) **Schrag, Staff**
Basic principles of social relationships. Primarily for freshmen and sophomores. Not open to students who have taken 310.

240 Group Behavior (5) **Dornbusch, Miyamoto**
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) **Faris, Staff**
Analysis of the processes of social and personal disorganization and reorganization in relation to poverty, crime, suicide, family disorganization, mental disorders, and similar social problems. Prerequisite, 110 or 310.

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, anthropods, echinoderms, chordates. Prerequisite, 111 or equivalent.

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 27). 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, then serve two years on active duty when called and six additional years in a reserve organization.

First-year Air Force ROTC students are given a thorough indoctrination course in aviation, 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 produce professionally qualified 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 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. In the first quarter of the second year, students specialize in flight operations, technical training, communications, maintenance engineering, or administration and supply. 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 a month. While attending summer camp they are paid at the rate of $75 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 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; moral and statutory 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, the air ocean, bases, and people; 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.

451 Air Science IV—Advanced (Flight Operations) (3) **Staff**
Air navigation; meteorology; theory of radar; electronic countermeasure methods; atomic energy and radiological defense; field laboratory for leadership.

461 Air Science IV—Advanced (Air Force General Technical Training) (3) **Staff**
Atomic theory and radiological defenses; guided missiles; new technological developments; familiarization and use of technical publications; Air Force technical research and development; field laboratory for leadership.

471 Air Science IV—Advanced (Air Force Communications) (3) **Staff**
Communications organization; command and administration; inspection; training; communications centers and systems; field laboratory for leadership.

481 Air Science IV—Advanced (Aircraft Maintenance Engineering) (3) **Staff**
Aircraft maintenance engineering; the air inspector and service equipment; engine operation and conditioning; cruise control and test flight; field laboratory for leadership.

491 Air Science IV—Advanced (Administration and Supply) (3) **Staff**
Air Force management; military teaching methods; the air inspector general; military law and boards; officer development; career development; staff; personnel administration; the air comptroller; field laboratory for leadership.

492, 493 Air Science IV—Advanced (General) (3,3) **Staff**
Air Force administration; Air Force inspector general; military teaching methods; Air Force career development; military law and boards; Air Force management; military customs; field laboratory for leadership.

MILITARY SCIENCE AND TACTICS

Professor of Military Science and Tactics: RAY M. O'DAY, 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.

The Department of Military Science and Tactics also offers a series of courses in Medical Corps subjects for students in the School of Medicine. (These courses are described in the *Schools of Medicine and Dentistry Bulletin.*)

Courses in the first year of the basic program require classroom attendance two hours each week. First-year students are also introduced to the principles of leadership and exercise of command through practice of basic elements of drill one hour each week. Second-year students may specialize in Infantry, Antiaircraft Artillery, Quartermaster Corps, Transportation Corps, or Corps of Engineers. 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.

A further requirement for students who intend to enter the Corps of Engineers is enrollment in a curriculum leading to an engineering or other scientific degree.

Courses in the advanced program are continuations of the specialties selected in the second year of the basic program. These courses require classroom attendance four hours a week, plus one hour of practice in leadership, drill, and exercise of command. 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 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, 121, 141 Military Science I—Basic (Infantry, Antiaircraft Artillery, Quartermaster Corps, Transportation Corps, Corps of Engineers) (2,2,2) **Staff**
Military organization; military policy of the United States; the National Defense Act and ROTC; evolution of warfare; map reading; individual weapons and marksmanship; first aid and hygiene; leadership, drill, and exercise of command.

201, 221, 241 Military Science II—Basic (Infantry) (2,2,2) **Staff**
Leadership, drill, and exercise of command; organization; weapons; marksmanship; technique of fire of the rifle squad; combat formations; observing and patrolling; tactics of the rifle squad.

202, 222, 242 Military Science II—Basic (Antiaircraft Artillery) (2,2,2) **Staff**
Leadership, drill, and exercise of command; introduction to antiaircraft artillery automatic weapons; characteristics, capabilities, and limitations of antiaircraft artillery automatic weapons; service of the automatic weapons fire unit; introduction to antiaircraft artillery guns; characteristics, capabilities, and limitations of 90-mm. antiaircraft artillery guns; service of 90-mm. antiaircraft artillery guns; map reading; introduction to field artillery.

203, 223, 243 Military Science II—Basic (Quartermaster Corps) (2,2,2) **Staff**
Leadership, drill, and exercise of command; organization for supply; organization and functions of the Quartermaster Corps; classification of supplies; use of supply catalogues and bases of allowances; property accountability and responsibility; research and development of supply in the Quartermaster Corps; organization, functions, and operation of quartermaster units; unit and organizational supply.

204, 224, 244 Military Science II—Basic (Transportation Corps) (2,2,2) **Staff**
Leadership, drill, and exercise of command; introduction to the Transportation Corps; economics of transportation; military highway transport; convoy operation; organization and operation of railroads (continental United States); tactics of the individual soldier.

205, 225, 245 Military Science II—Basic (Corps of Engineers) (2,2,2) **Staff**
Leadership, drill, and exercise of command; history and traditions of the Corps of Engineers; characteristics of weapons; camouflage; defense against chemicals; explosives and demolitions; hand tools and rigging; mines and booby traps; organization and tactics of small units; organization of ground and field fortifications.

301, 321, 341 Military Science III—Advanced (Infantry) (3,3,3) **Staff**
Leadership, drill, and exercise of command; organization; weapons; gunnery; communications; combat intelligence; estimates of battle situations and combat orders; field fortifications; tactics of the rifle and heavy weapons platoon and companies.

302, 322, 342 Military Science III—Advanced (Antiaircraft Artillery) (3,3,3) **Staff**
Leadership, drill, and exercise of command; antiaircraft artillery tactics; basic gunnery—antiaircraft guns and automatic weapons; communications; motors and transportation; organization; troop movements; map reading; field artillery tactics.

303, 323, 343 Military Science III—Advanced (Quartermaster Corps) (3,3,3) **Staff**
Leadership, drill, and exercise of command; storage and warehousing; procurement, storage, and distribution of petroleum products; food service, bakery, commissary, laundry, and salvage operations; graves registration; station and depot supply; individual weapons and marksmanship.

304, 324, 344 Military Science III—Advanced (Transportation Corps) (3,3,3) **Staff**
Leadership, drill, and exercise of command; organization of a theater of war and transportation staff sections; military railway service; movements; airlift planning and operations; port operations in continental United States and overseas; stevedore operations; harborcraft and marine maintenance; highway transport service operations; individual weapons and marksmanship; tactics of a rifle squad; tactics of the rifle and heavy weapons platoons and companies.

305, 325, 345 Military Science III—Advanced (Corps of Engineers) (3,3,3) **Staff**
Leadership, drill, and exercise of command; bridge design and classification; engineer signal communications; engineer combat intelligence; engineer supply; military roads and runways; organization of engineer units; organization of combat divisions; tactics of engineer units; vehicle operation and maintenance; water supply; barrier planning; technique of fire.

360 Military Science III—Advanced Camp (3) **Staff**
Six weeks' training at an army base; intensive study in the field of specialization. (Offered Summer Quarter only.)

401, 421, 441 Military Science IV—Advanced (Infantry) (3,3,3) **Staff**
Military administration; military law and boards; military teaching methods; phychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; organization; command and staff; communications; motors and transportation; supply and evacuation; troop movements; new developments in weapons, aircraft, and naval craft; the military team; tactics of the infantry battalion in attack and defense.

402, 422, 442 Military Science IV—Advanced (Antiaircraft Artillery) (3,3,3) **Staff**
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; antiaircraft artillery matériel; advanced antiaircraft artillery tactics; command and staff; combat intelligence; gunnery; the military team; new developments in artillery matériel and guided missiles; Air Force and Navy developments; supply and evacuation; field artillery capabilities and use; map reading.

403, 423, 443 Military Science IV—Advanced (Quartermaster Corps) (3,3,3) **Staff**
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; fiscal procedures; procurement procedures; command and staff; combat intelligence; technical intelligence; organization and functions of the combatant arms; organization and functions of the technical services; quartermaster operations in the zone of the interior; quartermaster operations in the theater of operations.

404, 424, 444 Military Science IV—Advanced (Transportation Corps) (3,3,3) **Staff**
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundation of national power; leadership, drill, and exercise of command; military railway service in a theater of operations; highway regulation and traffic planning; movement control in a theater of operations; logistics; supply and property; command and staff; combat and transportation intelligence; the Transportation Corps officer; special defensive operations.

405, 425, 445 Military Science IV—Advanced (Corps of Engineers) (3,3,3) **Staff**
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; engineer support for the Air Force; engineer support for the communication zone; engineer support for the field army; command and staff; construction, utilities, and job management; motor movements; river crossing operations.

NAVAL SCIENCE

Professor of Naval Science: ARTHUR C. WOOD, 309 Clark Hall

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 a hundred 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 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

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
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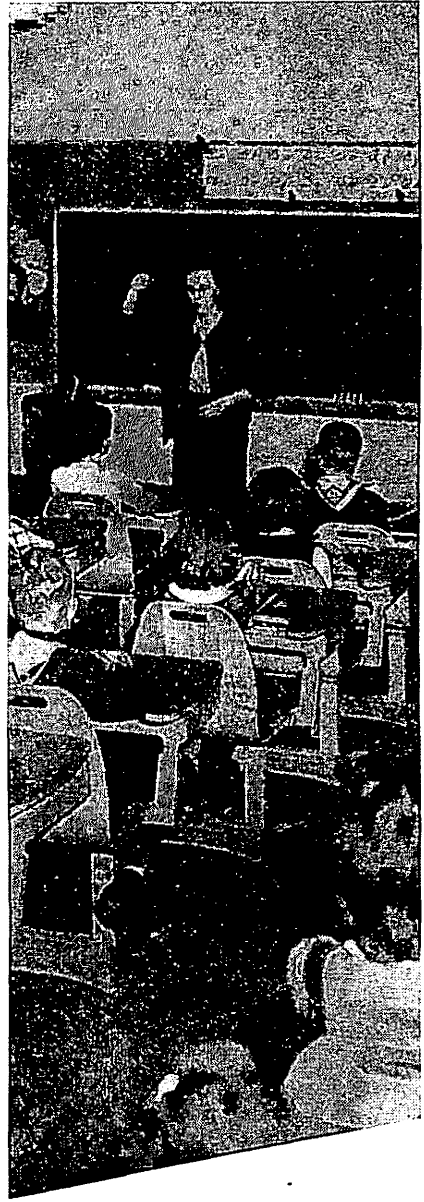

COLLEGE OF **EDUCATION**

1953-1955

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 home 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
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
DIVISION OF HEALTH SCIENCES
  SCHOOL OF DENTISTRY
  SCHOOL OF MEDICINE
  SCHOOL OF NURSING
  COLLEGE OF PHARMACY
SCHOOL OF LAW

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT
SUMMER QUARTER ANNOUNCEMENT
HOME STUDY
EXTENSION CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 871
May, 1953

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

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

AUTUMN QUARTER, 1953

REGISTRATION PERIOD

SEPT. 8-SEPT. 29	Registration for students in residence Spring Quarter, 1953. *(Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 25, but no later than September 18.)*
SEPT. 11-SEPT. 29	Registration for former students not in residence Spring Quarter, 1953. *(Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 25, but no later than September 18.)*
SEPT. 14-SEPT. 25	Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. *(August 28 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. 14-SEPT. 29	Registration for new transfer students with at least full sophomore standing. *(August 28 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—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—WEDNESDAY	Instruction begins (8 a.m.) for all other students
OCT. 2—FRIDAY	President's Convocation (11 a.m.)
OCT. 6—TUESDAY	Last day to add a course
NOV. 11—WEDNESDAY	Armistice and Admission Day holiday
NOV. 26-NOV. 29	Thanksgiving recess
DEC. 18—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1954

REGISTRATION PERIOD

NOV. 23-DEC. 11	Registration for students in residence Autumn Quarter, 1953. *(Registration appointments will be issued on presentation of ASUW cards beginning October 23.)*
DEC. 29-DEC. 31	Registration for former students not in residence Autumn Quarter, 1953. *(Registration appointments may be obtained by writing to or applying at the Registrar's Offiice beginning October 19.)*
DEC. 29-DEC. 31	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. 4—MONDAY	Instruction begins
JAN. 8—FRIDAY	Last day to add a course
FEB. 22—MONDAY	Washington's Birthday and Founder's Day holiday
MAR. 19—FRIDAY	Instruction ends

SPRING QUARTER, 1954

REGISTRATION PERIOD

FEB. 24-MAR. 12	Registration for students in residence Winter Quarter, 1954. *(Registration appointments will be issued on presentation of ASUW cards beginning January 22.)*
MAR. 24-MAR. 26	Registration for former students not in residence Winter Quarter, 1954. *(Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 18.)*
MAR. 24-MAR. 26	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. 29—MONDAY	Instruction begins
APR. 2—FRIDAY	Last day to add a course
MAY 21—FRIDAY	Governor's Day
MAY 31—MONDAY	Memorial Day holiday
JUNE 6—SUNDAY	Baccalaureate Sunday
JUNE 11—FRIDAY	Instruction ends
JUNE 12—SATURDAY	Commencement

SUMMER QUARTER, 1954

REGISTRATION PERIOD

JUNE 2-JUNE 4 JUNE 14-JUNE 18	Registration for all students. *(Registration appointments for students in residence Spring Quarter, 1954, and for former students not in residence Spring Quarter, 1954, may be obtained from the Registrar's Office beginning April 19. 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 21—MONDAY	Instruction begins
JUNE 22—TUESDAY	Last day to add a course for the first term
JUNE 25—FRIDAY	Last day to add a course for the full quarter
JULY 5—MONDAY	Independence Day holiday
JULY 21—WEDNESDAY	First term ends
JULY 22—THURSDAY	Second term begins
JULY 23—FRIDAY	Last day to add a course for the second term
AUG. 20—FRIDAY	Instruction ends

AUTUMN QUARTER, 1954

REGISTRATION PERIOD

SEPT. 7-SEPT. 28	Registration for students in residence Spring Quarter, 1954. *(Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 24, but no later than September 17.)*
SEPT. 10-SEPT. 28	Registration for former students not in residence Spring Quarter, 1954. *(Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 24, but no later than September 17.)*
SEPT. 13-SEPT. 24	Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (*August 27 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. 13-SEPT. 28	Registration for new transfer students with at least full sophomore standing. (*August 27 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. 27—MONDAY	Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing
SEPT. 29—WEDNESDAY	Instruction begins (8 a.m.) for all other students
OCT. 1—FRIDAY	President's Convocation (11 a.m.)
OCT. 5—TUESDAY	Last day to add a course
NOV. 11—THURSDAY	Armistice and Admission Day holiday
NOV. 25-NOV. 28	Thanksgiving recess
DEC. 17—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1955

REGISTRATION PERIOD

NOV. 22-DEC. 10	Registration for students in residence Autumn Quarter, 1954. *(Registration appointments will be issued on presentation of ASUW cards beginning October 22.)*
DEC. 29-DEC. 31	Registration for former students not in residence Autumn Quarter, 1954. *(Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 18.)*
DEC. 29-DEC. 31	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—MONDAY	Instruction begins
JAN. 7—FRIDAY	Last day to add a course
FEB. 22—TUESDAY	Washington's Birthday and Founder's Day holiday
MAR. 18—FRIDAY	Instruction ends

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

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

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CHARLES F. FRANKLAND, *Vice-President*	Seattle
THOMAS BALMER	Seattle
DONALD G. CORBETT	Spokane
MRS. J. HERBERT GARDNER	La Conner
JOHN L. KING	Seattle
WINLOCK W. MILLER	Seattle

John Spiller, *Secretary*

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HAROLD P. EVEREST, M.A.	*Vice-President of the University*
ETHELYN TONER, B.A.	*Registrar*
NELSON A. WAHLSTROM, B.B.A.	*Comptroller and Business Manager*
FRANCIS FOUNTAIN POWERS, Ph.D.	*Dean of the College of Education*
ELLA WESA REDFERN, B.A.	*Assistant to the Dean*

COLLEGE OF EDUCATION FACULTY

BAILY, ATHOL ROMAYNE, 1949 ..... *Assistant Professor of Industrial Education*
B.S., 1931, Kansas State Teachers College; M.A., 1936, Ed.D., 1949, Missouri

BARR, JOHN ALTON, 1947 (1949) ..... *Assistant Professor of Guidance*
B.S., 1936, M.A., 1938, Minnesota; Ph.D., 1948, Washington

BATIE, HARRIETT VIRGINIA, 1941 (1949) ..... *Instructor in Education; Certification and Academic Adviser*
B.S., 1935, Hastings College; M.A., 1945, Washington

BOLTON, FREDERICK ELMER, 1912 (1947) ..... *Professor Emeritus of Education; Research Consultant; Dean Emeritus of the College of Education*
B.S., 1893, M.S., 1896, Wisconsin; Ph.D., 1898, Clark

BOROUGHS, HOMER, JR., 1948 (1950) ..... *Assistant Professor of Elementary Education*
B.A., 1939, Western Washington College of Education; M.A., 1947, Ph.D., 1949, Washington

COLE, THOMAS RAYMOND, 1930 (1951) ..... *Professor Emeritus of Education; Consultant in School Service*
Ph.B., 1902, M.A., 1903, LL.D. (Hon.), 1931, Upper Iowa

CORBALLY, JOHN EDWARD, 1927 (1942) ..... *Professor of Secondary Education; Director of Practice Teaching*
B.A., 1918, Whitworth College; M.A., 1925, Ph.D., 1929, Washington

DRAPER, EDGAR MARIAN, 1925 (1936) ..... *Professor of Curriculum; Director of In-Service Teacher Training*
B.A., 1916, M.A., 1925, Ph.D., 1926, Washington

DVORAK, AUGUST, 1923 (1937) ..... *Professor of Education; Director of Admissions Research*
B.A., 1920, Ph.D., 1923, Minnesota

HAYDEN, ALICE HAZEL, 1942 (1952) ..... *Professor of Educational Research*
Ph.C., 1928, B.S., 1929, M.S., 1929, Oregon State; Ph.D., 1932, Purdue

JESSUP, JOHN HUNNICUTT, 1926 (1927) ..... *Associate Professor of Educational Sociology*
A.B., 1920, Earlham College; M.A., 1924, Iowa

MACDONALD, CECILIA, 1949 (1950) ..... *Assistant Professor of Elementary Education*
B.A., 1946, Central Washington College of Education;
M.Ed., 1952, Washington

POWERS, FRANCIS FOUNTAIN, 1928 (1939) ..... *Professor of Educational Psychology; Dean of the College of Education*
B.A., 1923, Washington; M.A., 1927, Oregon; Ph.D., 1928, Washington

STEVENS, EDWIN BICKNELL, 1936 (1947) ..... *Professor Emeritus of Education; Adviser to Higher Education Conference*
A.B., 1896, Tufts College;
A.M., 1899, Harvard

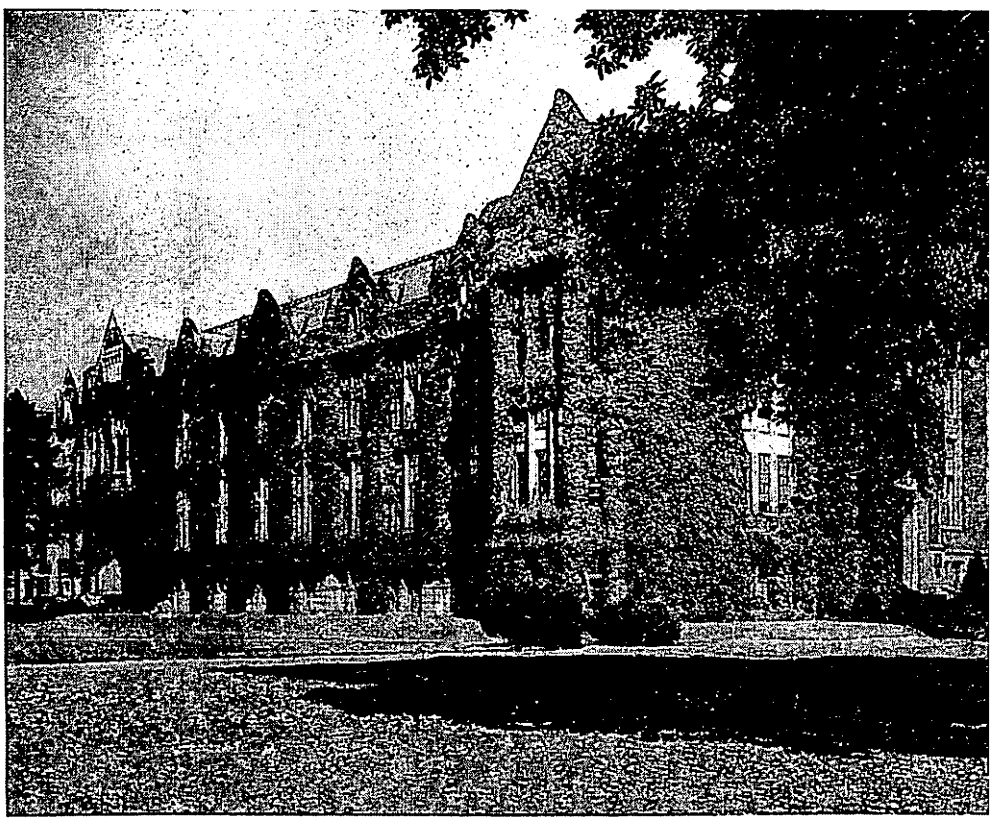
STRAYER, GEORGE DRAYTON, JR., 1949 ..... *Professor of Educational Administration*
B.S., 1927, Princeton; M.A., 1928, Ph. D., 1934, Columbia

WILLIAMS, CURTIS TALMADGE, 1920 (1936) ..... *Professor of Methods and Philosophy of Education*
A.B., 1913, Kansas State Normal College;
A.M., 1914, Ph.D., 1917, Clark

COOPERATING FACULTY

ALEXANDER, MARGARET A. ..... *Instructor, General Business*
ALLENDOERFER, CARL B. ..... *Professor and Executive Officer, Mathematics*
BIJOU, SIDNEY W. ..... *Professor, Psychology*
BLASER, H. WESTON ..... *Associate Professor, Botany*
BONE, HUGH A. ..... *Professor, Political Science*
BOUGHTON, GLADYS R. ..... *Assistant Professor and Director, Librarianship*
BOWERMAN, CHARLES E. ..... *Assistant Professor, Sociology*
BRAZEAU, WENDELL ..... *Assistant Professor, Art*
BRIER, HOWARD M. ..... *Assistant Professor, Communications*
BRIGGS, ROBERT ..... *Acting Assistant Professor, General Business*
BROER, MARION R. ..... *Assistant Professor, Physical Education for Women*
CADY, GEORGE H. ..... *Professor, Chemistry*
CARTER, JUANITA E. ..... *Instructor, General Business*
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. ..... *Assistant Professor, English*
EYRE, JOHN D. ..... *Assistant Professor, Geography*
FOX, KATHARINE ..... *Assistant Professor, Physical Education for Women*
FROST, VERNON R. ..... *Professor and Director, Communications*
FULLER, STEVEN D. ..... *Instructor, Art*
GATES, CHARLES M. ..... *Professor, History*
GRIMSHAW, AUSTIN ..... *Professor and Dean, Business Administration*
GROVES, ELIZABETH A. ..... *Assistant Professor, Librarianship*
GRUMMEL, WILLIAM C. ..... *Assistant Professor, Classics*
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*
HOLT, W. STULL ..... *Professor and Executive Officer, History*
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*
ISAACS, WALTER F. ..... *Professor and Director, Art*
JERBERT, ARTHUR R. ..... *Associate Professor, Mathematics*
JOHNSON, PAULINE ..... *Associate Professor, Art*
KATCHER, ALLAN ..... *Assistant Professor, Psychology*
KENWORTHY, RAY W. ..... *Associate Professor, Physics*
KINGSTON, J. MAURICE ..... *Assistant Professor, Mathematics*
LOUCKS, ROGER BROWN ..... *Professor and Executive Officer, Psychology*
LUNDBERG, GEORGE A. ..... *Professor and Executive Officer, Sociology*
MACLEAN, DOROTHY ..... *Assistant Professor, Physical Education for Women*
MANLEY, JOHN HENRY ..... *Professor and Executive Officer, Physics*
MARTIN, ARTHUR W. ..... *Professor and Executive Officer, Zoology*
MARTS, MARION ERNEST ..... *Assistant Professor, Geography*
MCADAMS, LAURA E. ..... *Associate Professor, Home Economics*
MCDIARMID, J. B. ..... *Associate Professor and Executive Officer, Classics*
MCLELLAN, HELEN ..... *Associate Professor, Physical Education for Women*
MEYER, HERMAN C. ..... *Associate Professor, Germanic Languages*
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*
PEEK, CLIFFORD ..... *Assistant Professor, Physical Education for Men*
POWERS, LELAND E. ..... *Professor and Executive Officer, Public Health and Preventive Medicine*
RAHSKOPF, HORACE G. ..... *Professor and Executive Officer, Speech*
REEVES, G. SPENCER ..... *Associate Professor, Public Health and Preventive Medicine*
ROOT, CATHERINE A. ..... *Assistant Professor, Music*
ROWNTREE, JENNIE I. ..... *Professor and Director, Home Economics*
RULIFSON, LEONE H. ..... *Associate Professor, Physical Education for Women*
SIMPSON, LURLINE V. ..... *Associate Professor, Romance Languages*
SORENSEN, ALICE J. ..... *Associate Professor, Music*
STROTHER, CHARLES R. ..... *Professor, Psychology*
TAYLOR, GEORGE E. ..... *Professor and Executive Officer, Far Eastern and Slavic Languages and Literature*
TIDWELL, M. FRED ..... *Associate Professor, General Business*
TURNER, MABEL ..... *Assistant Professor, Librarianship*
UTTERBACK, C. L. ..... *Professor, Physics*
VAIL, CURTIS C. D. ..... *Professor and Executive Officer, Germanic Languages*
VARGAS-BARON, ANIBAL ..... *Associate Professor, Romance Languages*
VAVRA, CATHERINE E. ..... *Assistant Professor, Public Health and Preventive Medicine*
WATERS, ELLEN H. ..... *Assistant Professor, Physical Education for Women*
WILLISTON, FRANK G. ..... *Professor, Far Eastern*
WILSON, RUTH M. ..... *Associate Professor and Executive Officer, Physical Education for Women*
WILSON, WILLIAM E. ..... *Professor, Romance Languages*
WOODBURNE, LLOYD S. ..... *Dean, Arts and Sciences*



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, and President Anderson himself finally urged establishment of a state normal school. When normal schools were established at Cheney and Ellensburg in 1890 and at Bellingham in 1893, teacher training at the University halted altogether.

The 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 Education Hall, has advanced the development of many specialized functions, including the Education Library. Observation and practice work has been expanded and strengthened, and teacher-training enrollment is now stabilized at about a thousand students.

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 inter-library 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. A *Remedial News Letter* provides special help for teachers of elementary reading, and 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 near-by 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 from sons and daughters of University alumni. The College of Education, however, like most colleges in the University, admits out-of-state students and encourages those with good scholarship records to apply.

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

Correspondence concerning requirements for admission or graduation should be addressed to the Registrar.

Prospective students in the state of Washington may obtain official application blanks from their high school principals or from the University Registrar. A high school diploma may not be substituted for the official blank, which must include all credits and grades and a statement that the student has completed his course with a diploma of graduation. Students from other states may obtain blanks by writing directly to the Registrar. Out-of-state students will also receive medical questionnaire forms, which must be filled out by a physician and returned to the Registrar. For admission in Autumn Quarter, applications should be completed and returned after high school graduation and before July 15. At the same time complete credentials must be sent directly to the Registrar by the high school principal or the registrar of the college previously attended.

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

Applications and credentials received before July 15 have precedence. The last day for new students to submit applications for admission in Autumn Quarter, 1953, is August 28, 1953; for admission in Autumn Quarter, 1954, the last day is August 27, 1954. For admission in other quarters, applications and credentials should be received at least thirty days before the beginning of the quarter.

ADMISSION FROM ACCREDITED HIGH SCHOOLS

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

UNIT REQUIREMENT. The minimum requirement is 16 high school units (or 15 units exclusive of activity credit in physical education, debate, etc.) including 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 Education, the 9 academic units must include 3 units of English; 2 units of one foreign language; 1 unit each of laboratory science, social science, and elementary algebra; and 1 unit of either plane geometry or second-year algebra. Less than a unit in a foreign language will not be counted in the total.

SCHOLARSHIP REQUIREMENT. The College of Education scholarship requirement is a 2.2 grade-point average (equivalent to a C+ on the Washington grading system) in high school studies.

Graduates of accredited schools who meet the 2.2 scholarship standard and have 3 units in English and 6 units in other academic subjects, but who do not have all the specific subject requirements of the College, may petition the Dean of the College for permission to enter with provisional standing. Students who are deficient in both first-year algebra and plane geometry are seldom admitted on this basis. Students with provisional standing must register each quarter for make-up courses in the subject they lack until the entrance deficiency is removed. An application for a degree will not be accepted until all deficiencies are removed. 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. Extension and correspondence courses in first-year algebra and plane geometry are offered through the University Division of Adult Education for a fee of $15 a quarter and do not carry credit toward graduation.

Graduates of accredited schools who cannot meet the 2.2 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.*

No student will be accepted for admission to the University who would not be officially recommended to the university of his own state. Students from other states who are recommended to their own state universities on different grading systems will find their scholarship averages adjusted to the Washington four-point system.

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 meet requirements for admission without deficiency 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. In general, the University does not accept a student who is in scholastic or disciplinary difficulty at his former school.

1. Applicants who have completed a year or more of college work must have a 2.2 grade-point average in their entire college records. Those with less than a year of college work must have a 2.2 average in both their college and high school records.

2. Complete transcripts and letters of honorable dismissal must be sent directly to the University Registrar by the registrar of the former school.

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

4. 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.

5. 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.

6. 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 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

Foreign students must meet the same general requirements as those from American schools and must demonstrate a satisfactory command of the English language. The official record of Canadian students is the matriculation certificate or university admission certificate of their province. A student who 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 an official transcript forwarded to the Registrar (see page 15).

ADMISSION OF SPECIAL STUDENTS AND AUDITORS

Persons twenty-one or older 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 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.

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.

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 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 on campus each quarter.

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 permission of the Dean.

REGULAR STUDENTS

A regular student is a student who fulfills the following requirements: (1) He has been granted regular admission to a school or college of the University. (2) His current schedule for credit is satisfactory to the dean of his school or college. (3) He has completed all of the required steps for 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 AND ACHIEVEMENT TESTS

New freshman students (including transfer students with less than 45 quarter credits) take achievement tests in English, social science, natural science, and mathematics, and a general aptitude test as part of the registration requirements. Test results do not affect admission but are used in advising and in assigning students to appropriate sections of English, mathematics, and other courses. 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.

Veterans who are accepted for entrance to the College of Education 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 two months before 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 consult a Veterans Administration regional office at least one month before the beginning of the quarter. 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, because allowances are not made until after monthly attendance is established.

Principal fees for each quarter (Autumn, Winter, and Spring) are listed below.

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 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.

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 (for ASUW members, optional), 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 for men students taking physical education activities.

Music Fees, per quarter

Private lessons, one-half hour a week — 25.00

Private lessons, one hour a week — 37.50

Group lessons — 5.00

Piano practice, one hour a day — 3.00

Organ practice, one hour a day — 6.00

Practice rooms are available only to students taking music courses.

Directed (Practice) Teaching Fee, per credit — 1.00

The total cost usually amounts to $8.

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

Teaching Certificate Fee 2.50

This does not include the legal registration fee of $1, which is paid to the county school superintendent who first registers the certificate.

Bureau of Teacher Service and Placement Fees

Initial registration in senior year 5.00

Maintenance on active list each subsequent year 2.50

SPECIAL FEES

From $2 to $5 is charged for late registration; $2 for each change of registration; $5 for a late medical examination; and $1 for a late X ray. The fee for a special examination is $1; for an advanced-credit examination, $2 per credit; and for removal of an Incomplete, $2.

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.

ESTIMATE OF YEARLY EXPENSES

The figures given below are minimum estimates for an academic year, which includes Autumn, Winter, and Spring Quarters. Special charges and the cost of books and supplies vary according to the course program and may change from year to year. 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

Athletic Admission Ticket (optional) 5.00

Accident Insurance (optional) 4.95

Special Charges and Deposits 38.50

Military uniform deposit, breakage ticket, and locker fees.

Books and Supplies 75.00

Board and Room

Double room in campus temporary dormitory, with meals in University Commons and Student Union Cafeteria, or double room and meals in Men's Residence Hall 500-585.00

Room and meals in Women's Residence Halls 525-600.00

Room and meals in student cooperative house 435.00

Room and meals in fraternity or sorority house 600.00

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

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.

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 three annual scholarships of $100 each, awarded by the Washington Congress of Parents and Teachers to freshmen with outstanding high school records, 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.

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

Men students may obtain rooms in the Men's Residence Hall, which is scheduled for completion in the fall of 1953, or in University-operated temporary dormitories, 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, Friends' Center, 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

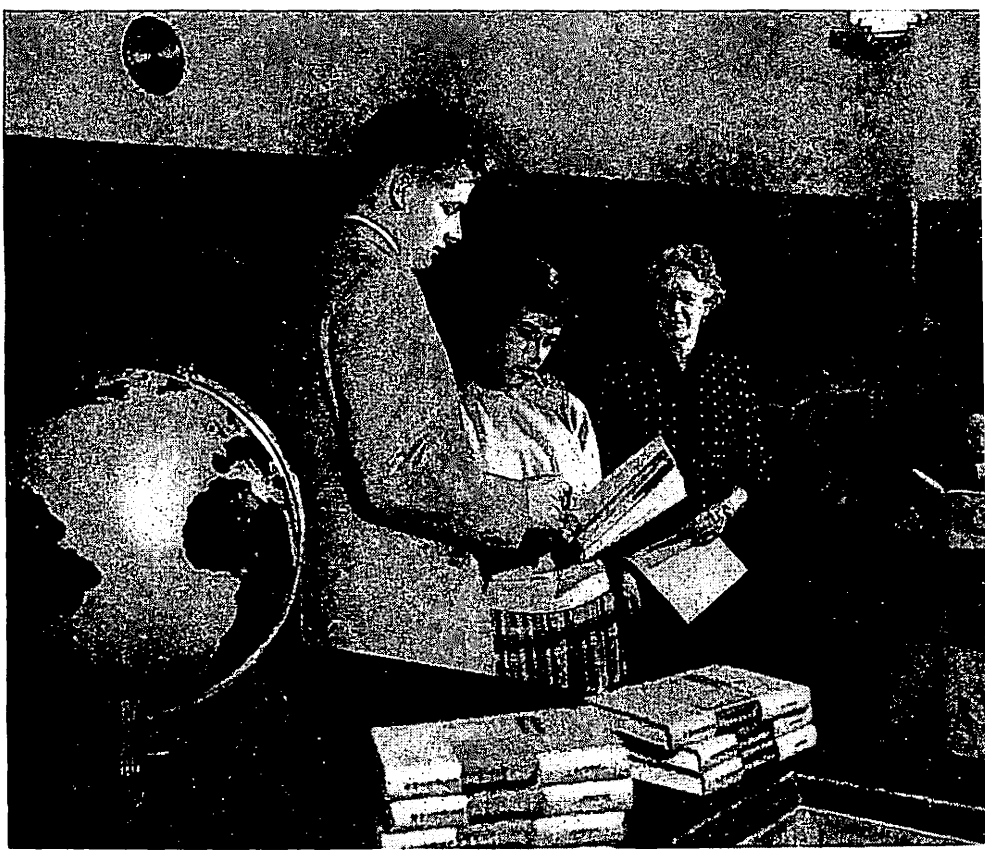
The University maintains a health center which helps to guard against infectious diseases and incipient ill health. A dispensary is available to students during class hours, and an infirmary receives bed patients at any hour.

The infirmary provides nursing care, medicine, 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 and their wives and husbands. 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 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 Education Hall, during their senior year, and should obtain recommendations before leaving the University, while their work and personal qualities are clear in the minds of their instructors. These records are kept in the Bureau's files for use when needed.



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 Doctory 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.

Education students are required to remove high school deficiencies during the freshman year. An application for a degree will not be accepted until all deficiencies are removed. Students have the privilege of graduating under the requirements in effect the year they enter or those in effect the year they receive a degree.

Application for a bachelor's degree should be made through the College advisory office during the first quarter of the senior year.

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, nursery school, 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 31-40).

BACHELOR OF SCIENCE. To obtain the Bachelor of Science degree, students may major in biology, geology, health education, home economics, mathematics, physics, or psychology. The requirements for each major are included in the first area of concentration in that subject (see pages 31-40).

BACHELOR OF ARTS IN ELEMENTARY EDUCATION. Students who wish to emphasize elementary school teaching may choose a major in elementary education. A mini-

mum of 36 credits in elementary education is required for this major. Courses include Education 209, 360, 370E, 371K or E, 374, 376, 377X-377Y, 378C, D, 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 31). 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).

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 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 credit in other University courses.

The military training requirement may be met with courses in any one of three University departments: Air Science and Tactics, Military Science and Tactics, and 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. 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.

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.

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 Executive Officer of the School of Physical Education and the University Health Officer. Those who are recommended by the Health Officer for exemption, deferral, or registration in special classes of modified physical education activities must report to the School of Physical Education for approval of exemption or deferral or assignment to modified activities courses.
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.

Men students take Physical Education 104, a basic skills course, in their first quarter, and swimming in their second or third quarter. In the other four quarters they may choose any four of a variety of gymnastics and sports, or may substitute freshman or varsity sports.

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.

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.

SCHOLARSHIP AND MINIMUM CREDITS

Students in the College of Education must maintain a 2.2 grade-point average. A cumulative 2.2 average is required for graduation. Grade points per credit are awarded on the following basis: a grade of A earns 4 points; B, three points; C, 2 points; and D, 1 point. The grade of E signifies failure and the grade-point equivalent is 0. The average is computed by multiplying the grade point received in a course by the 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. 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.

GROUP REQUIREMENTS

Courses taken by education students are in three main groups: humanities, social sciences, and sciences. Each student must complete 30 credits in one group, 20 credits in another, and 10 credits in the remaining group. 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:

Humanities	*Social Sciences*	*Sciences*
Architecture	Anthropology	Anatomy 301
Art	Economics	Astronomy
Classics	Far Eastern Institute courses	Biochemistry
Drama	Geography	Biological Science 101J-102J
English	History	Biology
Far Eastern languages	Home economics	Botany
General literature	Philosophy	Chemistry
Germanic languages	Physical education	Fisheries
Humanities 101, 102, 103, 201, 202, 203	Political science	Geology
Journalism	Psychology	Mathematics
Liberal arts	Social Science 101, 102, 103, 201, 202, 203	Meteorology
Librarianship	Sociology	Microbiology
Music		Oceanography
Radio		Pharmacy 115
Romance languages		Physical Science 101, 102, 104
Scandinavian languages		Physics
Slavic languages		Zoology
Speech		

SENIOR-YEAR RESIDENCE

Senior standing is attained when 135 credits, plus the required quarters of military training 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 a General Certificate 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 on September 1, 1951, at which time the Provisional General Certificate replaced them.

Transfer students who have been graduated from an approved four-year teacher-training institution 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 2.2 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 2.2 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 four 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 40).

Requirements for the Provisional General Certificate are:

1. A degree of Bachelor of Arts, Bachelor of Science, Bachelor of Arts in Elementary Education, or Bachelor of Science in Home Economics Education.

2. Evidence of such general scholarship and personal and moral qualities as give promise of success.

3. A cumulative grade-point average of 2.2 or above; an average of C or above in all education courses, with a C or above in Education 371K, E, X, or S; and an average of C or above in each area of concentration or basic academic field.

4. A signed oath of allegiance as a citizen of the United States.

5. A health examination within six months before the certificate is granted.

6. Academic work to total a minimum of 180 quarter credits, including the following:

A. Emphasis (either (1) or (2) may be chosen)
   (1) Elementary emphasis, kindergarten to grade six
      a. Major in elementary education, for degree of Bachelor of Arts in Elementary Education—minimum of 36 credits in elementary education
      b. One basic academic field (see B, below)
      c. A second area of concentration (see B, below)
      d. General education (see C, below)
      e. General education for elementary teachers (see D, below)
      f. Professional education (see E, below)
   (2) Secondary emphasis, grades seven to twelve
      a. First area of concentration, which includes major requirements for degree of Bachelor of Arts, Bachelor of Science, or Bachelor of Science in Home Economics Education (see B, below)
      b. Second area of concentration (see B, below)
      c. General education (see C, below)
      d. Professional education (see E, below)

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 31-40.
   (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 areas as outlined by the State Board of Education.

Fine and Applied Arts	*Health and Physical Education*	*Language Arts*	*Sciences and Mathematics*	*Social Studies*
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 (second area only)		Psychology
		Spanish		Sociology
		Speech		

C. General education including the following or their equivalents (required in both elementary and secondary emphases):

	CREDITS
English 101, 102, 103 English Composition	9
Physical Education Activities	6
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	
Nursery School 305 Personality Growth of the Preschool Child	3
or	
Education 402 Child Study and Development	3
Music 107 or substitute Survey of Music	2-5
or	
Education 377X-Y Music for Elementary Teachers	6
Art 100 or substitute Introduction to Art	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:

	CREDITS
Drama 437 Creative Dramatics with Children	3
Geography 100 Survey of World Geography	5
History 241 Survey of the History of the United States	5
Home Economics 300 Nutrition	2
Librarianship 451 Children's Books	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:

	CREDITS
209 Educational Psychology (including laboratory experiences and taken concurrently with 370). Prerequisite, Psychology 100 and a course in child development	
370 Introduction to Teaching Procedures (including 2 credits in laboratory experiences and taken concurrently with 209)	5
370E Elementary School Methods (including 2 credits in laboratory experiences). Prerequisite, 370	5
374 Fundamentals of Reading Instruction. Prerequisite, 370E	5
390 Evaluation in Education. Prerequisite, 370	3
373 Washington State Manual	2
Special Methods for High School Teaching (prerequisite, 370), or 378C, D Physical Education for the Elementary School and 379 Arithmetic for Elementary Teachers (prerequisite, 370E)	2-8
371K or E Directed Teaching in Kindergarten or Elementary School. Prerequisites, 374, 376, 377X-Y, and 378 C, D	
or	
371X or S Directed Teaching in Junior or Senior High School. Prerequisite, 370E and Special Methods	8

360 Principles of Education (including curriculum study and taken after 371K, E, X, or S) 3

372E, X, or S Professional Laboratory Experiences (taken on level different from directed teaching). Prerequisite, 371K, E, X, or S 3

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.

AREA I, FINE AND APPLIED ARTS

Art

First Area of Concentration. The requirements are: Art 105, 106, 107, 109, 110, 111, 112, 253, 254, 255, 256, 258, 272, 300, 301, 302, 303, 304, 305, 362, 463, 466, 495, 496, and 497; Architecture 100 and 101; Philosophy 445 or Liberal Arts 111; plus recommended courses to complete the area. (The following courses are suggested for the thirteenth quarter; they may be taken either before or after teaching experience: 320, 326, 369, 450 or 451, and 464.)

Basic Academic Field. The requirements are: 45 to 48 credits, including Art 105, 106, 107, 109, 110, 111, 112, and 151; 6 credits from Art 253 (or 254 or 255), 256, 258, 272, 300, 302, 303, 305, and 326 (or 329); plus recommended courses to complete the field.

Second Area of Concentration. This program should be planned in consultation with an adviser.

Business Education

First Area of Concentration. The requirements are: 64 credits, including Accounting 150 and 151; Business Communications 310; Business Law 201; General Business 101; Marketing 301; Secretarial Training 10, 111, 112, 115, 120-121, 122, and 320; Education 324 and 325; plus 15 approved credits from secretarial training, accounting, or marketing courses; plus recommended courses to complete the area.

Basic Academic Field. The requirements are: 36 credits, including Accounting 150 and 151; General Business 101; Business Law 201; Secretarial Training 10, 111, 112, 115, 120-121, and 320; Education 324 and 325; plus recommended courses to complete the field.

Second Area of Concentration. The requirements are: 23 credits, including Accounting 150; Secretarial Training 10, 111, 112, 115, 120-121, and 320; Education 324 and 325; plus recommended courses to complete the area.

Home Economics

First Area of Concentration. The requirements are: Home Economics 101, 115, 125, 134, 215, 234, 248, 307, 315, 338, 347, 348, 354, 356, and 457; 3 credits from Home Economics 407, 434, 447, or 495; Art 109; Chemistry 101, 230; Economics 200; Nursery School 305; Nursing 100; Sociology 110; Zoology 208; Microbiology 301; plus recommended courses to complete the area.

Basic Academic Field. The requirements are: 45 credits, including Home Economics 101, 115, 125, 134, 215, 234, 248, 307, 347, 348, 354, 356, and 457; plus recommended courses to complete the field.

Second Areas of Concentration. The requirements for specialization in textiles, clothing, and art are: Home Economics 125, 134, 234, and 347; and electives selected from 321, 322, 329, 334, 338, 426, and 434. The requirements for specialization in food, nutrition, and health are: Home Economics 115, 215, 300, 350, and 457; and Nursing 100. The requirements for specialization in family relationships and child welfare are: Home Economics 110, 350, 356, and 457; Nursery School 305. In each specialization, recommended courses may be added to complete the areas.

Industrial Education

First Area of Concentration. The requirements are: 36 credits, including Education 180, 181, 280, 281, 380, 383-384, 386, and 388; Mechanical Engineering 201, 202, 203, and 305; Architecture 105; plus recommended courses to complete the area.

Basic Academic Field. The requirements are the same as those for the first area of concentration.

Second Area of Concentration. The requirements are: Education 180, 181, 280, 281, and 388; Mechanical Engineering 201, 202, and 203; plus recommended courses to complete the area.

Music

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, 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 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, 345, or 346J, an examination in piano and voice is given.

For graduation, students are required to earn a grade-point average of 2.5 in music courses.

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 songs and of art songs; (2) sing at sight one part in two- and four-part songs; (3) analyze the vocal performances of other students in the class and give constructive criticisms.

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.

FIRST AREA OF CONCENTRATION.

FIRST YEAR	CREDITS
Music 101, 102, 103	9
Vocal or Instrumental Instruction	6
Music Ensemble	0
Engl. 101, 102, 103	9
Psychol. 100	5
*Speech 100	5
Science	5
Electives	4
Phys. Educ. 110 or 175	2
Phys. Educ. activity	3
	48

SECOND YEAR	CREDITS
Music 124, 125, 126	3
Music 201, 202, 203	9
Music 207, 208, 209	6
Vocal or Instrumental Instruction	6
Music Ensemble	0
Psychol. 306 or Nursery School 305 or Educ. 402	5 or 3
Educ. 209 and 370 (in third quarter)	8
Science	5
Phys. Educ. activity	3
Electives	3
	48-46

THIRD YEAR	CREDITS
Music 224, 225, 226	3
Music 304	2
Music 384, 385, 386	4
Vocal or Instrumental Instruction	6
Music Ensemble	3
*Educ. 370E and 374	10
Educ. 390 and *373	5
*Art 100 or substitute	2-5
Electives	4
Music Theory, upper division	6
	45-48

FOURTH YEAR	CREDITS
Music 244	1
Music 344, 345, 346J	9
Vocal or Instrumental Instruction	6
*Public Health 461	5
Music Ensemble	3
*Hist. 464	5
Educ. 371S	8
*Educ. 360	3
*Educ. 372E	3
Social Science	5-8
Electives	0-3
	51

*Candidates for the Bachelor of Arts degree in music education who do not plan to teach in the state of Washington are not required to take the courses designated by an asterisk.

BASIC ACADEMIC FIELD. The requirements are: Music 101, 102, 103, 110A, 110C; 111 or 112, 120A, and 120C; 4 credits from 124, 125, 126, 224, 225, and 226; 244, 304, and 385; one year of music ensemble; Education 377X-Y; plus recommended courses to complete the field.

SECOND AREA OF CONCENTRATION. The requirements for a vocal area are: Music 101, 102, 103, 130C, 304, 346J, 384, 385, 386; 3 credits in upper-division choral ensemble; plus recommended courses to complete the area. The requirements for an instrumental area are: Music 101, 102, 103, 124, 125, and 126; 130B, 130D, 130F, or 130G; 224, 225, 226, 244, 304, 346J, 384, 385, and 386; plus recommended courses to complete the area.

AREA II, HEALTH (INCLUDING PHYSICAL EDUCATION)

Health Education (Public Health Emphasis)

FIRST AREA OF CONCENTRATION. The requirements are: 45 credits, including Public Health 301 or 402, 412, 461, 464, and 485; Conjoint 496 or Education 402; Physical Education 291, 292, 345, and 453; Sociology 353 or Home Economics 356; Psychiatry 450 or Education 408; Home Economics 300; Microbiology 301; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are: 40 credits, including Public Health 301 or 402, 412, 461, 464, and 485; Conjoint 496 or Education 402; Physical Education 291, 292, 345, and 453; Psychiatry 450 or Education 408; Home Economics 300; Sociology 353 or Home Economics 356; Microbiology 301 or equivalent; plus recommended courses to complete the field.

SECOND AREA OF CONCENTRATION. The requirements are: Physical Education 291, 292, and 453; Public Health 301, 412, and 461; plus recommended courses to complete the area.

Physical Education for Men

FIRST AREA OF CONCENTRATION IN PHYSICAL EDUCATION. The requirements are: Physical Education 161, 162, 163, 264, 265, 266, 181, 182, 183, 284, 285, 286, 190, 291, 292, 293, 294, 309, 322, 324, 340, 345, 358, 361, 363, 364, 447, 450,

465, and 493; 6 credits from 370, 371, 372, and 373; Anatomy 301; Chemistry 101, 230; Sociology 110; Zoology 111 and 112, or Biology 101J-102J; Zoology 114 and 208; plus recommended courses to complete the area.

First Area of Concentration in Health Education. The requirements are: Physical Education 291, 292, 345, and 453; either Anatomy 301 and Zoology 208 or 358, or Conjoint 317-318; either Biology 101J-102J or Zoology 111 and 112; Chemistry 101 and 230; Sociology 110; Conjoint 496 or Education 402; Home Economics 300; Microbiology 301 or an approved substitute; Psychiatry 450 or Education 408; Public Health 301 or 402; Public Health 412 and 464; Sociology 353 or Home Economics 356; plus recommended courses to complete the area.

Basic Academic Field. Students who plan to complete a basic academic field in physical education should consult advisers in the College of Education and the School of Physical Education.

Second Area of Concentration in Physical Education. The requirements are: Physical Education 161, 162, 163, 264, 265, 266, 181, 182, 183, 184, 185, 186, 345, 358, 361, 363, 364, and 450; 370, 371, 372, or 373; Zoology 118, 208, or 358; plus recommended courses to complete the area.

Second Area of Concentration in Health Education. The requirements are: Physical Education 291, 292, and 453; Public Health 301 and 412; plus recommended courses to complete the area.

Physical Education for Women

First Area of Concentration in Physical Education. The requirements are: Physical Education 115, 121, 157, 176, 177, 178, 281, 282, 283, 284, 190, 292, 293, 301, 311, 312, 318, 322, 344, 345, 356, 362, 363, 364, 450, 466, and 480; Anatomy 301; Biology 101J-102J; Zoology 111 and 112, or Chemistry 101 and 230; Sociology 110; Zoology 208 or 358; 5 credits in physics or an approved elective; plus recommended courses to complete the area. If this area is not accompanied by a second area in health education, Physical Education 453 and 465 and Home Economics 300 are also required.

First Area of Concentration in Health Education. The requirements are: Physical Education 291, 292, 345, and 453; either Anatomy 301 and Zoology 208 or 358, or Conjoint 317-318; either Biology 101J-102J or Zoology 111 and 112; Chemistry 101 and 230; Sociology 110; Conjoint 496 or Education 402; Home Economics 300; Microbiology 301 or approved substitute; Psychiatry 450 or Education 408; Public Health 301 or 402, 412, and 464; Sociology 353 or Home Economics 356; plus recommended courses to complete the area (chosen in consultation with an adviser).

Basic Academic Field. Students who plan to complete a basic academic field in physical education should consult advisers in the College of Education and the School of Physical Education.

Second Area of Concentration in Physical Education. The requirements are: Physical Education 176, 177, 178, 292, 309, 312, 345, and 363; Zoology 118, 208, or 358; plus recommended courses to complete the area (chosen in consultation with an adviser).

Second Area of Concentration in Health Education. The requirements are: Physical Education 291, 292, and 453; Public Health 301 and 412; plus recommended courses to complete the area.

AREA III, LANGUAGE ARTS

Drama

First Area of Concentration. The requirements are: Drama 101, 102, 146, 147, 148, 251, 252, 253, 403, 404, 405, 406, 414, 421 or 423, 422, 427, 428, 429, 451, 452, 453, 481 or 482 or 483, and 497; 25 credits in literature, including

English 264, 265, 370, and 371 or 372; plus recommended courses to complete the area. A senior comprehensive examination is also required.

BASIC ACADEMIC FIELD. The requirements are: 45 credits, including Drama 101, 102, 146, 147; 6 credits from 251, 252, and 253; 307, 308, or 309; 434, 435, or 436; 6 credits from 403, 404, 405, 406, and 414; 6 credits from 427, 428, 429 or 451, 452, and 453; 497; 10 credits in drama electives; plus recommended courses to complete the field.

SECOND AREA OF CONCENTRATION. The requirements are: 33 credits, including Drama 101, 102, 146, 147, 148, 251, and 252; 6 credits from 403, 404, 405, 406, and 414; 6 credits from 427, 428, 429, 451, 452, and 453; 497; plus recommended courses to complete the area.

English

FIRST AREAS OF CONCENTRATION. The requirements for specialization in advanced writing are: 50 credits, including English 258, 264 or 370, 377 or 374, 387 or 417; 448 or 449; 404, 406, or 466; 6 credits from 251, 252, and 253; 6 credits from 261, 262, and 263; 6 credits from 328 and 329; 6 credits from 277 and 278; 15 credits in upper-division writing courses, 10 of these in consecutive courses; Education 326; Speech 240; plus recommended courses to complete the area. The remainder may be in advanced writing, literature, and related fields.

The requirements for specialization in literature are: 50 credits, including English 257 or 258, 351, and 370; 344, 345, 367, 368, or 369; 374, 375, 377, 378, or 379; 361, 362, or 363; 387 or 417; 10 credits in courses which continue or are closely related in period or subject matter to two of those already chosen; Education 326; Speech 240; 3 credits in advanced writing; plus recommended courses to complete the area. The remainder may be in upper-division literature and advanced writing, and in foreign literature in translation.

BASIC ACADEMIC FIELD. The requirements are: 45 credits, including English 257 or 258, 351, and 370; 344, 345, 367, 368, or 369; 374, 375, 377, 378, or 379; 361, 362, or 363; 15 credits in English electives, 10 of which continue or are closely related to two of the upper-division courses already chosen; plus recommended courses to complete the field.

SECOND AREAS OF CONCENTRATION. One area requires 36 credits, including Speech 240; English 387 or 417; at least 3 credits in advanced writing; and electives in literature (including Shakespeare and nineteenth-century English and American literature) to complete the required credits. The other area requires 24 credits, including Speech 240; one course each in advanced writing and literature; and electives to complete the requirement, preferably including either 264, 265, and 266, or 257, 258, and 387 (or 417). The requirements in each case include recommended courses to complete the area.

French

FIRST AREA OF CONCENTRATION. The requirements are: 45 credits, including French 201, 202, 203, 301, 302, 303, 304, 305, 306; 327, 328, 329 or 330; 341, 358, and 359; 12 credits in electives and some directed reading; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: a minimum of 24 credits in French courses numbered above 203; plus recommended courses to complete the area.

Germanic Languages and Literature

Scientific German, courses in English translation, and first-year German are not counted toward the major or toward teaching areas.

First Area of Concentration. The requirements are: 29 credits, including German 207, 230, 300, 301, 302, 303, 401, 402, and 403; Education 330; plus recommended courses to complete the area.

Basic Academic Field. The requirements are the same as those for the first area of concentration.

Second Area of Concentration. The requirements are: 20 credits, including German 207, 300, 301, 302, 303, 401, 402, 403, and 3 credits in electives; Education 330; plus recommended courses to complete the area.

Journalism

First Area of Concentration. The requirements are: Journalism 100, 200, 201, 220, 300, 303, 306, 311, 329, 333, 334, 375J, and 428; plus recommended courses to complete the area. All journalism courses must be scheduled by arrangement with the Director of the Division of Journalism. A 3.0 minimum grade-point average must be maintained in all journalism courses, otherwise credits may be applied only toward a second area of concentration.

Basic Academic Field. The requirements are the same as those for the first area of concentration.

Second Area of Concentration. The requirements are: Journalism 200, 201, 220, 300, 306, and 375J; plus recommended courses to complete the area. All journalism courses must be scheduled by arrangement with the Director of the Division of Journalism.

Latin

First Area of Concentration. The requirements are: 27 credits in upper-division Latin courses; 9 credits chosen with the consent of the Department from upper-division Latin and Greek courses, Classics 330, History 201-202, 403, and 404, and Philosophy 320; plus recommended courses to complete the area.

Basic Academic Field. The requirements are the same as those for the first area of concentration.

Second Area of Concentration. The requirements are: 20 credits in courses numbered above 300, including Latin 309; plus recommended courses to complete the area.

Librarianship

A high school librarian's certificate is required of all librarians in accredited high schools. Applicants must hold a teaching certificate. Course requirements are as follows:

1. For librarianship in schools with enrollment of 100 or less: a minimum of 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 paragraph 2 above.
4. For librarianship in schools with enrollment of 500 or more: one year of training in an approved library school.

Second Area of Concentration. The requirements are: 18 credits, including Librarianship 451, 460, 461, 462, 463, and 464; plus recommended courses to complete the area.

Spanish

First Area of Concentration. The requirements are: 45 credits, including Spanish 201, 202, 203, 301, 302, 303, 304, 305, 306, 358, and 359; 14 credits in electives and some directed reading; 6 credits from 327, 328, 329 and 330; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 24 credits, including Spanish 210, 211, and 212; plus recommended courses to complete the area. Only courses numbered above 203 are counted toward the total requirements.

Speech

FIRST AREA OF CONCENTRATION IN GENERAL SPEECH. The requirements are: 50 credits, including Speech 100, 120, 210, 240, 332, 352, 470, 498, and two credits in 339, 349, or 369; Education 342 or Speech 359 (choice to be approved by Department of Speech); plus recommended courses to complete the area. The student will also take approved supporting courses in drama, English, and/or social studies. (In the fifth year, students must elect an additional 15 credits of speech courses approved by the Department of Speech, including Speech 400 unless it has already been completed.)

FIRST AREA OF CONCENTRATION IN SPEECH CORRECTION. The requirements are: 51 credits, including Speech 100, 120, 210, 352, 470, 471; 8 credits in clinical practice (474 and/or 484); 480, 481, 489 and 498; plus recommended courses to complete the area. (In the fifth year, students must elect an additional 14 credits in speech courses approved by the Department of Speech, including Speech 400 unless it has already been completed. It is expected that students who emphasize speech correction and hearing will also elect additional approved courses in psychology during the fifth year.)

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION IN GENERAL SPEECH. The requirements are: 30 credits, including Speech 100, 120, 210, 230 or 240, 352, and 470; Education 342 or Speech 359 (choice to be approved by Department of Speech). (In fifth year students must elect an additional 5 credits approved by the Department of Speech.)

AREA IV, SCIENCES AND MATHEMATICS

Biology

FIRST AREA OF CONCENTRATION. The requirements are: 60 credits, including either Biology 101J-102J, Botany 111, or Zoology 111; Biology 451; Botany 112, 113, and 371 or 472; Zoology 112, and 358 or 400; Zoology 433, 434, or 444, or Biology 473; Zoology 463, 464, or 465; Microbiology 301; 10 credits in approved electives, usually from Botany 201, and 202 or 331, Zoology 433, 434, and 456; and Biology 401 and 473; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 30 credits, including either (1) Botany 111 and 10 credits selected from Botany 112, and 113 or 371, or (2) Biology 101J-102J, Botany 112 or 113, and 371; either (1) Zoology 111 and 112 and any 5-credit upper-division laboratory course in zoology, or (2) Biology 101J-102J with a grade of A or B and 10 credits in any upper-division laboratory courses in zoology (if the grade in Biology 101J-102J is C, Zoology 112 must precede the laboratory courses in zoology); plus recommended courses to complete the area.

Chemistry

Grades of C or above must be obtained in all chemistry courses counted to meet the minimum requirements for a first or second area or a basic academic field.

FIRST AREA OF CONCENTRATION. The requirements are: 36 credits, including

Chemistry 115, 116 (or 111, 112, 113), 221, 231, 232, 241, 242, 351, 352, and 354; one year of college physics; plus recommended courses to complete the area. The election of enough college mathematics to include some calculus is recommended.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 25 credits, including Chemistry 115, 116 (or 111, 112, 113), 221, and 230; one year of high school or college physics; plus recommended courses to complete the area.

Geology

FIRST AREA OF CONCENTRATION. The requirements are: 36 credits, including Geology 205, 206, 207, and 412; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 20 credits, including Geology 101, 205, 206, and approved electives; plus recommended courses to complete the area.

Mathematics

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: 48 credits, including Mathematics 104, 105, 106, 307, 308, 309; 20 credits in approved electives, including 6 credits in algebra and 6 in geometry; plus recommended courses to complete the area. The only approved lower-division electives are 100 and 281.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 25 credits, including Mathematics 104, 105, 106; 12 credits in approved electives; plus recommended courses to complete the area. The only approved lower-division electives are 100 and 281.

Physics

FIRST AREA OF CONCENTRATION. The requirements are: 42 credits, including Physics 121, 122, 123 (or 101, 102, 103), 321, 322, 323, 325, 326, 360, and 361; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

AREA V, SOCIAL STUDIES

Civics

FIRST AREA OF CONCENTRATION. The requirements are: 40 credits, including Political Science 201, 360, and 376; Economics 160; Sociology 110; 13 elective credits in political science; 5 credits in economics or sociology; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 25 credits, including Political Science 201 and 360; Economics 160 or Sociology 110; 13 elective credits in political science; plus recommended courses to complete the area.

Economics

FIRST AREA OF CONCENTRATION. The requirements are: Economics 200, 201, 301, and 302; plus 25 additional credits to be selected from four fields of eco-

nomics other than the field of economic theory. Ten of the 25 credits must be taken in one of the four fields and 5 credits in each of the other three fields. Additional requirements are: Accounting 150, 255; either Business Statistics 201, Mathematics 281, Psychology 301, or Sociology 223; plus related courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 25 credits, including Economics 200, 201; three upper-division courses from three different fields of specialization; plus recommended courses to complete the area.

Far Eastern

SECOND AREA OF CONCENTRATION. The requirements are: 18 credits, including Far Eastern 110 or 310; Far Eastern 423J, 447, or 454J; Far Eastern 240, 241, 242, 243, 443, or 478; 3 or 5 credits in approved electives; plus recommended courses to complete the area. A 2.2 grade-point average is required in Far Eastern courses.

Geography

FIRST AREA OF CONCENTRATION. The requirements are: 50 credits, including Geography 100, 102, 202, 207, 210, 325, and 358; 23 credits in additional upper-division courses; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are: 45 credits, including Geography 100, 102, 202, 207, 210, 325, and 358; 18 credits in additional upper-division courses; plus recommended courses to complete the field.

SECOND AREA OF CONCENTRATION. The requirements are: 26 credits, including Geography 100, 102, 202, 210, 325, and 370; one course numbered above 400; plus recommended courses to complete the area.

History

FIRST AREA OF CONCENTRATION. The requirements are: 50 credits, including History 101 and 102 or Social Science 101, 102, 103; History 201-202, 241, and 464; plus recommended upper-division courses to complete the area. A 2.5 grade-point average is required in history courses.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 30 credits, including History 101 and 102 or Social Science 101, 102, and 103; History 241 and 464; plus recommended upper-division courses to complete the area. A 2.5 grade-point average is required in history courses.

Political Science

FIRST AREA OF CONCENTRATION. The requirements are: 40 credits, including Political Science 201, 202, 321, 351, 360, and 376; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 20 credits, including Political Science 202, 360, and 376; plus recommended courses to complete the area.

Psychology

FIRST AREA OF CONCENTRATION. The requirements are: 36 credits, including Psychology 100, 101, 200, 301, 400 or 427; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 18 credits, including Psychology 100 and 101; plus recommended courses to complete the area.

Sociology

FIRST AREA OF CONCENTRATION. The requirements are: 36 credits, including Sociology 110 or 310, 223, 230 or 430, 240, and 352 or 450; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 27 credits, including Sociology 110 or 310, and 352 or 430; plus recommended courses to complete the area.

Certificate Conversion Program

The Standard General Certificate has been issued since August, 1951, and is valid in all grades as 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. Transcripts of all college work must be presented by the candidate when the conversion program is begun.

The Standard General Certificate may be earned through the University of Washington, regardless of where the previous certificates were earned, if the teacher has had teaching experience in the state of Washington. Appropriate conversion programs are outlined below.

1. Requirements for conversion from the Provisional General Certificate to the Standard General Certificate include:

a. Approval of all proposed programs for the Standard General Certificate obtained from the recommending institution. (If the candidate plans to take his fifth year in the state of Washington, his *recommending institution* will be the one which he attends for the two residence quarters or one semester of the fifth year. If he plans to attend an out-of-state institution, his *recommending institution* will be the one in which he earned the Provisional General Certificate.)

b. A minimum of 45 quarter credits above the requirements for the bachelor's degree, 50 per cent of which must be in upper-division and/or graduate courses (those numbered 300 and above).

c. A minimum of 30 credits in residence, approved by the recommending institution, completed at *one* institution.

d. No more than 12 credits earned in approved correspondence and/or extension courses during the fifth year.

e. A 2.2 grade-point average (C+) for the fifth year.

f. At least one year of teaching experience, which must precede the fourteenth quarter.

g. Any suggestions made by supervisors or administrators with reference to courses or areas the candidate needs. These should be available at the time of the interview with the adviser, so that they can be incorporated into the fifth-year program.

h. A petition for the Standard General Certificate filed with an adviser in 221 Education Hall at the beginning of the conversion program.

i. The "Application for Teacher's Certificate" form, including the notarized oath of allegiance, filed with the county superintendent together with a $1 fee for release of the certificate.

j. Transcripts of all college work filed in 221 Education Hall.

2. 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 Education Hall, and transcripts of all college work are to be presented at the same time. The "Application for Teacher's Certificate" form, including the notarized oath of allegiance, must be filed with the county superintendent together with a $1 fee for release of the certificate.

3. 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. These specific education courses or their equivalents:

	CREDITS
370 Introduction to Teaching Procedures (emphasis on high school methods)	5
371E Elementary Directed Teaching	3-8
372S Professional Laboratory Experiences (secondary level)	3
One special methods course in the first broad area of concentration for high school teaching	2-5

b. A major or 45 quarter credits in one academic division.
c. At least one year of teaching experience.
d. An approved bachelor's degree.
e. A minimum of 45 credits above the requirements for the bachelor's degree, 50 per cent of which must be upper-division and/or graduate courses (those numbered 300 and above).
f. A minimum of 30 credits in residence at the University of Washington during the fifth year.
g. A 2.2 grade-point average (C+) for the fifth year.
h. A petition for conversion filed with an adviser in 221 Education Hall at the beginning of the conversion program.
i. The "Application for Teacher's Certificate" form, including the notarized oath of allegiance, filed with the county superintendent together with a $1 fee for release of the certificate.
j. Transcripts of all college work filed in 221 Education Hall.

4. 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. These specific education courses or their equivalents, to total 24 credits in elementary education:

	CREDITS
370E Elementary School Methods	5
371S Secondary Directed Teaching	3-8
372E Professional Laboratory Experiences (elementary level)	3
374 Fundamentals of Reading Instruction	5
402 Child Study and Development	3
Electives from the following:	
376 Art in the Elementary School	5
377X-Y Music for Elementary Teachers	6
378C, D Physical Education for the Elementary School	6

b. A major or 45 quarter credits in one academic division.
c. At least one year of teaching experience.
d. An approved bachelor's degree.
e. A minimum of 45 credits above the requirements for the bachelor's degree, 50 per cent of which must be upper-division and/or graduate courses (those numbered 300 and above).

f. A minimum of 30 credits in residence at the University of Washington during the fifth year.
g. A 2.2 grade-point average (C+) for the fifth year.
h. A petition for conversion filed with an adviser in 221 Education Hall at the beginning of the conversion program.
i. The "Application for Teacher's Certificate" form, including the oath of allegiance properly notarized, filed with the county superintendent together with a $1 fee for release of the certificate.
j. Transcripts of all college work filed in 221 Education Hall.

5. Teachers holding a Six-Year Elementary Certificate or the equivalent may continue it in force by earning 9 quarter credits every six years.

6. Persons holding a Six-Year Secondary Certificate or any other regular secondary certificate who wish to convert to the Continuing Secondary Certificate should file the appropriate "Application for Teacher's Certificate" form with the State Department of Public Instruction in the same manner as when renewing certificates. The Continuing Secondary Certificate is valid on the secondary level as long as the holder remains in teaching service and five years thereafter.

7. Persons holding a Six-Year Elementary Certificate or any other regular elementary certificate who wish to convert to the Continuing Elementary Certificate with the University of Washington as the recommending institution must have verification of the completion of 45 quarter credits above the requirements for the bachelor's degree, 50 per cent of which must be upper-division and/or graduate courses. Of the 45 credits, 12 may be earned in correspondence and/or extension. A minimum of 30 credits must be earned in residence at one institution, either this University or an approved out-of-state institution. A 2.2 grade-point average is required.

Students should file the appropriate "Application for Teacher's Certificate" form with the State Department of Public Instruction. The Continuing Elementary Certificate is valid as long as the holder remains in teaching service and five years thereafter.

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.*

EMERGENCY AND SPECIAL CERTIFICATES AND CREDENTIALS

Information about 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 last two years of successful experience as a teacher, plus two years of successful experience as an elementary, junior, or senior high school principal, or as a supervisor or head of a department in a senior high school, and as such have devoted at least two hours per day to administrative duties.

Courses that are not acceptable as graduate credit for advanced degrees at the University of Washington or the State College of Washington, or at other institutions authorized to grant such degrees and accredited by the State Board of Education, are not accepted for a superintendent's credential, except that when the teaching certificate has been earned in a secondary teacher-training institution, one-half of the 24 academic credits in elementary education in lieu of elementary administrative experience required for the superintendent's credential may be obtained on the undergraduate level at an elementary-teacher-training institution maintaining a laboratory school. Courses completed more than ten years prior to application are not acceptable. A course in school finance is required for a superintendent's credential.

The superintendent's credential is valid for a principalship in any field of service for which the holder of the credential is properly qualified with a teacher's certificate.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must 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 masters' degrees; two years of 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: educational methods, college teaching, curriculum, elementary education, educational administration and supervision, educational psychology, educational sociology, guidance and counseling, history and philosophy of education, and special education.

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, educational methods, college teaching, comparative education, curriculum, educational administration, educational psychology, educational sociology, educational supervision, elementary education, guidance and counseling, history and philosophy of education, secondary education, special education, and tests and measurements. (If business education is one of the two noneducation subjects, a maximum of 10 credits in it may be offered, these credits to be in business education, materials, and distributive education.) Students must take a written final examination over the selected four fields in education.

DOCTOR OF EDUCATION. The requirements are: 60 credits in education, including Education 490 or 491, 591, and 587 and 588 or 589, a minimum of 12 credits in one field of education, a minimum of 9 credits in each of three other fields of education, and electives to make up the total; and 45 credits in departments other than education, including 9 to 15 credits each in arts and letters, science and mathematics, foreign language, and social sciences. The fields in education from which an Ed.D. prospective candidate may elect work are: educational methods, college teaching, curriculum, educational administration and supervision, educational psychology, educational sociology, elementary education, guidance and counseling, history and philosophy of education, and special education.

DOCTOR OF PHILOSOPHY. The requirements are: 70 credits in education, including Education 490, 591, 587 and 588 or 589, 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 Ph.D. prospective candidates may specialize are: educational methods, college teaching, curriculum, educational administration and supervision, educational psychology, elementary education, guidance and counseling, history and philosophy of education, and special education.

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 and will be arranged with students individually.

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*, which is published just before registration begins.

COURSES FOR UNDERGRADUATES

Courses 320 to 346J and course 375J are special methods courses in secondary subjects.

74 Improvement of Reading and Study Habits (0)
This course is designed to increase rate and comprehension in reading and to improve study habits, so that students may achieve greater learning efficiency.

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**
Introduction to industrial education; the common tools, materials, processes, and products of industry.

209 Educational Psychology (3) **Batie, Powers**
The psychological basis of education. Recent experimentation. Prerequisites, Psychology 100 and a course in child development. 209 and 370 must be taken concurrently.

280 Fundamentals of Woodwork for Industrial Education Teachers (3) **Baily**
Hand tool processes; elementary machine operations; methods of assembling and fastening; simple wood finishing. Prerequisites, 180 and 181 or equivalent.

281 General Metalwork for Industrial Education Teachers (5) **Baily**
Tools, materials, and processes used in sheet metal, forging, casting, bench metal, ornamental iron work, welding, machining, and finishing of metal. Pr., 180 and 181 or equivalent. (Offered alternate years; offered 1953-54.)

320 Teachers' Course in Art (2) **Johnson**
Prerequisites, 209 and 370, senior standing, and permission.

321 Teachers' Course in Botany (2) **Blaser**
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 3.0.

323 Teachers' Course in Civics (2) **Hitchner**
Prerequisites, 209 and 370.

324 Teachers' Course in Business Education: Bookkeeping and General Business (2) **Carter**
Prerequisites, 209 and 370, Business Administration 101, and 10 credits in accounting.

325 Teachers' Course in Business Education: Typewriting, Shorthand, Transcription, and Business Communications (2) **Tidwell**
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) **Staff**
Prerequisites, 209 and 370, and either German 303 or permission.

331 Teachers' Course in History (2) **Boroughs**
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) **Grummel**
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 309 or equivalent. Two credits count as education and one as mathematics.

338 Teachers' Course in Far East (2)
(Offered when demand is sufficient.)

339 Teachers' Course in Physical Education for Men (2) **Peek**
Prerequisites, 209 and 370 and Physical Education 358, 361, and 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 one as speech. Prerequisites for majors in speech, 209, 370, and at least 20 credits in speech, including Speech 352. Prerequisites for non-majors, 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.

344 Teachers' Course in Zoology (2) **Hatch**
Prerequisites, 209 and 370 and 20 credits in zoology.

346J Teachers' Course in Senior High School Music (3) **Normann**
Prerequisites, 209 and 370 and junior standing. Two credits count as education and 1 as music.

360 Principles of Education (3) **Draper**
Individually and in groups, students study and analyze problems in the areas of professionalization of teachers, foreign education programs, guidance and counseling, vocational education, extracurricular activities, and curriculum improvement. Prerequisite, 371K, E, X, or S.

370 Introduction to Teaching Procedures (5) **Boroughs**
Fundamental techniques and methods of teaching, with emphasis on practical considerations. Classroom teaching situations are observed on the elementary and junior and senior high school levels. Audio-visual laboratory experiences are provided. 209 and 370 must be taken concurrently.

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. Prerequisites, 209, 370, 370E, 373, 374, 376, 377X-Y, 378C-D, 390, or approved equivalents. Fee, $1 per credit.

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. Prerequisites, 209, 370, 370E, 373, 374, 376, 377X-Y, 378C-D, 390, or approved equivalents. Fee, $1 per credit.

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. Prerequisites, 209, 370, 370E, 373, 374, 376, 377X-Y, 378C-D, 390, or approved equivalents. Fee, $1 per credit.

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 395 with 371S to make a total of 15 credits for the quarter.

Women's physical education cadets do directed teaching in Winter Quarter only.

Assignments are made by the Director of Cadet Teaching the first day of each quarter. Prerequisites, 209, 370, 370E, 373, secondary subject matter methods, 390, or approved equivalents. Fee, $1 per credit.

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**
State Constitution and excerpts from school code. Required by law of all applicants for Washington State teaching certificates. Not open to students who have taken 230.

374 Fundamentals of Reading Instruction (5) **MacDonald**
The teaching of reading in the elementary school from the readiness program in the kindergarten-primary area through the intermediate grades. Prerequisite, 370E.

375J 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) **Root**
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, 378D Physical Education for the Elementary School (3,3) **Horne, Smith**
Special methods for teaching the activities included in the physical education program of elementary schools: program planning and related problems; analysis and practice of rhythmic activities, games, sports, story plays, mimetics, apparatus, stunts and tumbling, and special events. Prerequisite, 370E.

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.

380 Tools and Materials for Industrial Education Teachers (2) **Baily**
Sources, specifications, and costs of shop materials and equipment. Care, repair, and sharpening of hand and machine tools. Prerequisite, 181. (Offered alternate years; offered 1953-54.)

383-384 Advanced Woodwork for Industrial Education Teachers (2-2) **Baily**
Design, construction, and finishing of projects in wood, involving machine operations, airbrush finishing, and upholstering. Prerequisite, 280 for 383.

386 Home Planning for Industrial Education (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. Prerequisite, 180. (Offered alternate years; offered 1954-55.)

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**
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.

401 Advanced Educational Psychology (3) **Barr**
Experimental backgrounds and practical applications. Prerequisite, permission.

402 Child Study and Development (3) **Staff**
Stages of child development; child welfare agencies; theories of some of the great leaders in child study; interplay between forces in the growing organism and the impact of various aspects of development upon each other; the influence of the cultural environment and the attitudes of others on a child's behavior and adjustment. Prerequisite, permission. (Not offered 1953-55; offered Summer Quarter for 2½ credits.)

403 Psychology of Elementary School Subjects (5) **Staff**
A practical general course on the psychological principles involved in teaching elementary school subjects. (Offered alternate years; offered 1953-54.)

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. (Not offered 1953-55; offered Summer Quarter.)

406 Character Education (3) **Barr**
Experimental background of the modern effort toward character development. Prerequisite, permission.

408 Mental Hygiene for Teachers and Administrators (3) **Barr**
Mental hygiene of school children, teachers, and administrators, including genetic factors and the influence of various school situations upon the formation of adjustment patterns. Special problems of teachers and administrators are emphasized. Some background in educational psychology is recommended, but is not a prerequisite.

410 Educational Sociology (3) **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. (Not offered 1953-55; offered Summer Quarter for 2½ credits.)

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) **Staff**
General analysis of techniques used to help young children develop an interested, responsive approach to school life. (Not offered 1953-55; offered Summer Quarter for 2½ credits.)

421 Remodial Teaching (5) **Staff**
For administrators and elementary and secondary teachers. Literature of remedial education with special reference to local needs. Remedial techniques, materials, and devices according to type of maladjustment; finding the best remedial treatment for the individual pupil. (Offered alternate years; offered 1953-54.)

422 Diagnosis in Education (5) **Staff**
Materials and devices for locating pupil difficulties, with special reference to scholastic progress in the language arts and mathematics; techniques and diagnosis as applied to emotional blockages and defects. For administrators and elementary and secondary teachers. (Offered alternate years; offered 1954-55.)

423 Learning Processes of Handicapped Children (5) **Staff**
Special problems presented by children who are exceptional because of physiological, psychological, and emotional handicaps. Case studies relating to delinquent and maladjusted children from the standpoint of both diagnosis and treatment. For supervisors, administrators, and teachers. (Offered alternate years; offered 1954-55.)

425 Teaching Reading and Remedial Reading (5) **Staff**
Experimental evidence of and practical classroom experience with the problems encountered in the teaching of reading and the correction of reading difficulties.

430 Public School Administration (3) **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. (Not offered 1953-55; offered Summer Quarter for 2½ credits.)

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. (Offered alternate years; offered 1953-54.)

438 Supervision of Elementary School Subjects (5) **Jessup**
Improvement of instruction in the elementary field: planning the program, determining the objectives, appraising the product, studying the pupil and the teacher, improving the use of materials of instruction, creating a better teaching environment, and facilitating growth of pupils through better teaching in all subjects. (Offered alternate years; offered 1954-55.)

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) **Barr, Corbally**
The role of guidance in present-day education; tools and techniques; organization and evaluation. For teachers and administrators. A background in educational psychology and tests and measurements is recommended, but is not a prerequisite.

448 Improvement of Guidance Techniques (3) **Barr**
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**
(Offered when demand is sufficient.)

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. (Offered alternate years; offered 1953-54.)

464 Principles of Curriculum Improvement (3) **Draper**
Intensive study of the basic principles and procedures utilized in the development of curriculum materials. Current practices in the development of objectives and learning experiences in the public schools are studied and evaluated and individual projects are carried out. Prerequisite, permission.

466 Workshop in Curriculum Improvement (3) **Draper**
Teachers will work as individuals or as members of committees on curriculum problems in the school districts of the state.

467 Techniques of Curriculum Improvement (3) **Draper**
Intensive study of the basic techniques used in the development of courses of study and units of work. Emphasis is on the major unit of work and the common learning units of work. Individual projects are carried out. Prerequisite, permission.

468 Extracurricular Activities (3) **Draper**
Student projects on individual problems in the area of extracurricular activities. The problem of evaluating pupil growth through participation in the extracurricular activities is emphasized. Prerequisite, permission.

470 Historical Backgrounds of Educational Methods (3) **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.

475 Improvement of Teaching (3) **Staff**
(Offered when demand is sufficient.)

475F Sight Saving (3) **Staff**
(Offered when demand is sufficient.)

475H Improvement of Teaching: Language Arts (2½) **Staff**
(Offered Summer Quarter only.)

475M Improvement of Teaching: Social Studies (3) **Staff**
(Not offered 1953-55; offered Summer Quarter for 2½ credits.)

475S Improvement of Teaching: Science (3) **Staff**
(Not offered 1953-55; offered Summer Quarter for 2½ credits.)

476C Field Work in Business Education (4) **Staff**
Internship in business and industry: work experience, job analysis, and research combined with specific curriculum-building programs. For experienced business education teachers. Limited enrollment. Prerequisite, permission of instructor. (Offered Summer Quarter only.)

476D Materials and Methods of Teaching Typewriting (2½) **Tidwell**
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.)

476F Materials and Methods of Teaching Thomas Shorthand (2½) **Staff**
Complete theory of Thomas shorthand; teaching objectives, materials, standards, and methods; the psychology of skill learning. An accelerated course for experienced teachers. (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.)

476I Problems of Distributive Education (2½) **Staff**
For distributive education supervisors and teachers. (Offered Summer Quarter only.)

476K Coordination of Distributive Education and Diversified Occupational Programs (2½) **Staff**
For distributive education supervisors and teachers. (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) **Tidwell**
Objectives, history, trends, and issues of business education; federal participation in vocational education; economic, occupational, and population trends and their implications in business education; leaders in business education; research and problems. (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 (5) **Staff**
Teaching of reading, stressing readiness, phonics, comprehension, speed, and reading in the content fields; motivation of leisure-time reading, including evaluation and selection of materials. Study in areas of individual interest is encouraged. Prerequisite, permission. (Offered when demand is sufficient.)

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. (Not offered 1953-54; offered Summer Quarter for 2½ credits.)

488 Philosophy of Education (3) **Staff**
(Offered when demand is sufficient.)

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) **Barr**
Psychological principles of education; summary of research results in application to school problems. Prerequisite, a background in general and educational psychology.

510 Seminar in Educational Sociology (3) **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**
(Offered when demand is sufficient.)

525 Seminar in Elementary Education (3) **Boroughs**
A critical examination of the elementary school, with special emphasis on curriculum and method.

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 and 431, or 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. Prerequisite, 430 or 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. Prerequisite, 430 or permission.

541, 542, 543 Guidance and Counseling (3,3,3) **Barr**
Techniques and materials used in school guidance; organization and administration of the guidance program. Primarily for people who plan to become counselors or guidance workers in educational institutions. Prerequisite, permission.

547 Seminar in Guidance (5) **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. (Not offered 1953-55; offered Summer Quarter.)

550 Development and Organization of Higher Education (3) **Williams**
Higher education from the standpoint of the new instructor; history of administrative organization.

551 College Problems (3) **Williams**
A consideration of the pertinent problems of the college teacher and his tasks.

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.

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. (Not offered 1953-55; offered Summer Quarter for 2½ credits.)

560, 561 Seminar in Curriculum (3,3) **Draper**
Research in guidance, extracurricular activities, and curriculum. The core curriculum and general education are emphasized.

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.

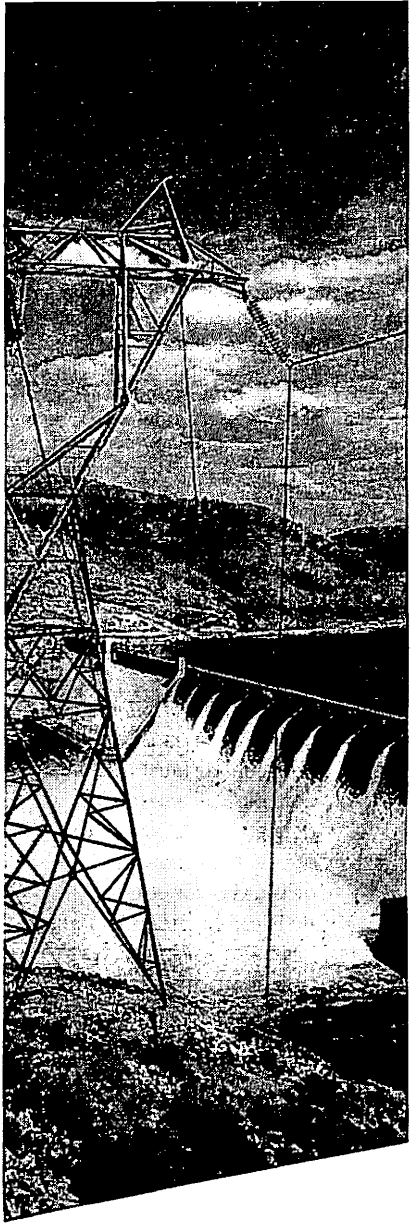
591 Methods of Educational Research (3) **Hayden**
A study of devices and methods used in conducting research. Designed to assist students in planning, organizing, and writing theses. Required of candidates for advanced degrees.

600 Research (*) **Staff**
Prerequisites, 591 and permission of instructor and director of educational research. Instructor and field must be designated in registration. When registration is for "thesis and/or research only," an incidental fee of $21.50 is charged and the work may be done *in absentia* by special permission.

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
Secondary Education
Special Education
Tests and Measurements

Thesis (*) **Staff**
Advanced degree candidates in education must register for "thesis." When registration is for "thesis and/or research only," an incidental fee of $21.50 is charged and the work may be done *in absentia* by special permission.

BULLETIN
UNIVERSITY
OF
WASHINGTON



COLLEGE OF
ENGINEERING
1953-1955

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 home 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

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

DIVISION OF HEALTH SCIENCES

- SCHOOL OF DENTISTRY
- SCHOOL OF MEDICINE
- SCHOOL OF NURSING
- COLLEGE OF PHARMACY

SCHOOL OF LAW

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT

SUMMER QUARTER ANNOUNCEMENT

HOME STUDY

EXTENSION CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 870
April, 1953

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

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

AUTUMN QUARTER, 1953

REGISTRATION PERIOD

SEPT. 8-SEPT. 29	Registration for students in residence Spring Quarter, 1953. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 25, but no later than September 18.*)
SEPT. 11-SEPT. 29	Registration for former students not in residence Spring Quarter, 1953. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 25, but no later than September 18.*)
SEPT. 14-SEPT. 25	Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (*August 28 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. 14-SEPT. 29	Registration for new transfer students with at least full sophomore standing. (*August 28 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—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—WEDNESDAY	Instruction begins (8 a.m.) for all other students
OCT. 2—FRIDAY	President's Convocation (11 a.m.)
OCT. 6—TUESDAY	Last day to add a course
NOV. 11—WEDNESDAY	Armistice and Admission Day holiday
NOV. 26-NOV. 29	Thanksgiving recess
DEC. 18—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1954

REGISTRATION PERIOD

NOV. 23-DEC. 11	Registration for students in residence Autumn Quarter, 1953. (*Registration appointments will be issued on presentation of ASUW cards beginning October 23.*)
DEC. 29-DEC. 31	Registration for former students not in residence Autumn Quarter, 1953. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 19.*)
DEC. 29-DEC. 31	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. 4—MONDAY	Instruction begins
JAN. 8—FRIDAY	Last day to add a course
FEB. 22—MONDAY	Washington's Birthday and Founder's Day holiday
MAR. 19—FRIDAY	Instruction ends

SPRING QUARTER, 1954

REGISTRATION PERIOD

FEB. 24-MAR. 12	Registration for students in residence Winter Quarter, 1954. (*Registration appointments will be issued on presentation of ASUW cards beginning January 22.*)
MAR. 24-MAR. 26	Registration for former students not in residence Winter Quarter, 1954. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 18.*)
MAR. 24-MAR. 26	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. 29—MONDAY	Instruction begins
APR. 2—FRIDAY	Last day to add a course
MAY 21—FRIDAY	Governor's Day
MAY 31—MONDAY	Memorial Day holiday
JUNE 6—SUNDAY	Baccalaureate Sunday
JUNE 11—FRIDAY	Instruction ends
JUNE 12—SATURDAY	Commencement

SUMMER QUARTER, 1954

REGISTRATION PERIOD

JUNE 2-JUNE 4 JUNE 14-JUNE 18	Registration for all students. (*Registration appointments for students in residence Spring Quarter, 1954, and for former students not in residence Spring Quarter, 1954, may be obtained from the Registrar's Office beginning April 19. 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 21—MONDAY	Instruction begins
JUNE 22—TUESDAY	Last day to add a course for the first term
JUNE 25—FRIDAY	Last day to add a course for the full quarter
JULY 5—MONDAY	Independence Day holiday
JULY 21—WEDNESDAY	First term ends
JULY 22—THURSDAY	Second term begins
JULY 23—FRIDAY	Last day to add a course for the second term
AUG. 20—FRIDAY	Instruction ends

AUTUMN QUARTER, 1954

REGISTRATION PERIOD

SEPT. 7-SEPT. 28	Registration for students in residence Spring Quarter, 1954. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 24, but no later than September 17.*)
SEPT. 10-SEPT. 28	Registration for former students not in residence Spring Quarter, 1954. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 24, but no later than September 17.*)
SEPT. 13-SEPT. 24	Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (*August 27 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. 13-SEPT. 28	Registration for new transfer students with at least full sophomore standing. (*August 27 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. 27—MONDAY	Instruction begins (8 a.m.) for freshmen entering directly from high school and for new transfer students with less than sophomore standing.
SEPT. 29—WEDNESDAY	Instruction begins (8 a.m.) for all other students
OCT. 1—FRIDAY	President's Convocation (11 a.m.)
OCT. 5—TUESDAY	Last day to add a course
NOV. 11—THURSDAY	Armistice and Admission Day holiday
NOV. 25-NOV. 28	Thanksgiving recess
DEC. 17—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1955

REGISTRATION PERIOD

NOV. 22-DEC. 10	Registration for students in residence Autumn Quarter, 1954. (*Registration appointments will be issued on presentation of ASUW cards beginning October 22.*)
DEC. 29-DEC. 31	Registration for former students not in residence Autumn Quarter, 1954. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 18.*)
DEC. 29-DEC. 31	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—MONDAY	Instruction begins
JAN. 7—FRIDAY	Last day to add a course
FEB. 22—TUESDAY	Washington's Birthday and Founder's Day holiday
MAR. 18—FRIDAY	Instruction ends

SPRING QUARTER, 1955

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.*)

REGISTRATION PERIOD

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

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

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CHARLES F. FRANKLAND, *Vice-President*	Seattle
THOMAS BALMER	Seattle
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JOHN L. KING	Seattle
WINLOCK W. MILLER	Seattle

John Spiller, *Secretary*

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HAROLD P. EVEREST, M.A.	*Vice-President of the University*
ETHELYN TONER, B.A.	*Registrar*
NELSON A. WAHLSTROM, B.B.A.	*Comptroller and Business Manager*
HAROLD EVERETT WESSMAN, Ph.D.	*Dean of the College of Engineering*
JAMES WALTER SOUTHER, M.A.	*Assistant to the Dean*

COLLEGE OF ENGINEERING EXECUTIVE COMMITTEE, 1952-53

DEAN H. E. WESSMAN, *Chairman*
J. W. SOUTHER, *Secretary*
PROFESSOR V. M. GANZER, *Aeronautical Engineering*
PROFESSOR R. W. MOULTON, *Chemical Engineering*
PROFESSOR R. B. VAN HORN, *Civil Engineering*
PROFESSOR A. V. EASTMAN, *Electrical Engineering*
PROFESSOR E. R. WILCOX, *General Engineering*
PROFESSOR S. W. CHAPMAN, *Humanistic-Social Studies*
PROFESSOR B. T. MCMINN, *Mechanical Engineering*
PROFESSOR F. B. FARQUHARSON, *Engineering Experiment Station*
PROFESSORS R. A. HECHTMAN, J. L. MCCARTHY, *Members at Large*

COLLEGE OF ENGINEERING FACULTY

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 (1949)—*Associate Professor of Aeronautical Engineering; Acting Executive Officer of the Department of Aeronautical Engineering*
B.A. in Math., 1933, Augustana College (Illinois); B.S. in A.E., 1941, Washington

GRATZER, LOUIS BERNARD, 1945 (1951)—*Junior Research Engineer*
B.S. in A.E., 1944, M.S. in A.E., 1951, Washington

JOPPA, ROBERT GLENN, 1945 (1951)—*Junior Research Engineer*
B.S. in A.E., 1945, M.S. in A.E., 1951, Washington

LIN, TUNG CHI, 1948 (1951)—*Junior Research Engineer*
B.S. in A.E., 1942, National Central University (Chungking, China); Ph.D., Queen Mary College (London)

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

SMITH, ROBERT HOWARD, 1947 (1951)—*Junior Research Engineer*
B.S. in A.E., 1946, M.S. in A.E., 1952, Washington

STREET, ROBERT ELLIOTT, 1948 (1949)—*Associate Professor of Aeronautical Engineering*
B.S. in Physics, 1933, Rensselaer Polytechnic Institute; M.A., 1934, Ph.D., 1939, Harvard

WEIKEL, RAYMOND CHESTER, 1948—*Assistant Professor of Aeronautical Engineering*
A.B., 1932, Wabash College; A.M., 1939, Illinois

CHEMICAL ENGINEERING

BABB, ALBERT LESLIE, 1952—*Assistant Professor of Chemical Engineering*
B.A.Sc., 1948, British Columbia; M.S., 1949, Ph.D., 1951, Illinois

BENSON, HENRY KREITZER, 1904 (1947)—*Professor Emeritus of Chemical Engineering; Research Consultant*
A.B., 1899, A.M., 1902, D.Sc., 1926, Franklin and Marshall College; Ph.D., 1907, Columbia.

BUCKHAM, JAMES ANDREW, 1951—*Instructor in Chemical Engineering*
B.S., 1945, B.S. in Ch.E., 1948, M.S. in Ch.E., 1948, Washington

CROSS, PAUL CLIFFORD, 1949—*Professor of Chemistry and Chemical Engineering; Executive Officer of the Department of Chemistry and Chemical Engineering*
B.S., 1928, Geneva College; M.S., 1930, Ph.D., 1932, Wisconsin

JOHANSON, LENNART NOBLE, 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

MILLER, AVEN P., JR., 1951—*Instructor in Chemical Engineering*
B.S. in Ch.E., 1948, M.S. in Ch.E., 1951, Washington

MOULTON, RALPH WELLS, 1941 (1950)—*Professor of Chemical Engineering*
B.S. in Ch.E., 1932, M.S. in Ch.E., 1934, Ph.D., 1938, Washington

WAMSLEY, WELCOME WILLARD, 1951—*Instructor in Chemical Engineering*
B.S. in Ch.E., 1949, Washington

CAMPBELL, THOMAS HERBERT, 1945 (1949)..... *Associate Professor of Civil Engineering*
B.S. in C.E., 1934, Washington; M.S. in C.E., 1938, 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 Surveying*
B.S. in C.E., 1920, C.E., 1935, Washington

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..... *Instructor in Civil Engineering*
B.S., 1947, Maine; M.S. in C.E., 1949, Minnesota

COLLIER, IRA LEONARD, 1919..... *Assistant Professor of Civil Engineering*
B.S. in C.E., 1913, C.E., 1917, Washington

EKSE, MARTIN INGVALD, 1948..... *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; Director, Engineering Experiment Station*
B.S. in M.E., 1923, M.E., 1927, Washington

HARRIS, CHARLES WILLIAM, 1906 (1951)..... *Professor Emeritus of Hydraulic Engineering; Research Consultant*
B.S. in C.E., 1903, Washington; C.E., 1905, Cornell

HECHTMAN, ROBERT AARON, 1949..... *Associate 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..... *Junior Research Engineer*
B.S. in C.E., 1940, 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 in Toll Road Studies*
B.S. in C.E., 1940, 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

SERGEV, SERGIUS IVAN, 1923 (1946)..... *Professor of Engineering Mechanics*
B.S. in M.E., 1923, M.E., 1931, Washington

SMITH, FREDERICK CHARNLEY, 1926 (1947)..... *Professor of Civil Engineering*
B.S. in C.E., 1926, C.E., 1929, Washington

SYLVESTER, ROBERT OHRUM, 1947..... *Assistant Professor of Civil Engineering*
B.S. in C.E., 1936, Washington; S.M., 1941, Harvard

TYLER, RICHARD GAINES, 1929—*Professor 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 (1952)—*Assistant Research Engineer*
B.A., 1928, Ref. Collegium Kolozsvar; 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

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; Executive Officer of the Department of Electrical Engineering*
B.S. in E.E., 1922, M.S. in E.E., 1929, Washington

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

HILL, WILLIAM RYLAND, JR., 1941 (1947)—*Associate 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

JACOBSEN, ANDREW BOONE, 1946 (1947)—*Instructor in Electrical Engineering; Junior Research Engineer*
B.S. in E.E., 1941, Washington

LEWIS, LAUREL JONES, 1946 (1949)—*Associate 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; Dean Emeritus of the College of Engineering*
B.S. in E.E., 1906, E.E., 1922, Wisconsin

ROBBINS, FLOYD DAVID, 1946 (1951)—*Assistant Professor of Electrical Engineering*
B.S. in E.E., 1925, E.E., 1949, Washington

ROGERS, WALTER EDWIN, 1946 (1952)—*Associate Professor of Electrical Engineering*
B.S. in E.E., 1934, California; M.S. in E.E., 1948, Washington

RUSTEBAKKE, HOMER MARTIN, 1947 (1949)—*Assistant Professor of Electrical Engineering*
B.S., 1941, Polytechnic College of Engineering; M.S., 1945, Pittsburgh

SHUCK, GORDON RUSSELL, 1918 (1952)—*Professor Emeritus of Electrical Engineering; Research Consultant*
B.S. in E.E., 1906, E.E., 1906, Minnesota

SMITH, GEORGE SHERMAN, 1921 (1941)—*Professor of Electrical Engineering*
B.S. in E.E., 1916, E.E., 1924, Washington

STOUT, THOMAS MELVILLE, 1948—*Instructor in Electrical Engineering*
B.S. in E.E., 1946, Iowa State; M.S.E., 1947, Michigan

SWARM, HOWARD MYRON, 1947 (1951)—*Assistant Professor of Electrical Engineering*
B.S. in E.E., 1940, M.S. in E.E., 1950, Washington

GENERAL ENGINEERING

AVERY, DON EDWARD, 1945 (1951)—*Assistant Professor of General Engineering*
B.S. in M.E., 1937, M.E., 1950, 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

DOUGLASS, CLARENCE EADER, 1939 (1945)—*Assistant Professor of General Engineering*
B.S., 1927, Washington State

ENGEL, ERNEST DIRCK, 1934 (1949)—*Associate Professor of General Engineering*
B.S. in E.E., 1930, Washington

GULLIKSON, ALBERT CLARENCE, 1942 (1947)—*Assistant Professor of General Engineering*
B.S. in M.E., 1924, M.E., 1938, Washington

HAMMER, VERNON BENJAMIN, 1947—*Instructor in General Engineering*
B.S. in C.E., 1940, Washington; M.S. in S.E., 1941, Harvard

HOAG, ALBERT LYNN, 1946 (1952)—*Assistant Professor of General Engineering*
B.S.F., 1941, B.S. in C.E., 1952, Washington

MCNEESE, DONALD CHARLES, 1946 (1951)—*Assistant Professor of General Engineering*
B.S. in C.E., 1940, C. E., 1951, Wyoming

MACARTNEY, THOMAS WAKEFIELD, 1946 (1952)—*Assistant Professor of General Engineering*
B.S. in C.E., 1939, B.S. in Com.E., 1946, Washington

MESSER, ROWLAND ENLOW, 1946 (1947)—*Instructor in General Engineering*
B.S. in M.E., 1935, Washington

ROWLANDS, THOMAS MCKIE, 1928 (1943)—*Associate Professor of General Engineering*
B.S. in Nav. Arch. and Marine Engrg., 1926, Massachusetts Institute of Technology

SEED, RICHARD WARREN, 1951—*Lecturer in General Engineering*
B.S. in M.E., 1944, California Institute of Technology; L.L.B., 1949, George Washington

SHAFFER, HARRY WINFIELD, 1952—*Instructor in General Engineering*
B.S. in E.E., 1948, Washington

WARNER, FRANK MELVILLE, 1913 (1937)—*Professor 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

HUMANISTIC-SOCIAL STUDIES

CHAPMAN, STUART WEBSTER, 1947—*Associate Professor of Humanistic-Social Studies; Executive Officer of the Department of Humanistic-Social Studies*
A.B., 1927, Boston; Ph.D., 1939, Yale

COWLES, RALPH GANO, 1948 (1951)—*Instructor in Humanistic-Social Studies*
B.A., 1947, M.A., 1951, Washington

HIGBEE, JAY ANDERS, 1952—*Instructor in Humanistic-Social Studies*
B.A., 1941, Iowa; M.A., 1949, Washington

KIRBY, BERNARD CROMWELL, 1948 (1950)—*Instructor in Humanistic-Social Studies*
B.A., 1929, Denison; M.A., 1950, 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—*Instructor in Humanistic-Social Studies; Assistant to the Dean*
B.A., 1947, M.A., 1948, Washington

WHITE, MYRON LESTER, 1947 (1950)—*Instructor in Humanistic-Social Studies*
B.A., 1943, Washington

MECHANICAL ENGINEERING

BALISE, PETER LOUIS, JR., 1950 ..... *Instructor in Mechanical Engineering*
S.B., 1948, S.M., 1950, Massachusetts Institute of Technology

COOPER, LEMUEL BROWNING, 1939 (1943) ..... *Assistant Professor of Mechanical Engineering*
B.S. in M.E., 1931, Washington

CRAIN, RICHARD WILLSON, SR., 1936 (1947) ..... *Assistant Professor of Mechanical Engineering*
B.S. in E.E., 1930, B.S. in M.E., 1932, Colorado Agricultural and Mechanical; M.S. in M.E., 1946, Washington

DAY, EMMETT ELBERT, 1947 (1950) ..... *Associate 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 Engineering; Research Consultant*
C.E., 1896, B. S., 1897, A.B., 1899, A.M., 1899, Virginia; B.S., 1902, Massachusetts Institute of Technology

GUIDON, MICHAEL, III, 1946 (1951) ..... *Assistant Professor of Mechanical Engineering*
B.S. in M.E., 1942, Lehigh

HENDRICKSON, HAROLD MARTIN, 1949 (1950) ..... *Associate Professor of Mechanical Engineering*
B.S. in M.E., 1927, M.E., 1935, Washington

KONECNY, ANTHONY RUDOLPH, 1951 ..... *Instructor in Mechanical Engineering*
B.S. in M.E., 1950, Illinois

KRAUSE, ROBERT PAUL, 1948 (1952) ..... *Assistant Professor of Mechanical Engineering*
B.M.E., 1947, Detroit; M.S. in M.E., 1952, Washington

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; Executive Officer of the Department of Mechanical Engineering*
B.S. in M.E., 1918, Oregon State; M.S. in M.E., 1926, M.E., 1931, Washington

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 Engineering*
B.S. in M.E., 1943, Virginia Polytechnic Institute

NORDQUIST, WILLIAM BERTIL, 1947 (1949) ..... *Assistant Professor of Mechanical Engineering*
B.M.E., 1941, Rensselaer Polytechnic Institute; M. S., 1946, Massachusetts Institute of Technology

OWENS, BERL WINFIELD, 1948 ..... *Instructor in Mechanical Engineering*
B.Aero.E., 1944, Minnesota

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

WATSON, WARREN KENNETH, 1948 (1952) ..... *Assistant Professor of Mechanical Engineering*
B.S. in M.E., 1943, Washington State

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 (1951) ..... *Instructor in Mechanical Engineering*
B.S. in M.E., 1950, Washington; M.S. in M.E., 1951, Illinois

MINERAL ENGINEERING

APLAN, FRANK FULTON, 1951 ..... *Assistant Professor of Mineral Dressing*
B.S. in Met., 1948, South Dakota School of Mines; M.S. in Min. Dress., 1950, Montana School of Mines

DANIELS, JOSEPH, 1911 (1923)—*Professor of Mining and Metallurgical Engineering*
S.B., 1905, Massachusetts Institute of Technology; M.S., 1908, E.M., 1933, Lehigh

FINLEY, JOHN A., 1946 (1951)—*Assistant Professor of Metallurgical Engineering*
B.S. in Met. E., 1939, Michigan College of Mines; M.S. in Met. E., 1951, Washington

McDONALD, HOWARD A., 1951—*Acting Instructor in Ceramic Engineering*
B.S. in Cer.E., 1950, Washington

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

ROCKWELL, ROBERT EUGENE, 1951—*Instructor in Ceramic Engineering*
B.F.A. in Cer., 1950, M.A. in Cer., 1951, Ohio State

ROWE, EDWARD A., 1948 (1949)—*Associate Professor of Metallurigal Engineering*
B.S. in Ch.E. (Met.), 1935, M.S. in Phys. Chem., 1939, Ph.D., 1948, Michigan State

ENGINEERING EXPERIMENT STATION

FARQUHARSON, FREDERICK BURT, 1925 (1940)—*Director of the Engineering Experiment Station; Professor of Civil Engineering*
B.S. in M.E., 1923, M.E., 1927, Washington

HEMENWAY, ISABEL W., 1947 (1951)—*Editor*
B.A., 1909, Nebraska; M.A., 1912, Chicago

McHUGH, ROBERT E., 1948 (1951)—*Junior Research Engineer*
B.S. in C.E., 1944, M.S. in C.E., 1947, Washington

ROW, OLIVER H., 1948—*Electron Microscopist*
B.S. in Chem., 1937, North Dakota Agricultural College

VINCENT, GEORGE S., 1943—*Principal Highway-Bridge Engineer, Bureau of Public Roads*
B.S. in C.E., 1916, Oregon State

NORTHWEST EXPERIMENT STATION, UNITED STATES BUREAU OF MINES

BOYD, CLARENCE L., 1948—*Chemist*
B.S., 1948, Macalester

CAMPBELL, ROBERT J., JR., 1948—*Chemical Engineer*
B. S., 1939, Oregon State

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; Lecturer in the School of Mineral Engineering*
B.S., 1934, Washington

SYMONDS, WILLIAM A., 1952—*Chemist*
B.S., 1949, Whitman College

WOOD, WALLACE R., 1952—*Chemical Engineer*
B.S., 1951, Washington

YANCEY, HARRY F., 1925—*Supervising Engineer; Lecturer in the School of Mineral Engineering*
B.A., 1913, M.A., 1915, Missouri; Ph.D., 1923, Illinois

FACULTY OF RESERVE OFFICERS TRAINING PROGRAMS

AIR SCIENCE AND TACTICS

BENSEN, MAJ. GARFIELD ROLAND, 1951—*Assistant Professor of Air Science and Tactics*

BITNEY, CAPT. ROBERT VERN, 1951—*Assistant Professor of Air Science and Tactics*

BOUCHER, LT. COL. ERNEST JOSEPH, 1951—*Assistant Professor of Air Science and Tactics*
A.B., 1935, California

CLARK, MAJ. KENNETH BEMIS, 1950 *Assistant Professor of Air Science and Tactics*

CLIFFORD, M/SGT. CHARLES CLINTON, 1951—*Instructor in Air Science and Tactics*

CRAIG, M/SGT. RAY VAUGHN, 1950—*Instructor in Air Science and Tactics*

DAVIS, MAJ. FRANK HUTCHINS, 1950—*Assistant Professor in Air Science and Tactics*

DIETZ, COL. GEORGE HENRY, 1950—*Professor of Air Science and Tactics*
B.S., 1925, Washington

EASTES, M/SGT. LOWELL MERRILL, 1952—*Instructor in Air Science and Tactics*

ELDER, M/SGT. JAMES WILLIAM, JR., 1949—*Instructor in Air Science and Tactics*

ENTWISTLE, MAJ. HARRY GRANT, 1952—*Assistant Professor of Air Science and Tactics*
B.A., 1939, Ohio; M.A., 1948, Ohio State

FIELDER, M/SGT. HOWARD JOSEPH, 1951—*Instructor in Air Science and Tactics*

GRUND, S/SGT. ROGER MYRON, 1951—*Instructor in Air Science and Tactics*

HIXSON, CAPT. RICHARD PURNELL, 1950—*Assistant Professor of Air Science and Tactics*

JENSEN, LT. COL. RALPH ALBERT, 1952—*Assistant Professor of Air Science and Tactics*

KRIDLER, MAJ. TED WILLIAM, 1951—*Assistant Professor of Air Science and Tactics*
B.A., 1937, Beloit College

LEMCKE, M/SGT. HANS KARL, 1951—*Instructor in Air Science and Tactics*

MARTIN, M/SGT. JOE BIGGER, JR., 1950—*Instructor in Air Science and Tactics*

MCGEE, DONALD KING, 1950—*Instructor in Air Science and Tactics*

MINZENMEYER, M/SGT. PAUL JOHN, 1951—*Instructor in Air Science and Tactics*

NEAL, T/SGT. WILLIE RAY, 1951—*Instructor in Air Science and Tactics*

OTTO, C.W.O. MARVIN HENRY, 1952—*Assistant Professor of Air Science and Tactics*

PATTERSON, M/SGT. PRINCE, 1952—*Instructor in Air Science and Tactics*

STILWELL, T/SGT. DONALD JOHN, 1952—*Instructor in Air Science and Tactics*

TEEPLE, MAJ. BUCKNER BURRISS, 1952—*Assistant Professor of Air Science and Tactics*
B.A., 1940, Kansas City

TWETEN, CAPT. WAYNE BEVERLY, 1952—*Assistant Professor of Air Science and Tactics*

VALENTINE, CAPT. EDWIN A., JR., 1951—*Assistant Professor of Military Science and Tactics*
B.A., 1947, Pacific Lutheran College; M.A., 1950, Washington

WILSON, CAPT. ROBERT CRANE, 1951—*Assistant Professor of Air Science and Tactics*
B.A., 1947, Pomona College

WOOD, MAJ. CRISPIN MELTON, 1951—*Assistant Professor of Air Science and Tactics*
B.S., 1949, California State Polytechnic College

YOUNSE, CAPT. BARNISE ORVILLE, 1951—*Assistant Professor of Air Science and Tactics*
B.S., 1948, North Texas State College

MILITARY SCIENCE AND TACTICS

BAIER, COL. GEORGE FREDERICK III, 1950—*Professor of Military Medical Science*
A.B., 1930, Alabama; M.D., 1934, Emory University

BEAULIEU, MAJ. PHILIP FRANCOIS, 1951—*Assistant Professor of Military Science and Tactics*
B.S., 1941, New Hampshire

CUMMING, FIRST LT. BRUCE HAMILTON, 1952—*Assistant Professor of Military Science and Tactics*
B.S., 1948, California

FISCHER, CAPT. CARL HENRY, JR., 1951.....*Assistant Professor of Military Science and Tactics*
B.S., 1945, United States Military Academy

HEXT, MAJ. CHARLES MILTON, 1952.....*Assistant Professor of Military Science and Tactics*

JACKSON, LT. COL. JOHN WILLIAM, JR., 1952.....*Assistant Professor of Military Science and Tactics*
B.A., 1934, Washington

MACAULAY, LT. COL. GEORGE BABINGTON, 1950.....*Assistant Professor of Military Science and Tactics*
A.B., 1938, Alabama

MARTIN, MAJ. ROBERT WHEELER, 1950.....*Assistant Professor of Military Science and Tactics*
B.S., 1939, Columbia

MILES, CAPT. CHARLES ERNEST, JR., 1951.....*Assistant Professor of Military Science and Tactics*
B.A., 1943, Washington

O'DAY, COL. RAY MILTON, 1951.....*Professor of Military Science and Tactics*
B.A., 1915, Washington State College

WAHL, LT. COL. EDWARD RONALD, 1949.....*Assistant Professor of Military Science and Tactics*
B.A., 1933, Idaho

WEEMS, MAJ. MINER LYLE, 1952.....*Assistant Professor of Military Science and Tactics*

ZITZER, LT. COL. FREDERICK, 1952.....*Assistant Professor of Military Science and Tactics*
B.S., (EE), Oregon State, 1938;
M.S. (CE), 1947, Texas Agricultural and Mechanical

NAVAL SCIENCE

CHAVOEN, SKC JOSEPH RAYMOND, 1951.....*Instructor in Naval Science*

CODY, ETC ARTHUR MARVIN, 1952.....*Instructor in Naval Science*

COOK, BMC LESTER EDWARD, 1951.....*Instructor in Naval Science*

FINNIGAN, LT. ROBERT JOHN, 1952.....*Assistant Professor of Naval Science*
B.S., 1944, Marquette

FORD, CDR. LEWIS MICHAEL, 1952.....*Associate Professor of Naval Science*
B.S., 1937, Southern California

HANCOCK, FCC STEPHEN JACOB, 1951.....*Instructor in Naval Science*

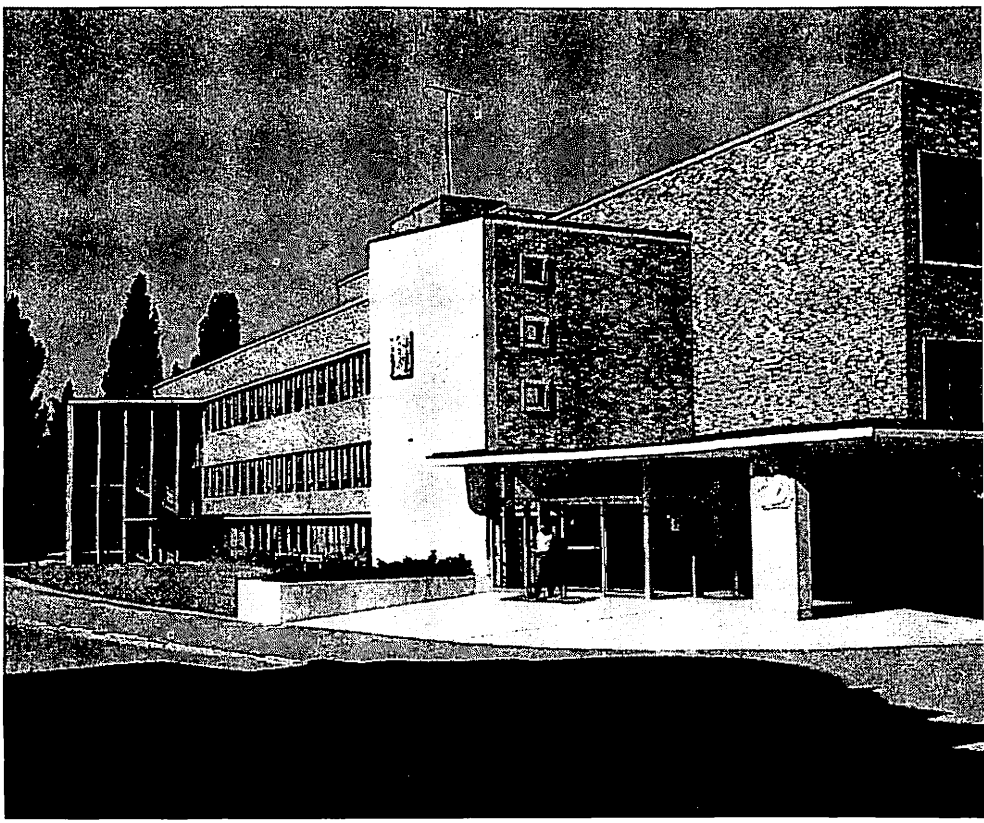
KELLOGG, LT. DEAN LUNDT, 1952.....*Assistant Professor of Naval Science*
B.S., 1946, United States Naval Academy

LEPPIG, MAJ. GEORGE EDWARD, 1952.....*Assistant Professor of Naval Science*
A.B., 1929, Notre Dame

SCHAEFFER, LT. JG WILLIAM M., 1952.....*Assistant Professor of Naval Science*
B.S., 1946, United States Naval Academy

TATKA, GMC HENRY, JR., 1951.....*Instructor in Naval Science*

WOOD, CAPT. ARTHUR CROSBY, 1951.....*Professor of Naval Science*
B.S., 1924, United States Naval Academy



GENERAL INFORMATION

GENERAL INFORMATION

IN THE SPRING of 1861 three forward-looking Seattle citizens, Arthur A. Denny, Judge Edward Lander, and Charles C. Terry, deeded ten acres of land for the establishment of a new university in what was then Washington Territory. Several months later, on November 4, 1861, the University of Washington opened the doors of a new frame building where the twenty-two-year-old "principal," Asa Shinn Mercer, began the instruction of thirty-one students, many of them young men recruited from nearby logging camps.

By 1889, when Washington was admitted to the Union, the University had achieved a consistent program and an enrollment of more than one hundred students. But it was clear that the original building would soon be inadequate and that the University would need more room for development. In 1891 the new University site, the present 600-acre campus between Lake Washington and Lake Union, was selected. The first of the new buildings, Denny Hall, was completed in 1894 and occupied for the first time in September, 1895, when the University's enrollment was 425 students. (The original campus is now the center of downtown Seattle. The Olympic Hotel stands on the ground occupied by the first University of Washington building.)

The plan to establish curricula in engineering was formulated at the time the University was preparing to move to its present campus. Instruction in mining engineering was authorized by the Regents in 1893 and the Catalogue of 1894-95, which listed courses in civil engineering, including Surveying, Descriptive Geometry, Hydraulics, Irrigation, and Strength of Materials, also announced that instruction in electrical engineering was planned for 1895. It was not until 1898, however, that the Department of Civil Engineering and the School of Mining Engineering were established on a firm basis with qualified faculty members. In 1901 the sporadic courses in electrical engineering were brought into a definite curriculum.

The College of Engineering was recognized as a major unit of the University in 1899, when Professor Almon H. Fuller was appointed the first Dean of Engineering. The first engineering degree was awarded in 1900 in mining engineering. The first degree in civil engineering was awarded in 1901, the first degree in electrical engineering in 1902, the first degree in mechanical engineering in 1906, and the first degree in chemical engineering in 1907. The Department of Aero-

nautical 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 1952 some fourteen 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), Education Hall (General Engineering), and Engineering Shops (Mechanical Engineering). Brief descriptions of the departmental facilities are given in the following paragraphs.

AERONAUTICAL ENGINEERING

Five different wind tunnels and a small supersonic laboratory are available for class instruction and research in the field of aerodynamics. The F. K. Kirsten Aeronautical Laboratory, largest of the wind tunnels, has been used for aerodynamic research and industrial testing since it was completed in 1937. It has a test section measuring 8 by 12 feet, and a maximum air speed of 250 mph. Special laboratory equipment is available for studying the behavior of typical aircraft structures under load. Universal testing machines ranging in load capacity from 60,000 to 2,400,000 pounds are available in the Civil Engineering Structural Research Laboratory.

The Department maintains a well-equipped and well-staffed machine and model shop which assists students constructing equipment for research or special projects.

CHEMICAL ENGINEERING

The Department of Chemical Engineering is in 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. An industrial chemistry laboratory has pilot-plant-size equipment for study of chemical processing. Complete equipment is available for study of paper pulping processes on a pilot-plant basis, and for laboratory investigations of electrochemistry. Machine, instrument, and glass-blowing shops staffed by full-time employees are maintained. A wide variety of special equipment for research is used by seniors and graduate students for thesis investigations, and a branch library in Bagley Hall houses a special collection of reference books and periodicals.

CIVIL ENGINEERING

More Hall, the Civil Engineering Building, has modern structural, concrete, mineral aggregates, soil mechanics, bituminous, and sanitary engineering laboratories. The structural laboratory contains a 2,400,000-pound testing machine with 120 inches between screws, a number of smaller machines ranging in capacity from

60,000 to 300,000 pounds, and complete electronic apparatus for stress and strain measurements. The concrete laboratory has facilities for making, curing, and testing concrete specimens. The aggregates laboratory houses apparatus for testing the hardness, soundness, and wearing qualities of rock, and for control of grading. The soil mechanics laboratory is of top rank in this field, and is equipped for all generally recognized tests encountered in foundation and earthwork engineering. The bituminous laboratory contains apparatus for the usual tests required of asphaltic road building materials, and is exceptionally well equipped for research in the design of stable bituminous surfacings. A complete sanitary engineering laboratory for the chemical, bacteriological, and microscopic analysis of water, sewage, and industrial wastes is available for study and professional research. The Charles W. Harris Hydraulics Laboratory, on the shore of Lake Union, is equipped with the latest facilities for investigations and laboratory studies of many problems in experimental hydraulics and water power. It is supplemented by a half-acre outdoor laboratory for construction and study of models of river channels.

ELECTRICAL ENGINEERING

The Department of Electrical Engineering is in Electrical Engineering Hall, a new three-story building of very modern design. The main laboratories are classified as follows: electrical machinery, communications, transients, impulse generator (high-voltage), power transmission line, illumination, industrial control, and electrical measurement. Smaller laboratories are available for research and special uses.

The large machinery laboratory is exceptionally well equipped for the study and testing of direct- and alternating-current motors and generators, transformers, induction regulators, and other auxiliary equipment. Experiments involving the operation of electrical machines are also run in the adjacent industrial controls laboratory, where power rectifiers, electronic apparatus, relays, and other necessary devices are available. The communications laboratory has the latest facilities for the study of vacuum-tube circuits and equipment; wire transmission, including line characteristics, filters, and other terminal apparatus; and ultra-high-frequency theory and practice. The electrical measurements laboratory is equipped for measuring a wide variety of electrical and magnetic quantities in addition to the basic measurement of voltage, current, and power.

The other laboratories are used in senior elective courses and graduate instruction. Included among the special laboratories are ten rooms which accommodate from two to six students each and are used for work on special problems and for graduate research. One of these laboratories, which is in a penthouse on the roof, is especially designed to house radio transmitting equipment; antenna towers are on the roof nearby. Other laboratories contain servomechanism and acoustics equipment, and one room is assigned to the Department's amateur radio club.

GENERAL ENGINEERING

The Department of General Engineering is on the third and fourth floors of Education Hall. In addition to ten well-equipped and well-lighted classrooms for drafting and computation courses, there are a sound projection room seating 125, a library and study room, a lounge for the student General Engineering Club, and a blueprinting room with a high-speed printing and developing machine.

HUMANISTIC-SOCIAL STUDIES

The Department of Humanistic-Social Studies is unusually well provided with modern equipment to supplement conventional teaching methods. Foremost among its facilities is a library of its own, stocked with books in a wide variety of nontechnical fields. These volumes are on open shelves, readily accessible to students who wish to browse. The library also has a collection of records for circulation within the Engineering College. 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 courses in production methods and includes the conventional equipment of a foundry, forge and weld shop, and machine shop, together with numerous special machines. Testing and gauging apparatus includes physical testing equipment for foundry and core sands, an electronic interferometer, and air precision gauging devices.

A second laboratory is equipped to simplify practices and to provide for research projects in the heat-power field. It contains all of the common types of heat-power and refrigeration machines, steam engines and turbines, gas, gasoline, and diesel engines, with the necessary auxiliary equipment, such as dynamometers, condensers, and heat exchangers, for the study of heat balances. A gas turbine unit is arranged with complete instrumentation for a wide range of tests, with provision for alternate combustion chambers and for water injection. A nonoperating turbo-jet unit is available for study. Auxiliary equipment for flame propagation investigations in jet combustion chambers is available, and equipment for standard tests on centrifugal fans is also part of this laboratory. An adjunct laboratory is equipped for the testing of lubrication oils and fuels.

A third laboratory provides facilities for the study of engineering materials. It has three universal testing machines, an impact machine, a fatigue machine, plastic molding equipment, complete hardness testing equipment, a metaloscope for metallographic investigations, apparatus for strength determination by photoelastic and electronic strain guage methods, and industrial X-ray and Zyglo inspection equipment. Apparatus for the study of vibrations, including a torsiograph, is a part of this laboratory, as are devices for the study of engineering materials at high and low temperatures.

MINERAL ENGINEERING

CERAMIC ENGINEERING. The laboratories of the Division of Ceramic Engineering may be classified in five groups, the first of which is the laboratory for grinding and classifying raw materials, mixing and tempering them, and forming them into shapes. The second group, in the Kiln Building, contains twelve kilns for firing and testing ware. A rotary kiln of sufficient size for batch testing or pilot-plant experiments has recently been completed. The physical testing laboratory makes up the third unit. In the fourth group are the pottery and glaze laboratories, which have facilities for casting and hand or wheel forming and for glaze preparation, spraying, drying, and firing. The fifth group consists of a research laboratory with much special equipment, including a long-arm centrifuge and a super centrifuge for subsieve particle size determination, a thermal expansion furnace, a diffraction X-ray unit, and differential thermal analysis equipment for mineral identification and analysis.

The Division also operates ceramic craft shops in which students are trained in hand production methods.

METALLURGICAL ENGINEERING. The Division of Metallurgical Engineering maintains a laboratory with facilities for process and physical metallurgical investigations. The process laboratories are equipped for studies in smelting, roasting, leaching, and electro-recovery of metals. Fire assay and wet assay laboratories are adjuncts for process control. A fuels analytical laboratory is available for studies of fuel characteristics and values.

The physical metallurgy laboratories include a preparation laboratory for cutting and coarse grinding of specimens; a polishing and physical testing laboratory; and a metallographic laboratory with several dark rooms. A nondestructive inspection laboratory provides training facilities in examination of manufactured articles by X-ray and other special techniques. The advanced physical metallurgy laboratories feature a diffraction X-ray unit with recording goniometer, micro-hardness testing, and controlled-atmosphere heat-treating furnaces. A well-equipped foundry with

a cupola and electric melting furnaces is available in conjunction with a complete series of courses in foundry metallurgy. Frequent field trips are made to plants of the diverse metal industry of western Washington.

MINING ENGINEERING. Laboratories of the Division of Mining Engineering, include full-scale commercial equipment supplemented by laboratory testing machines of the latest design. Mining practices are studied with the aid of models, maps, and frequent field trips. A full equipment catalogue file enables the student to relate class problems to field practice. The important coal fields of western Washington, the mining districts of the Cascade Mountains, and the large quarry industry of Puget Sound afford opportunity for study of all phases of mining. Annual excursions to more distant mining districts supplement the local studies. The facilities of the Department of Geology are also used by the mining students.

The ore-dressing and mineral-preparation laboratories are equipped 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.

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.

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 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 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. Better-than-average grades in high school mathematics are required.

Prospective students in the state of Washington may obtain official application blanks from their high school principals or from the University Registrar. Those from other states may obtain blanks by writing directly to the Registrar. Out-of-state students will also receive medical questionnaire forms, which must be filled out by a physician and returned with the application for admission. For admission in Autumn Quarter, applications should be completed and returned after high school graduation and before July 15. Complete credentials must be sent before

that date directly to the Registrar by the high school principal or the registrar of the college previously attended. Applications and credentials received before July 15 have precedence over those which arrive later. The last day for new students to submit applications for admission in Autumn Quarter, 1953, is August 28; for Autumn Quarter, 1954, the last day is August 27. For admission in other quarters, applications and credentials should be received at least thirty days before the beginning of the quarter.

ADMISSION FROM ACCREDITED HIGH SCHOOLS

Graduates of accredited senior high schools who meet University entrance requirements are eligible for admission as freshmen with regular standing. The University requires 16 high school units (a unit equals two semesters, or one full year of high school study), including at least 9 units in academic subjects. The grade-point average in high school studies must be at least 2.0 (equivalent to a C average on the Washington grading system). The units used for admission cannot include any unit with less than a passing grade.

For entrance to the College of Engineering, the 9 academic units must include 3 units of English; 1 unit each of elementary algebra, plane geometry, physics, and chemistry; and ½ unit each of advanced algebra and solid geometry. Effective September, 1954, trigonometry will be required instead of geometry.

It is essential that students possess a good working knowledge of algebra at the beginning of their course. All entering freshmen are given a qualifying test in intermediate algebra before registering. This test may be taken any time after September 15, including the morning of the day of registration.

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.

Graduates of accredited high schools who meet the scholarship standard and have 3 units in English and 6 units in other academic subjects, but who do not meet all specific subject requirements, may petition the Dean of the College for entrance with provisional standing. Students who are deficient in both elementary algebra and plane geometry are seldom admitted on this basis. Students with provisional standing must register each quarter for make-up courses in the subject they lack until the entrance deficiency is removed. No student may receive a degree until he has made up all entrance deficiencies. First-year algebra and plane geometry are offered through the University Division of Adult Education for a fee of $15 a quarter and do not carry credit toward graduation.

Graduates of accredited high schools in Washington and Alaska whose grade-point average is below 2.0 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. Students cannot be pledged to fraternities or sororities, run for office in student organizations, or participate in intercollegiate athletics until they are removed from probation.

ADMISSION BY EXAMINATION

Graduates of nonaccredited high schools in Washington and Alaska may petition the Board of Admissions for entrance as freshmen if they meet the scholarship and unit requirements for admission and are recommended by their high school principals. The Board usually requires these students to take special entrance examinations.

Prospective students who are not high school graduates must pass College Entrance Board examinations and meet entrance requirements in all specific subjects without deficiency. 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. Applicants who have completed a year or more of college work must have a 2.0 grade-point average in their entire college records. Those with less than a year of college work must have a 2.0 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. 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.
5. 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. Up to 10 extension or correspondence credits from this University can apply toward the work of the senior year.
6. The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted. Definite advanced standing is determined at the end of the student's first quarter in the University.

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.

ADMISSION OF FOREIGN STUDENTS

Foreign students must meet the same general requirements as those from American schools and must demonstrate a satisfactory command of the English language. The official record of Canadian students is the matriculation certificate or university admission certificate of their province. A student who has graduated from a school system that provides less than twelve years of instruction may be required to take additional high school work.

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 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 and do not receive any credit for course work.

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 on campus each quarter.

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.

ADVISING

After notification of admission, and before registration, new freshman and transfer students should visit or write to Professor E. R. Wilcox, Executive Officer of the Department of General Engineering, for help in planning their course programs. 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 AND ACHIEVEMENT TESTS

New freshman students (including transfer students with less than 45 quarter credits) take achievement tests in English, social science, natural science, and mathematics, and a general aptitude test as part of the registration requirements. Test results do not affect admission but are used in advising and in assigning students to appropriate sections of English, mathematics, and other courses. 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.

Veterans who are accepted for entrance to the College of Engineering 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 two months before registration. Those who do not have certificates 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 consult a Veterans Administration regional office at least one month before the beginning of the quarter. 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, because allowances are not made until after monthly attendance is established.

Principal fees for each quarter (Autumn, Winter, and Spring) are listed below.

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 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.

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; special students are exempt.

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 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 each.

Graduation Fee — 10.00

SPECIAL FEES

From $2 to $5 is charged for late registration, $2 for changed registration, and $6 for late medical examination and X-ray. Fees for special examinations, certification of credits from unaccredited schools, and removal of Incompletes range from $1 to $5.

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.

ESTIMATE OF YEARLY EXPENSES

Tuition, Incidental, and ASUW Membership Fees	
Full-time resident student	$165.00
Full-time nonresident student	315.00
Athletic Admission Ticket (optional)	5.00
Accident Insurance (optional)	4.95
Special Fees and Deposits	38.50
Military uniform deposit, breakage ticket, and locker fees.	
Books and Supplies	100.00
Board and Room	
Double room in campus temporary dormitory, with meals in University Commons and Student Union Cafeteria, or double room and meals in Men's Residence Hall	500-585.00
Room and meals in Women's Residence Halls	525-600.00
Room and meals in student cooperative house	435.00
Room and meals in fraternity or sorority house	600.00
Initial cost of joining a fraternity or sorority is not included; this information may be obtained from the Interfraternity or Panhellenic Council.	
Personal Expenses	200.00

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 33-72). 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. Every student has the privilege of graduating under the requirements in effect either the year he enters or the year he receives his degree. No student may receive a degree until he has made up all entrance deficiencies.

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).

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 exemp-

tions, 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 the Organized Reserve of the Armed Forces or Coast Guard at the time of 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.

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 paragraphs 4, 8, and 10 must arrange at the time of entrance to substitute equivalent credit in other University courses for the military training requirement.

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 73-79).

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 six quarters of residence.

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 Executive Officer of the School of Physical Education and the University Health Officer.
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. No exemption is granted for less than six months of service.
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.

Men students take Physical Education 104, a basic skills course, in their first quarter, and take swimming in their second or third quarter. In the other four quarters they may choose any four of a variety of gymnastics and sports, or may substitute freshman or varsity sports.

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 required.

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.

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 2.2 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 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). A cumulative grade-point average of 2.2 is necessary. No more than 9 quarter credits in advanced ROTC courses may be counted toward graduation.

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

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 33-72).

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 FELLOWSHIPS. The Board of the Engineering Experiment Station each year awards a limited number of fellowships to graduate students in various departments of the College of Engineering. These fellowships 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 fellowships amount to $125 a month for fifteen months, or a total of $1875, and recipients are exempt from tuition fees. A student receiving one of these fellowships will normally need to be in residence for five quarters to obtain a master's degree. 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.

MAJOR REUBEN H. FLEET SCHOLARSHIP IN AERONAUTICAL ENGINEERING, $500. For undergraduate or graduate students.

EDWARD ORTON, JR., CERAMIC FOUNDATION RESEARCH FELLOWSHIP, $1200. For graduate students.

GLADDING MCBEAN SCHOLARSHIPS IN CERAMIC ENGINEERING, $350. Two available each year to incoming freshmen, continuing for four years.

GLADDING MCBEAN FELLOWSHIP IN CERAMIC ENGINEERING, $1500. For graduate students.

SAMUEL G. BAKER AWARD IN CHEMICAL ENGINEERING, $100. Awarded to outstanding senior.

HOOKER ELECTROCHEMICAL COMPANY RESEARCH FELLOWSHIP IN CHEMICAL ENGINEERING, $1500. For graduate students.

PROCTOR AND GAMBLE COMPANY FELLOWSHIP IN CHEMICAL ENGINEERING, $1440. For graduate students.

STANDARD OIL COMPANY TECHNICAL FELLOWSHIP IN CHEMICAL ENGINEERING, $1000. For graduate students.

BOW LAKE EQUIPMENT COMPANY SCHOLARSHIP IN CIVIL ENGINEERING, $300. For undergraduate students.

R.C.A. SCHOLARSHIP IN ELECTRICAL ENGINEERING, $600. For upper-division undergraduate students.

WESTINGHOUSE ACHIEVEMENT SCHOLARSHIP IN ELECTRICAL ENGINEERING, $500. For junior undergraduate students.

U. S. BUREAU OF MINES FELLOWSHIPS IN MINERAL ENGINEERING, $1875. For graduate students.

WILLIAM MCKAY SCHOLARSHIP IN MINERAL ENGINEERING, stipend variable. For upper-division undergraduate students.

LIVINGSTON WERNECKE MEMORIAL SCHOLARSHIP IN MINERAL ENGINEERING, stipend variable. For undergraduate students, including freshmen.

ENGINEERING COUNCIL SERVICE AWARD. Awarded to outstanding undergraduate student in the College.

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 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.

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.

HOUSING

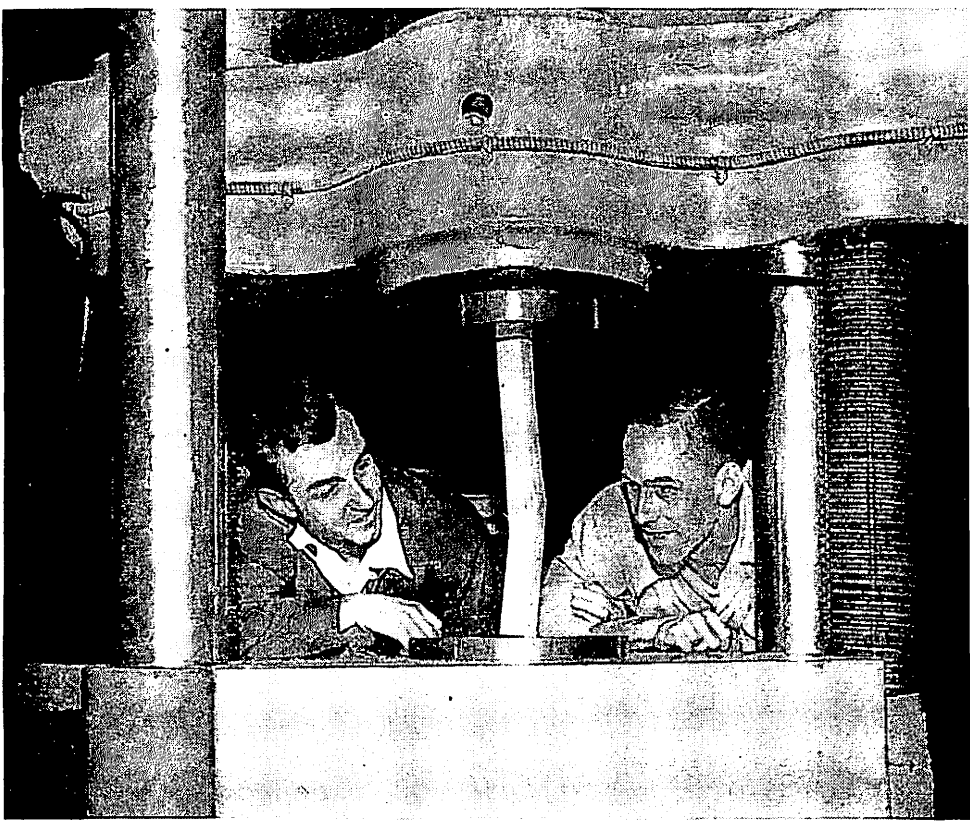
Rooms in the Men's Residence Hall, which is scheduled for completion in the fall of 1953, or in University-operated temporary dormitories, may be obtained through the Office of Student Residences. This office also keeps listings of rooms, rooms with board, and a few apartments and houses; these listings must be consulted in person. Housing for women is available in the Women's Residence Halls. The Student Cooperative Association, 1114 East Forty-fifth Street, provides housing on a cooperative basis. Students interested in living in fraternity or sorority houses may write to the Interfraternity or Panhellenic Council.

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

HEALTH CENTER

The University maintains a health center which helps to guard against infectious diseases and incipient ill health. A dispensary is available to students during class hours, and an infirmary will receive bed patients at any hour.

The infirmary 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.



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*.

GRADUATE CURRICULA

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 engineering 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.

AERONAUTICAL ENGINEERING

Acting 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 Graduate Curricula, above), 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 51).

Students who are planning to do graduate work must take Mathematics 421 (Ordinary and Partial Differential Equations) during their senior year.

Second Year

FIRST QUARTER	CREDITS
Math. 251 Analytic Geom. & Calc.	5
Mech. Engr. 201 Metal Castings	1
Mech. Engr. 220 Heat Engines	3
Mech. Engr. 260 Mechanism	3
Physics 217 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	17-20

SECOND QUARTER	CREDITS
Aero. Engr. 200 Intro.	2
Civil Engr. 291 Dynamics	3
H.-S.S. 265 Tech. of Comm.	3
Math. 252 Analytic Geom. & Calc.	3
Mech. Engr. 202 Welding	1
Physics 218 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	17-20

THIRD QUARTER	CREDITS
Civil Engr. 292 Mechanics of Matls.	3
Elect. Engr. 300 Direct Currents	5
Math. 253 Analytic Geom. & Calc.	3
Mech. Engr. 203 Metal Machining	1
Physics 219 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	17-20

Third Year

FIRST QUARTER	CREDITS
Civil Engr. 293 Mechanics	3
Civil Engr. 342 Hydraulics	5
Elect. Engr. 301 Alt. Currents	5
H.-S.S. 331 Humanities	3
	16

SECOND QUARTER	CREDITS
Aero. Engr. 300 Aerodynamics	3
H.-S.S. 332 Humanities	3
Mech. Engr. 320 Thermodynamics	5
Mech. Engr. 340 Engr. Matls.	3
Mech. Engr. 361 Machine Design	3
	17

THIRD QUARTER	CREDITS
Aero. Engr. 301 Aerodynamics	3
Aero. Engr. 302 Aerodynamics	3
Aero. Engr. 360 Engines	3
H.-S.S. 491 Nontech. Reading	1
Mech. Engr. 341 Aircraft Matls.	2
Mech. Engr. 362 Machine Design	3
	15

Fourth Year

FIRST QUARTER	CREDITS
Aero. Engr. 303 Aerodynamics	3
Aero. Engr. 320 Aero. Lab.	1
Aero. Engr. 330 Struct. Anal.	4
Aero. Engr. 390 Seminar	0
Econ. 211 General	3
Electives	4
	15

SECOND QUARTER	CREDITS
Aero. Engr. 321 Aero. Lab.	1
Aero. Engr. 331 Struct. Anal.	4
Aero. Engr. 391 Seminar	0
Aero. Engr. 410 Aero. Design	4
Hum. Rel. 365 Indust. Rel.	3
Electives	3
	15

THIRD QUARTER	CREDITS
Aero. Engr. 311 Loads	2
Aero. Engr. 340 Struct. Design	4
Aero. Engr. 350 Struct. Test	1
Aero. Engr. 392 Seminar	1
Bus. Law 307 Bus. Law	3
Electives	4
	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 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 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.

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 are required. Other requirements are similar to those for the Master of Science degree.

COURSES FOR UNDERGRADUATES

200 Introduction to Aeronautics (2) — **Eastman**
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) — **Ganzer**
Air properties and their variations with altitude; the continuity and Bernoulli equations; jets and body pressure distribution; dimensional analysis and dynamic similarity; aeronautical nomenclature; the stream function applied to simple problems; aerodynamic characteristics of airfoils in a perfect and real fluid. Prerequisites, Civil Engineering 342, Physics 217, 218, and 219, and Mathematics 251.

301 Aerodynamics (3) — **Ganzer**
Momentum and circulation theory of lift; induced effects; airplane efficiency factor; spanwise lift distribution; auxiliary lift devices. Prerequisite, 300.

302 Aerodynamics (3) — **Ganzer**
Aerothermodynamic relations; viscosity and compressibility effects on bodies and in pipes; laboratory facilities; wind tunnel wall corrections; parasite drag and power required by an airplane. Prerequisites, 301 (which may be taken concurrently) and Mechanical Engineering 320.

303 Aerodynamics (3) — **Ganzer**
Performance of propeller- and jet-driven airplanes as affected by power plants and airplane configuration; stability and control. Prerequisite, 302.

311 Airplane Design Loads (2) — **Weikel**
Elementary dynamics of the rigid airplane; loads encountered in flight and handling of the airplane; the relation of load factor to velocity; CAA requirements for loads on an airplane. Prerequisite, 303.

320 Aerodynamics Laboratory (1) — **Ganzer**
Tests of subsonic and supersonic operating characteristics of wind tunnels and ducts. Prerequisite, 302.

321 Aerodynamics Laboratory (1) — **Ganzer**
Pressure distribution, wake, and boundary layer tests of two-dimensional airfoils; three-dimensional tests involving complete model build-up. Prerequisites, 303 and 320.

330 Aircraft Structural Analysis (4) — **Weikel**
Analysis of statically determinate plane and space trusses; stresses and deflections of the general beam; introduction to simple monocoque and stressed-skin structures. Prerequisites, Mechanical Engineering 340 and 361.

331 Aircraft Structural Analysis (4) — **Weikel**
Analysis of statically indeterminate plane and space trusses; continuous beams, frames, and rings; complex monocoque and stressed-skin structures; introduction to buckling and instability problems. Prerequisite, 330.

340 Aircraft Structural Design (4) — **Weikel**
Relation of structural analysis to structural design; basic criteria for structural design of aircraft; actual design of some structural components of an airplane. Prerequisite, 331.

350 Aircraft Structural Testing (1) — **Weikel**
Methods and techniques of aircraft structural testing; laboratory test of typical structural components of an airplane. Prerequistie, 330.

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. (Offered when demand is sufficient.)

385 Selected Subjects in Aeronautical Design (2) — **Staff**
Lectures and typical problems presented by men with aeronautical engineering experience. Prerequisite, permission.

390-391-392 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) — **Street, Ganzer**
Euler's equations of motion; use of potential and stream functions; sources, sinks, and vortices; three-dimensional flow; two-dimensional flow; theory of airfoils and wings. Prerequisite, Mathematics 253.

410 Aerodynamic Design (4) — **Ganzer**
Preliminary design of a modern airplane to satisfy a given set of requirements; estimation of size, selection of configuration, weight and balance, performance, and stability and control. Prerequisite, 303.

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, 321.

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, 331. (Offered when demand is sufficient.)

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 in straight forward motion and in yaw; aerodynamic considerations of the helicopter and other possible types of moving wing systems. Prerequisite, 302. (Offered when demand is sufficient.)

470 Analytical Problems in Aeronautics (3) — **Street**
Problems in aerodynamics, structures, and dynamics which can be formulated as ordinary differential equations; their solution and interpretation. Prerequisite, Mathematics 421 or permission.

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. Prerequisite, 506 and Physics 350 or equivalent. (Offered when demand is sufficient.)

516 Stability and Control (3) **Ganzer**
Aerodynamics of control; the general problem of dynamic stability; the influence of aerodynamic parameters on flying characteristics.

520-521-522 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. Prerequisite, 530 or Civil Engineering 572. (Offered when demand is sufficient.)

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 the Airplane (3) **Martin, Street**
The dynamics of the rigid airplane; general theory of particle motion in space, and the application to problems of airplane flight paths; general theory of systems of elastically connected particles, and the application to the dynamics of airplane components. (Offered when demand is sufficient.)

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 of 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: PAUL C. CROSS, 103 Bagley Hall
Adviser: 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 36), 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 51).

Second Year

FIRST QUARTER	CREDITS
Chem. Engr. 271 Intro.	3
Chem. 355 Physical	3
Math. 251 Analytic Geom. & Calc.	5
Physics 217 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	16-19

SECOND QUARTER	CREDITS
Chem. Engr. 272 Intro.	3
Chem. 356 Physical	4
Math. 252 Analytic Geom. & Calc.	3
Mech. Engr. 202 Welding	1
Physics 218 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Chem. Engr. 273 Intro.	3
Chem. 357 Physical	3
Civil Engr. 292 Mechanics of Matls.	3
H.-S.S. 265 Tech. of Comm.	3
Physics 219 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	17-20

Third Year

FIRST QUARTER	CREDITS
Chem. 335 Organic Chem.	3
Chem. 345 Organic Chem. Lab.	2
Chem. 358 Physical Chem. Lab.	3
Elect. Engr. 300 Direct Currents	5
H.-S.S. 331 Humanities	3
	16

SECOND QUARTER	CREDITS
Chem. Engr. 375 Thermodynamics	3
Chem. 336 Organic Chem.	3
Chem. 346 Organic Chem. Lab.	2
Chem. 359 Physical Chem. Lab.	3
Elect. Engr. 301 Alt. Currents	5
	16

THIRD QUARTER	CREDITS
Chem. Engr. 470 Unit Oper.	3
Chem. 337 Organic Chem.	3
Econ. 211 General	3
H.-S.S. 332 Humanities	3
Mech. Engr. 203 Metal Mach.	1
Mech. Engr. 361 Machine Design	3
	16

Fourth Year

FIRST QUARTER	CREDITS
Chem. Engr. 471 Unit Oper.	4
Chem. Engr. 481 Inorganic	4
Chem. Engr. 498 Thesis	1
H.-S.S. 491 Nontech. Reading	1
Electives	5
	15

SECOND QUARTER	CREDITS
Chem. Engr. 472 Unit Oper.	4
Chem. Engr. 482 Organic	4
Chem. Engr. 498 Thesis	2
Hum. Rel. 365 Indust. Rel.	3
H.-S.S. 492 Nontech. Reading	1
Electives	2
	16

THIRD QUARTER	CREDITS
Chem. Engr. 473 Unit Oper.	4
Chem. Engr. 483 Process Des.	4
Chem. Engr. 498 Thesis	2
Bus. Law 307 Bus. Law	3
H.-S.S. 493 Nontech. Reading	1
Elective	1
	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*. Entrance, or qualifying, examinations are required of prospective candidates for both degrees. These examinations are designed to assess the student's knowledge and understanding of the material normally contained in an undergraduate program with a major in chemical engineering. They are usually given on the 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. No foreign language is required.

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

COURSES FOR UNDERGRADUATES

271 Introduction to Chemical Engineering (2-3) **Buckham**
Application of scientific laws to engineering problems dealing with gases and gas vapor mixtures, from the standpoint of the chemical engineer, emphasizing the use of the material balance as a general tool. Prerequisites, Chemistry 107 or 116, and Mathematics 153, or equivalents.

272 Introduction to Chemical Engineering (2-3) **Buckham**
Material and energy balances of combustion processes and an introduction to thermodynamics. Prerequisite, 271.

273 Introduction to Chemical Engineering (2-3) **Buckham**
Combination of material and energy balances with equilibrium and rates of physical and chemical reactions. Elementary economic balance. Prerequisite, 272.

375 Chemical Engineering Thermodynamics (3) **Staff**
Introduction to applications of thermodynamics to chemical engineering problems. Review of pressure-volume-temperature relationships, equations of state, and thermodynamic definitions and laws. Calculation and representation of thermodynamic functions. Heat and work of state change in various closed- and open-system noncyclic and cyclic processes. Phase equilibria in multicomponent systems. Prediction of chemical equilibria. Prerequisites, Chemistry 355 and 356 or equivalents.

N381 Field Trip (0) **Staff**
A four-day spring vacation field trip in which various chemical industries in the Pacific Northwest are visited. Prerequisite, junior standing or permission.

N382 Field Trip (0) **Staff**
A four-day spring vacation field trip in which various chemical industries in the Pacific Northwest are visited. Prerequisite, senior standing or permission.

470 Unit Operations (3) **McCarthy**
Fundamental unit operations of chemical engineering, beginning with the film theory, fluid flow, flow meters, heat transfer, and evaporation. Prerequisite, 273.

471 Unit Operations (2 or 4) **Johanson**
A continuation of 470, in which absorption and distillation are studied from the standpoints of equilibria, operating lines, rates, and size of equipment required. The laboratory covers the subject matter of 470.

472 Unit Operations (2 or 4) **Moulton**
A continuation of 471, with a study of extraction, absorption, air conditioning, drying, and crystallization. The laboratory covers primarily the subject matter of 471. Prerequisite, 471.

473 Unit Operations (2 or 4) **Johanson**
A continuation of 472, with a study of filtration, sedimentation, classification, crushing, and grinding. The laboratory covers the subject matter of 472 and 473. Prerequisite, 472.

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 252 or equivalent.

481 Inorganic Chemical Processes (4) **Moulton**
Fuels; coal distillation; carbon; cement; potassium salts; fertilizers; sodium compounds; chlorine; electrochemical industries; sulfur and sulfuric acid; nitrogen industries; nuclear engineering. Prerequisite, Chemistry 221 or equivalent.

482 Organic Chemical Processes (4) **Moulton**
Process instrumentation; paints and protective coatings; oils and fats; waxes; soaps and synthetic detergents; sugar and starch; wood chemicals; pulp and paper; synthetic fibers; plastics and polymers; petroleum chemicals. Prerequisite, Chemistry 221 or equivalent.

483 Chemical Engineering Process Design (4) **Moulton**
Comprehensive design problem for a chemical plant; economic study; raw materials; process flow sheet; material and heat balances; design of specific units; sizing of lines and pumps; instrumentation; packaging; warehousing; marketing and sales. Prerequisite, Chemistry 221 or equivalent.

485 Industrial Electrochemistry (3) **Moulton**
Theoretical and applied electrochemistry; units and laws; overvoltage and polarization; analysis; oxidation and reduction; deposition; refining; metallurgy; electrothermics. Prerequisite, Chemistry 356 or permission. (Offered when demand is sufficient.)

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**
Special lectures offered as necessary by various members of the staff and visiting professors.

570 Heat Transfer and Fluid Flow (3) **McCarthy**
Measurement of temperature and heat capacity; dimensional analysis; Fourier's law; steady and unsteady heat conduction; radiant energy; energy transfer; fluid flow mechanisms; energy balance; Bernoulli's theorem; viscosity concepts; Poiseuille's and Fanning's equations; friction factors; convection heat transfer; Reynolds' analogy; film coefficient correlations by the use of Nusselt's, Prandtl's, Graetz's, and Reynolds' numbers; over-all heat transfer coefficients; introductory design calculations. Prerequisite, 471.

571 Diffusional Processes (3) **Moulton**
Diffusion theory; transfer of material between phases; design of absorption equipment; Kremser method; multicomponent systems; performance of absorption equipment; simultaneous absorption and chemical reaction; solvent extraction. Prerequisite, 472.

572 Distillation (3) **Johanson**
Application of fundamental principles to industrial problems in binary and multicomponent distillation. Equilibrium and rate of transfer; ideal and nonideal systems. Graphical and analytical calculation methods. Design, control, and instrumentation of fractionating equipment. Prerequisite, 473.

575 Advanced Chemical Engineering Thermodynamics (3) **McCarthy**
General equations for phase equilibrium; applications of thermodynamics to unit operations and to prediction of chemical equilibria developed in some detail. Prerequisite, Chemistry 456 or equivalent.

580 Nuclear Engineering (3) **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. Prerequisite, 570.

581 Kinetics and Catalysis (3) **Johanson**
Homogeneous and heterogeneous systems, with emphasis on chemical engineering principles applied to industrial reactor design. Prerequisite, 570.

582 Multistage Separation Processes (3) **McCarthy**
Theoretical and practical study of special batch and continuous multistage processes for separation of various substances, including isotopes. Ion exchange, chemical exchange, gas and thermal diffusion, chromatographic, electrophoretic, and other processes are considered. Prerequisite, permission.

583 Topics in Chemical Engineering Unit Operations (1-3) **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 (2) **McCarthy**
Fundamentals of substances with high molecular weight, including study of valence consideration, molecular weight determination, polymerization and condensation, reactions, cracking fiber and film formation, glasses, and mechanical properties as related to chemical structure. Prerequisites, 232 and 356. (Offered when demand is sufficient.)

587 Chemistry of High Polymers (2) **McCarthy**
Chemistry and technology of substances with high molecular weight, including natural and synthetic hydrocarbons, vinyls, rubbers, phenolaldehyde resins, lignin, cellulose, starch, glycogen, nylons, proteins, and silicons. Prerequisites, Chemistry 232 and 356. (Offered when demand is sufficient.)

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 36), Master of Science in Civil Engineering, and Master of Arts in Urban Planning.

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 51).

The fourth-year program calls for five 3-credit civil engineering elective courses. Electives in the field of hydraulics are courses 445, 447, 448; in materials, courses 467, 468; in structures, course 485; in sanitary, courses 455, 458, 459; in transportation, courses 315, 403, 422, 423, 424, 426, 428, 429. One of these electives must be in the sanitary engineering field, preferably 458. Students planning graduate work in structures should elect Mathematics 421 (Ordinary and Partial Differential Equations) and those planning to take a degree in industrial engineering should elect Accounting 150 (Fundamentals).

Second Year

FIRST QUARTER	CREDITS
Civil Engr. 291 Dynamics	3
H.-S.S. 265 Tech. of Comm.	3
Math. 251 Analytic Geom. & Calc.	5
Physics 217 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	16-19

SECOND QUARTER	CREDITS
Civil Engr. 292 Mechanics of Matls.	3
Geol. 310 Engineering	5
Math. 252 Analytic Geom. & Calc.	3
Physics 218 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Civil Engr. 293 Mechanics	3
Elect. Engr. 300 Direct Currents	5
Mech. Engr. 260 Mechanism, or Mech. Engr. 220 Heat Engines	3
Physics 219 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	16-19

Third Year

FIRST QUARTER	CREDITS
Civil Engr. 312 Route Sur.	3
Civil Engr. 342 Hydraulics	5
Civil Engr. 371 Structural	3
Elect. Engr. 301 Alt. Currents	5
	16

SECOND QUARTER	CREDITS
Civil Engr. 313 Location	3
Civil Engr. 343 Hydraulics	5
Civil Engr. 363 Materials	3
Civil Engr. 372 Structural	3
H.-S.S. 491 Nontech. Reading	1
	15

THIRD QUARTER	CREDITS
Civil Engr. 314 Surveying	3
Civil Engr. 321 Roads	3
Civil Engr. 350 Sanitary	3
Civil Engr. 362 Materials	3
Civil Engr. 373 Structural	3
H.-S.S. 492 Nontech. Reading	1
	16

Fourth Year

FIRST QUARTER	CREDITS
Civil Engr. 375 Structural	3
Civil Engr. 466 Soil Mech.	3
H.-S.S. 331 Humanities	3
Econ. 211 General	3
Technical Electives	3
	15

SECOND QUARTER	CREDITS
Civil Engr. 376 Structural	3
H.-S.S. 332 Humanities	3
Hum. Rel. 365 Indust. Rel.	3
Technical Electives	6
	15

THIRD QUARTER	CREDITS
Civil Engr. 377 Structural	3
Bus. Law 307 Bus. Law	3
H.-S.S. 333 Humanities	3
Technical Electives	6
	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 research. No foreign language is required.

MASTER OF ARTS IN URBAN PLANNING. Graduates in civil engineering are eligible to enter the graduate curriculum in urban planning. The urban planning curriculum and prerequisite courses are described in the *Graduate School Bulletin*.

COURSES FOR UNDERGRADUATES

MECHANICS AND SURVEYING

256 Forest Surveying (8) — **Hoag**
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.

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. (Physics 217 may be taken concurrently.)

292 Mechanics of Materials (3) — **Campbell, Staff**
Basic theory, analysis and design of machine and structural members. Deformations, normal and shearing stresses in tension members, beams and columns. Torsional stresses and deformations. Prerequisites, 291 and Mathematics 153 or equivalent. (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.

312 Route Surveying (3) — **Chittenden, Colcord, Collier**
Alignment survey problems associated with the location of highways and railways, including preliminary and final location, staking of curves, compensation for curvature and sight distance, and preparation of location maps. Prerequisite, 256 or General Engineering 121.

313 Location and Earthwork (3) — **Chittenden, Colcord, Collier**
Highway and railway grades, profiles, cross sections, earthwork quantities, including shrinkage and swell, and application of the mass diagram to the problems of haul; legal description and estimates. Prerequisite, 256 or General Engineering 121.

314 Intermediate Surveying (3) — **Chittenden, Colcord, Collier**
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 (Lambert Conformal Projection for Washington). Office and field time are about equally divided. Prerequisite, General Engineering 121.

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. Prerequisites, 256 for foresters, 312 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) — **Meese, Ekse**
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) — **Tyler, Horwood**
An introduction to modern urban planning. Recent historical developments. The interrelation of land uses and utilities. Enabling legislation and forms of municipal regulation. 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, 313.

423 River and Harbor Engineering (3) — **Meese**
Breakwaters, shore protection, channel protection, and channel regulation; theory of waves. Prerequisites, 313, 342.

424 Highway Design (3) — **Ekse**
Design of 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 Hydraulics (5) **Moritz, Campbell, Staff**
Practical fluid mechanics with engineering application to the energy and flow of real liquids through various orifices, intakes, pipes, reducing and expanding passages, open channels, including streams, over weirs, and in tangential wheels, reaction turbines, and centrifugal pumps. Emphasis is on fundamental principles, accompanied by laboratory verification. Three lectures, three hours problems, three hours laboratory. Prerequisite, 291.

343 Hydraulic Engineering (5) **Moritz, Campbell, Staff**
Complete projects and hydrometric methods; design of gravity spillway; flume intakes; surge; economical design of pipe line. Prerequisite, 342.

445 Hydraulic Machinery (3) **Moritz**
Application of hydraulic principles to the design and function of hydraulic machinery, with emphasis on turbine design and pump analysis. Topics include: head, speed, power, type, shape, losses; details of runner, shaft, guides, bearing casing governor, auxiliaries, etc. pumps and other hydraulic devices. Prerequisite, 342.

447 Hydraulic Power (3) **Campbell**
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) **Van Horn, Campbell**
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) **Sylvester**
Basic concepts of water supply, sewerage, refuse disposal, and stream pollution; chemical, bacteriological, and physical analysis of water and sewage. Prerequisite, Chemistry 107 or equivalent.

455 Water Supply and Treatment (3) **Tyler, Sylvester**
Water sources, consumption, fire protection, financing, and cost comparisons; intakes and supply conduits; pipeline materials and appurtenances; distribution system design and analysis; ground water and wells; storage on the distribution system; water quality and purposes of treatment; design of a water filtration plant; water softening, corrosion control, and miscellaneous water treatment. Prerequisites, 342 and 350.

458 Sewerage and Sewage Treatment (3) **Tyler, Sylvester**
Hydraulic design of storm and sanitary sewers, inverted siphons, overflow structures, river and ocean outfalls; problems of stream pollution, its effects and elimination. Principles and design of sewage disposal plants. Prerequisites, 342 and 350.

459 Sanitary Design (3) **Tyler, Sylvester**
Principles of aerobic and anaerobic treatment of sewage. Problems of toxicity, concentration and disposal of industrial wastes. Pollution buildup in tidal estuaries. Analysis of local plant operation as basis for design. Prerequisite, 458.

ENGINEERING MATERIALS

362 Materials of Construction (3) **Mittet**
Concrete, Portland cement, and concrete mixtures. Prerequisite, 292.

363 Materials of Construction (3) **Smith**
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**
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) **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**
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**
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.

375 Structural Design (3) **Clanton, Miller, 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.

376 Structural Design (3) **Clanton, Miller, 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, 373.

377 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 375.

491 Advanced Professional Design (2-5 each quarter) **Staff**
Students should register for H (hydraulic), M (materials), S (structural), W (sanitary), or T (transportation). Prerequisite, permission of executive officer.

COURSES FOR GRADUATES ONLY

509 Engineering Relations (2) **Staff**
Methods of setting up engineering problems and investigations; written and oral presentation of professional ideas and analysis of current research and investigations, both professional and economic, in the student's major field. Prerequisite, graduate standing.

520 Seminar (2) **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) **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. Prerequisite, 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.

547 Advanced Hydraulic Power (4) **Campbell**
Theory and application of hydrology, with emphasis on water power development. Precipitation, runoff, maximum and minimum flows, flood routing. Economics of storage and transportation of water. Types of hydroelectric installations; multiple use projects. Special problems in hydrology and hydraulic power. Prerequisite, 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) **Hennes**
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. Prerequisite, 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 sub-structures. Prerequisite, 467 and senior or graduate standing.

571 Advanced Strength of Materials (3) **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, compatability 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**
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**
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**
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), 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, 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 36), 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 51).

In the third and fourth years, students may either follow the prescribed curriculum or make substitutions in it to take an option in communication or power. In

the communication option, Electrical Engineering 360, 361, and 470 may be substituted for 340, 341, and 450; in the power option, Electrical Engineering 440 and 4 credits in electrical electives may be substituted for 460 and 461.

Students who plan to study for an advanced degree must include Mathematics 421 (Ordinary and Partial Differential Equations) as an undergraduate elective. It is recommended that 422 also be included when possible.

Students planning to take a degree in industrial engineering should elect Accounting 150 (Fundamentals).

Second Year

FIRST QUARTER	CREDITS
Elect. Engr. 220 Direct-Current Circuits	5
Mech. Engr. 201 Metal Castings	1
Math. 251 Analytic Geom. & Calc.	5
Physics 217 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	16-19

SECOND QUARTER	CREDITS
Elect. Engr. 221 Direct-Current Measurements	2
Civil Engr. 291 Dynamics	3
H.-S.S. 265 Tech. of Comm.	3
Math. 252 Analytic Geom. & Calc.	3
Physics 219 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Elect. Engr. 225 Direct-Current Machinery	6
Civil Engr. 292 Mechanics of Matls.	3
Math. 253 Analytic Geom. & Calc.	3
Mech. Engr. 202 Welding	1
Phys. Educ. Activity	1
ROTC	2-3
	14-17

Third Year

FIRST QUARTER	CREDITS
Elect. Engr. 320 Alternating-Current Circuits	5
Econ. 211 General	3
H.-S.S. 331 Humanities	3
Mech. Engr. 203 Metal Machining	1
Mech. Engr. 340 Engr. Matls.	3
	15

SECOND QUARTER	CREDITS
Elect. Engr. 340 Alternating-Current Mach.	4
Elect. Engr. 341 Alternating-Current Mach. Lab.	4
Civil Engr. 342 Hydraulics	5
H.-S.S. 332 Humanities	3
	16

THIRD QUARTER	CREDITS
Elect. Engr. 450 Advanced Alternating Currents	6
Bus. Law 307 Bus. Law	3
H.-S.S. 333 Humanities	3
Mech. Engr. 368 Kinematics	3
	15

Fourth Year

FIRST QUARTER	CREDITS
Elect. Engr. 420 Vacuum Tubes	4
Elect. Engr. 425 Electric Transients	4
H.-S.S. 491 Nontech. Reading	1
Mech. Engr. 466 Machine Design	4
Physics 455 Intro. to Modern Physics	3
	16

SECOND QUARTER	CREDITS
Elect. Engr. 429 Field Theory	3
Elect. Engr. 460 Vacuum-Tube Circuits	5
H.-S.S. 492 Nontech. Reading	1
Mech. Engr. 325 Thermodynamics	3
Electives	3
	15

THIRD QUARTER	CREDITS
Elect. Engr. 461 Vacuum-Tube Circuits	5
Hum. Rel. 365 Indust. Rel.	3
H.-S.S. 493 Nontech. Reading	1
Mech. Engr. 426 Thermodynamics	5
Electives	2
	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 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, 520, 521, and 522.

MASTER OF ELECTRICAL ENGINEERING This is a more advanced degree than that of Master of Science in Electrical Engineering. A total of 72 credits of course work and a more extensive thesis are required. Other requirements are similar to those for the Master of Science degree. Certain physics courses may be used in partial satisfaction of the major requirements.

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, 514, 520, 521, and 522.

COURSES FOR UNDERGRADUATES

200 Elementary Electronics (5) — **Hill, 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 alternating weeks. Prerequisites, Physics 122 and Mathematics 252 or 308.

220 Direct-Current Circuits (5) — **Harrison, Staff**
Direct-current circuit theory, including Ohm's Law, Kirchoff's Laws, circuit theorems, resistivity, and temperature effects; magnetic circuits, inductance, and capacitance. Beginning course for electrical engineering students. Prerequisites, Mathematics 153 and General Engineering 111.

221 Direct-Current Measurements (2) — **Harrison, Staff**
One four-hour laboratory per week covering methods of measuring voltage, current, resistance, magnetic flux, inductance, and capacitance. This course is the laboratory for 220 but is taken in a subsequent quarter. Prerequisite, 220.

225 Direct-Current Machinery (6) — **Rogers, Staff**
Construction, operation, characteristics, and applications of direct-current machinery. Includes two four-hour laboratories per week. Prerequisite, 221.

300 Direct Currents (5) — **Robbins, Staff**
Short course in direct-current circuits and machinery for non-electrical engineering majors. Includes one three-hour laboratory per week. Prerequisites, Physics 218, Mathematics 153, and General Engineering 111.

301 Alternating Currents (5) — **Robbins, Staff**
Short course in alternating-current circuits and machinery for non-electrical engineering majors. Includes one three-hour laboratory per week. Prerequisite, 300.

320 Alternating-Current Circuits (5) — **Bergseth, Staff**
Voltage, current, and power relations in alternating-current circuits; complex number representation of sinusoidal quantities; elementary network and coupled-circuit analysis; polyphase circuits; use of alternating-current instruments; Fourier series analysis. Includes one three-hour laboratory per week. Prerequisite, 221.

340 Alternating-Current Machinery (4) — **Rustebakke, Staff**
Theory of synchronous machines, induction motors, and transformers. Prerequisites, 225 and 320. To be taken concurrently with 341.

341 Alternating-Current Machinery Laboratory (4) — **Rusebakke, Staff**
Two four-hour laboratories per week covering experimental work with alternating-current machinery. To be taken concurrently with 340.

360 Alternating-Current Machinery (4) — **Rustebakke, Staff**
A condensation of 340 and 450 covering the theory of synchronous machines, induction motors, transformers, single-phase motors, and other power equipment. For students specializing in communication. Prerequisite, 225.

361 Alternating-Current Machinery Laboratory (4) — **Rustebakke, Staff**
Two four-hour laboratories per week covering experimental work with alternating-current machinery. To be taken concurrently with 360.

400 Vacuum Tubes and Electronics (5) — **Hill, 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, 301.

420 Vacuum Tubes and Electronics (4) — **Swarm, 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, 320.

425 Electric Transients (4) — **Smith, 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 paramcters; use of classical, Laplace, and step-by-step methods of solving the differential equations involved. Includes one four-hour laboratory on alternate weeks. Prerequisite, 320.

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541 Advanced Transients (5) — **Smith**
Transient phenomena in transmission lines and rotating machinery; lighting 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. Prerequisite, 425. (Offered alternate years; offered 1954-55.)

545 Power Transmission (5) — **Rustebakke**
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) — **Rustebakke**
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. Prerequisite, 420. Must be accompanied or preceded by 510. (Offered alternate years; offered 1954-55.)

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. Prerequisite, 566 or permission. Includes one three-hour laboratory per week.

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.

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. Prerequisite, 470. (Offered alternate years; offered in 1953-54.)

582 Servomechanisms in Electrical Engineering (4) — **Stout**
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)

429 Field Theory (3) — **Rogers, Staff**
Vector analysis and the study of electric and magnetic fields, leading to such basic equations as those of Maxwell and Poisson. Prerequisite, 320.

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) — **Hill, 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 per week. Prerequisite, 420.

450 Advanced Alternating Currents (6) — **Hoard, 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 or 360.

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 or 360, and 420.

460, 461 Vacuum-Tube Circuits (5,5) — **Hill, 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 in 460, and one four-hour laboratory per week in 461. Prerequisite for 460, 420; for 461, 460.

470 Communications Networks (6) — **Eastman, 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. Prerequisite, 320.

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 clampers. 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) — **Jacobsen**
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, 320 and Mathematics 421.

511 Network Analysis (4) — **Lewis**
Matric 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 or 360.

515 Measurements and Circuit Components (3) — **Stout**
Measurements of resistance, inductance, capacitance, and frequency at all frequencies from d-c to 10,000 megacycles; use of inductance bridges, r-f bridges, Twin-T circuits, Q meters, susceptance variation methods, frequency standards, and standing wave detectors. Prerequisite, 470.

520-521-522 Seminar (0-0-2) — **Lewis**
Required for all graduate students.

104 (General) for Chemistry 105 and 106. Those who have had high school trigonometry and can pass a qualifying examination may omit Mathematics 104 (Plane Trigonometry) and take Mathematics 105 (College Algebra) in the first quarter. Students who expect to major in ceramic or metallurgical engineering in the School of Mineral Engineering, or who expect to enter the Department of Chemical Engineering, will substitute Chemistry 115, 116, and 325 for Chemistry 105, 106, and 107, and in the first quarter omit Physical Education 175, substituting it for General Engineering 121 in the third quarter.

First Year

FIRST QUARTER	CREDITS
Gen. Engr. 100 Orientation	1
Gen. Engr. 101 Drawing	3
Gen. Engr. 111 Problems	3
Chem. 105 General	3
Math. 104 Plane Trig.	3
Phys. Educ. 175 Health	2
Phys. Educ. Activity	1
ROTC	2-3
	16-19

SECOND QUARTER	CREDITS
Gen. Engr. 102 Drawing	3
Gen. Engr. 112 Problems	3
Chem. 106 General	3
Math. 105 College Algebra	5
Phys. Educ. Activity	1
ROTC	2-3
	15-18

THIRD QUARTER	CREDITS
Gen. Engr. 103 Drafting	3
Gen. Engr. 121 Plane Surveying	3
Chem. 107 General	3
Math. 153 Analytic Geom. & Calc.	5
H-S.S. 140 Engr. Report Writing	1
Phys. Educ. Activity	1
ROTC	2-3
	16-19

COURSES FOR UNDERGRADUATES

100 Engineering Orientation (1) — **Macartney, Staff**
Lectures, discussion, and reading assignments on the College of Engineering and on the various fields of professional engineering.

101 Engineering Drawing (3) — **Boehmer, Staff**
Orthographic projection including three-view drawing and all related views; use of instruments, sections, sketching, and isometric and scale practice; reading of drawings and techniques of lettering and line work.

102 Engineering Drawing (3) — **Douglass, Staff**
Study of drawing standards, notes, conventions, shop language, and proper dimensioning. Practice in making acceptable shop drawings; ink and pencil tracings; reading of drawings. Prerequisite, 101.

103 Drafting Problems (3) — **Warner, 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. Prerequisites, 101 and 102.

107 Engineering Drawing (3) — **Warner, Hoag**
Short course for forestry and art students.

111 Engineering Problems (3) — **Brown, Staff**
Training in methods of analyzing and solving engineering problems, principally dynamics problems; coaching in proper methods of work and study, including training in systematic arrangement and clear workmanship. The student is helped to orient himself in his engineering work. Prerequisites, high school physics and advanced algebra.

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 Mathematics 104.

121 Plane Surveying (3) — **McNeese, Staff**

541 Advanced Transients (5) **Smith**
Transient phenomena in transmission lines and rotating machinery; lighting 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. Prerequisite, 425. (Offered alternate years; offered 1954-55.)

545 Power Transmission (5) **Rustebakke**
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) **Rustebakke**
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. Prerequisite, 420. Must be accompanied or preceded by 510. (Offered alternate years; offered 1954-55.)

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. Prerequisite, 566 or permission. Includes one three-hour laboratory per week.

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.

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. Prerequisite, 470. (Offered alternate years; offered in 1953-54.)

582 Servomechanisms in Electrical Engineering (4) **Stout**
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) **Stout**
Study of field models, analogue and digital computers, and various special-purpose computers for solving electrical problems. Includes one three-hour laboratory per week. Prerequisite, 510 (Offered alternate years, offered 1953-54.)

600 Research (2-5) **Staff**

Thesis (*) **Staff**

GENERAL ENGINEERING

Executive Officer: E. R. WILCOX, 311 Education 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 had high school trigonometry and can pass a qualifying examination may omit Mathematics 104 (Plane Trigonometry) and take Mathematics 105 (College Algebra) in the first quarter. Students who expect to major in ceramic or metallurgical engineering in the School of Mineral Engineering, or who expect to enter the Department of Chemical Engineering, will substitute Chemistry 115, 116, and 325 for Chemistry 105, 106, and 107, and in the first quarter omit Physical Education 175, substituting it for General Engineering 121 in the third quarter.

First Year

FIRST QUARTER	CREDITS
Gen. Engr. 100 Orientation	1
Gen. Engr. 101 Drawing	3
Gen. Engr. 111 Problems	3
Chem. 105 General	3
Math. 104 Plane Trig.	3
Phys. Educ. 175 Health	2
Phys. Educ. Activity	1
ROTC	2-3
	16-19

SECOND QUARTER	CREDITS
Gen. Engr. 102 Drawing	3
Gen. Engr. 112 Problems	3
Chem. 106 General	3
Math. 105 College Algebra	5
Phys. Educ. Activity	1
ROTC	2-3
	15-18

THIRD QUARTER	CREDITS
Gen. Engr. 103 Drafting	3
Gen. Engr. 121 Plane Surveying	3
Chem. 107 General	3
Math. 153 Analytic Geom. & Calc.	5
H-S.S. 140 Engr. Report Writing	1
Phys. Educ. Activity	1
ROTC	2-3
	16-19

COURSES FOR UNDERGRADUATES

100 Engineering Orientation (1) — **Macartney, Staff**
Lectures, discussion, and reading assignments on the College of Engineering and on the various fields of professional engineering.

101 Engineering Drawing (3) — **Boehmer, Staff**
Orthographic projection including three-view drawing and all related views; use of instruments, sections, sketching, and isometric and scale practice; reading of drawings and techniques of lettering and line work.

102 Engineering Drawing (3) — **Douglass, Staff**
Study of drawing standards, notes, conventions, shop language, and proper dimensioning. Practice in making acceptable shop drawings; ink and pencil tracings; reading of drawings. Prerequisite, 101.

103 Drafting Problems (3) — **Warner, 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. Prerequisites, 101 and 102.

107 Engineering Drawing (3) — **Warner, Hoag**
Short course for forestry and art students.

111 Engineering Problems (3) — **Brown, Staff**
Training in methods of analyzing and solving engineering problems, principally dynamics problems; coaching in proper methods of work and study, including training in systematic arrangement and clear workmanship. The student is helped to orient himself in his engineering work. Prerequisites, high school physics and advanced algebra.

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 Mathematics 104.

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. Prerequisites, 102 and Mathematics 104.

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 freshman 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), Economics 211 (General), and Psychology 336 (Industrial Psychology for Engineers).

COURSES FOR UNDERGRADUATES

N10 Rudiments of Writing **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.

140 Engineering Report Writing (1) **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; use of charts, diagrams, plates; accepted abbreviations; proper bibliographical usages. Prerequisite, N10 or passing of tests.

265 Techniques of Communication (3) **Staff**
Understanding of and practice in written and oral presentation of ideas: research techniques, organization of material, acceptable usage, and adaptation of presentation to the communication medium, the occasion, and the audience. Prerequisite, 140 or permission.

301 Modern Reading (3) **Staff**
Readings in literature and the social sciences to discover relationships between culture and personality in the modern world. Prerequisite, 265 or equivalent.

302 Technical Writing (3) **Staff**
Advanced technical reporting; specifications; technical and semi-technical articles; letters and oral reports. Special attention is given to organization, effective use of illustrative materials, and functional use of layout. Prerequisite, 265 or equivalent.

331 Humanities (3) **Staff**
The nature of man, the nature of culture, and the individual's relationship to his culture. These concepts are discussed in relation to some primitive and civilized societies. Prerequisite, 265 or equivalent.

332 Humanities (3) **Staff**
The growth of modern western culture; the rise of individualism, capitalism, Protestantism, and democracy; the growth of science and technology; the changing nature of literature and the arts. Prerequisite, 331 or equivalent.

333 Humanities (3) **Staff**
Discussion of contemporary political and social problems; relationship of engineering and technology to these problems and to intellectual and artistic trends. Prerequisite, 332 or equivalent.

491 Nontechnical Reading (1) **Staff**
Literary and informational material, planned to meet the most obvious needs of the individual student. Prerequisite, 265 or equivalent.

492 Nontechnical Reading (1) **Staff**
Great works of literature, and their interpreters and critics.

493 Nontechnical Reading (1) **Staff**
Current views, new outlooks, and contemporary world developments.

INDUSTRIAL ENGINEERING

The industrial engineering curriculum consists of a regular four-year course of study in any engineering department that offers a full curriculum, supplemented by a fifth year devoted to study in industrial management, accounting, quality control, and related subjects. Since the College does not have a department of industrial engineering, students registering for this fifth year of study must have their schedule of courses approved by the department through which they received their first bachelor's degree.

Students who plan to enter the industrial engineering curriculum should take Accounting 150 (Fundamentals) as an elective subject for the first bachelor's degree. Those who fail to do so will need to take Accounting 150 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
Actg. 151 Fundamentals	3
Fin. 201 Banking & Bus.	5
Electives	7
	15

SECOND QUARTER	CREDITS
Acctg. 310. Intermediate	5
Fin. 301 Corporation	5
Mech. Engr. 410 Engr. Admin.	3
Electives	3
	16

THIRD QUARTER	CREDITS
Acctg. 330. Cost Acctg.	5
Mech. Engr. 411 Engr. Econ.	3
Electives	6
	14

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 36), 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 51).

Second Year

FIRST QUARTER	CREDITS
Mech. Engr. 201 Metal Castings	1
Mech. Engr. 220 Heat Engines	3
Mech. Engr. 260 Mechanism	3
Math. 251 Analytic Geom. & Calc.	5
Physics 217 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	17-20

SECOND QUARTER	CREDITS
Mech. Engr. 202 Welding	1
Civil Engr. 291 Dynamics	3
Econ. 211 General	3
H.-S.S. 265 Tech. of Comm.	3
Math. 252 Analytic Geom. & Calc.	3
Physics 218 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	18-21

THIRD QUARTER	CREDITS
Mech. Engr. 203 Metal Machining	1
Mech. Engr. 221 Lab.	3
Bus. Law 307 Business Law	3
Civil Engr. 292 Mechanics of Matls.	3
Physics 219 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	15-18

Third Year

FIRST QUARTER	CREDITS
Mech. Engr. 305 Production	1
Mech. Engr. 320 Thermodynamics	5
Mech. Engr. 340 Materials	3
Civil Engr. 293 Dynamics	3
H.-S.S. 331 Humanities	3
	15

SECOND QUARTER	CREDITS
Mech. Engr. 306 Prod. Tech.	1
Mech. Engr. 322 Exp. Engr.	3
Mech. Engr. 361 Mach. Des.	3
Mech. Engr. 367 Dynamics	3
Elect. Engr. 300 Direct Currents	5
H.-S.S. 491 Nontech. Reading	1
	16

THIRD QUARTER	CREDITS
Mech. Engr. 307 Prod. Plan.	1
Mech. Engr. 323 Exp. Engr.	3
Mech. Engr. 362 Mach. Des.	3
Elect. Engr. 301 Alt. Currents	5
H.-S.S. 332 Humanities	3
	15

Fourth Year

FIRST QUARTER	CREDITS
Mech. Engr. 481 Internal Combustion Engines	3
Civil Engr. 342 Hydraulics	5
H.-S.S. 333 Humanities	3
Electives	6
	17

SECOND QUARTER	CREDITS
Mech. Engr. 468 Mach. Des.	3
Mech. Engr. 482 Lab.	3
Hum. Rel. 365 Indust. Rel.	3
H.-S.S. 492 Nontech. Reading	1
Electives	6
	16

THIRD QUARTER	CREDITS
H.-S.S. 493 Nontech. Reading	1
Electives	14
	15

Although options are not designated, the 26 elective credits provided in the curriculum allow students to develop special aptitudes and interests and to achieve a moderate degree of specialization. At least 18 of these credits must be in technical courses. Technical electives appropriate to the fields indicated are listed here as recommendations.

DESIGN. Mechanical Engineering 403 (Tool Design), 464 (Machine Design), and 483 (Internal Combustion Engine Design) (see also graduate courses).

HEAT POWER. Mechanical Engineering 424 (Power Plants), 425 (Air Conditioning), and 428 (Refrigeration) (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), and 417 (Methods Analysis).

MASTER OF SCIENCE IN MECHANICAL ENGINEERING

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*.

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**
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) **Zylstra**
Theory and application of the art and science of metal welding. Arc, resistance, and oxyacetylene welding methods; fundamental concepts of welding design, control of residual stress and distortion, flame cutting and heat bending. Laboratory.

203 Metal Machining (1) **Konecny**
Introduction to basic machining methods used in industrial metal processing. Fundamental concepts of the use of machine tools, layout tools, and measuring tools. Laboratory.

220 Heat Engines (3) **Cooper, Crain, Krause, 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, Hendrickson, Krause, Watson**
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) **Baliso, Day, Watson**
Velocity analysis of linkages and other mechanisms; geometry of gearing; transmission of motion by links, gears, cams, and flexible couplings. Prerequisites, General Engineering 103 and Mathematics 105.

305 Production Tooling (1) **Schaller, Konecny**
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) — **Schaller, Konecny, Zylstra**
Study of machine tools and machining processes, including exercises on all principal tools. Prerequisite, junior standing in industrial design or permission. Not open to engineering students.

320 Thermodynamics (5) — **McMinn, Nordquist**
A study of the basic thermodynamic laws covering the relationships between heat energy and work, with particular emphasis on the application of these laws to engineering problems. Prerequisite, 221.

322, 323 Experimental Engineering (3, 3) — **Crain, Krause, 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) — **Nordquist, McMinn**
The general energy equation; second law; ideal and actual cycles; media; elements of power plants; elements of refrigeration; nozzles. Prerequisite, junior standing in engineering.

340 Engineering Materials (3) — **Mills, Balise, Day**
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 nonmetallics in aircraft construction. Lecture and laboratory. 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 design or permission.

361, 362 Machine Design (3, 3) — **Morrison, Balise, Crain, Day**
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.

366 Dynamics of Engines (2) — **Morrison**
Investigation of governors, fly wheels, and balancing. Prerequisites, 320 and Civil Engineering 291. (Offered Autumn, 1953, and Winter, 1954, only.)

367 Dynamics of Machines (3) — **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) — **Morrison, Day**
Linkages, velocity and acceleration analysis; cams; principles of gear design; trains of mechanisms; inertia and balancing of rotating masses; fly wheels. For non-mechanical 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) — **Schaller, Owens**
Structure, organization, management, and operation of manufacturing enterprises as related to production planning and control, methods analysis, product development, and industrial and human relations. Prerequisite, senior standing.

411 Engineering Economy (3) — **Schaller, Konecny**
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.

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) — **Owens, Konecny**
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.

424 Power Plants (5) **Cooper**
Consideration of the use, selection, and arrangement of components for industrial and central power stations. Study of steam turbines, including preliminary design of nozzles and blades, calculation of losses, and efficiency studies. Prerequisites, 340 and 367.

425 Air Conditioning (3) **Hendrickson, Crain**
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) **Nordquist, Crain, Krause**
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. Class 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.

466 Machine Design (4) **Morrison, Day, Balise**
Design of machine elements. Application of statics, dynamics, strength of materials, and shop practices to the design of machine parts. For non-mechanical engineering students. Prerequisite, 368.

468 Machine Design (3) **Morrison. Day, Balise**
Advanced topics in machine design, including analysis of curved beams and thick cylinders, force fits, and design of major machine assemblies. Prerequisite, 362.

481 Internal Combustion Engines (3) **Guidon**
Study of the fundamental principles of operation of gasoline and Diesel engines; analysis of theoretical and actual cycles; fuels; combustion; detonation; carburation, ignition, injection, and performance characteristics of typical engines. Prerequisite, 340.

482 Internal Combustion Engine Laboratory (3) **Guidon, Cooper, Krause**
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) **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; displacement, stability, strength, and construction. Prerequisite, junior standing.

491 Naval Architecture (3) **Rowlands**
Theory of naval architecture; displacement, stability, strength, and performance. Prerequisite, 490.

492 Naval Architecture (3) **Rowlands**
Application of principles of naval architecture; calculations and design. Prerequisites, 362 and 491.

499 Undergraduate Research (2-5 each quarter)

COURSES FOR GRADUATES ONLY

521 Thermodynamics (3) **Nordquist, McMinn**
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) **Watson**
Study of conduction, convection, and radiation, separately and in combination; steady and unsteady states; mathematical treatments; dimensional analyses; graphical solutions; change-of-phase problems. Prerequisites, 320, and graduate standing or permission.

541 Advanced Engineering Materials (3) **Mills**
A second course in the nature and behavior of engineering materials. Ferrous and nonferrous 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. Prerequisite, 340, and graduate standing in engineering.

543 Experimental Mechanics of Materials (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.

544 Engineering Instrumentation (3) **Balise, Day**
Analysis of general equations of instrument response; study of industrial instruments, including pressure, temperature, composition, mechanical measurements; telemetering. Application of feedback to the several modes of control; factors affecting controllability; servomechanisms. Prerequisite, graduate standing in 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.

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 each quarter) **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 36); 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 68).

Ceramic Engineering

BACHELOR OF SCIENCE IN CERAMIC ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 51). Chemistry 115, 116, and 325 should be taken instead of Chemistry 105, 106, and 107. Students who decide to transfer into ceramic engineering may complete the chemistry requirements by rearranging the required curriculum in consultation with the Director of the School.

As part of their course, students have ceramics industrial practice during the summer vacations following their sophomore and junior years, and must participate in scheduled field excursions.

Second Year

FIRST QUARTER	CREDITS
Cer. Engr. 201 Intro.	2
Chem. Engr. 271 Intro.	2
Math. 251 Analytic Geom. & Calc.	5
Mech. Engr. 202 Welding	1
Physics 217 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	15-18

SECOND QUARTER	CREDITS
Cer. Engr. 202 Raw Matls.	3
Chem. Engr. 272 Intro.	3
H.-S.S. 265 Tech. of Comm.	3
Math. 252 Analytic Geom. & Calc.	3
Physics 218 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	17-20

THIRD QUARTER	CREDITS
Cer. Engr. 203 Preparation	3
Civil Engr. 292 Mechanics of Matls.	3
H.-S.S. 331 Humanities	3
Mech. Engr. 203 Metal Mach.	1
Physics 219 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	15-18

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Cer. Engr. 302 Forming	3	Cer. Engr. 303 Coatings	3	Cer. Engr. 304 Drying	3
Cer. Engr. N306 Excursion	0	Cer. Engr. 311 Structure	3	Cer. Engr. 312 Colloids	3
Cer. Engr. 331 Pottery	4	Chem. 356 Physical	4	Chem. 357 Physical	3
Chem. 355 Physical	3	H.-S.S. 333 Humanities	3	Physics 229 Pyrometry	2
H.-S.S. 332 Humanities	3	Electives	3	Electives	5
Electives	3		16		16
	16				

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Cer. Engr. N307 Excursion	0	Cer. Engr. 402 Dryer & Kiln	2	Cer. Engr. 403 Plant Des.	2
Cer. Engr. 411 Equilibria	3	Cer. Engr. 421 Lab.	3	Cer. Engr. 441 Seminar	1
Cer. Engr. 441 Seminar	1	Cer. Engr. 441 Seminar	1	Cer. Engr. 498 Thesis	1
Cer. Engr. 470 Refractories	3	Cer. Engr. 498 Thesis	2	Psychol. 336 Indust.	3
Cer. Engr. 498 Thesis	2	Hum. Rel. 365 Indust. Rel.	3	Electives	8
H.-S.S. 291 Nontech. Read.	1	Electives	4		15
Electives	5		15		
	15				

ADVANCED DEGREES

Students who intend to work toward advanced degrees must 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, or research and product development. Graduates of accredited ceramic engineering curricula and graduates of other accredited engineering curricula who complete the basic undergraduate courses in ceramic engineering may become candidates.

MASTER OF SCIENCE IN CERAMICS. Students with undergraduate majors in science, particularly chemistry or physics, may become candidates for this degree after completing basic undergraduate courses in ceramics.

COURSES FOR UNDERGRADUATES

201 Introduction to Ceramics (2) — **Mueller**
History and scope of the ceramics industries: industrial growth and scientific development; economic importance; place in modern civilization.

202 Ceramics Raw Materials (3) — **Mueller**
Rocks and minerals used in ceramics industries; their mineralogy, physical properties, compositions, sources, and origins.

203 Process Ceramics: Preparation (3) — **Mueller**
Production and preparation of raw materials; outlines of manufacturing procedures for ceramic products.

302 Process Ceramics: Forming (3) — **Mueller**
Principles and practices; casting from slips; hand and mechanical forming of unfired bodies; forming from melts.

303 Process Ceramics: Coatings (3) — **Staff**
Preparation, composition, and application of glazes and colors: color theory; solution, colloidal, transition, and stain coloring. Prerequisite, 202.

304 Process Ceramics: Drying and Firing (3) — **Mueller**
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.

N307 Ceramic Engineering Excursion (0) — **Staff**
Plant inspection trip; senior year.

311 Physical Ceramics: Structure and Reactions (3) — **Mueller**
Laws of chemistry and physics applied to ceramic research and production control: crystalline and glassy state; physical-chemical reactions of ceramic materials. Prerequisite, Chemistry 357 or permission.

312 Physical Ceramics: Colloids and Rheology (3) **Mueller**
Structural chemistry: colloidal and rheological phenomena and their effects on ceramic materials. Prerequisite, 311.

331 Ceramic Craftsmanship: Pottery Techniques (4-5) **Rockwell**
Craftsmanship methods of forming ceramic bodies: slab, hand molding, slip casting, turning and jiggering; drying and small kiln firing.

332 Ceramic Craftsmanship: Elementary Glazes (4-5) **Rockwell**
Simple glazes and their application to ware: practice in firing; fitting glazes to bodies; textures.

333 Ceramic Craftsmanship: Decoration (4-5) **Rockwell**
Glaze studies: methods of color production; practice in color production with test tiles; methods of decorating ware. Prerequisite, 332.

402 Dryer and Kiln Design (2) **Staff**
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 specified performance. Prerequisite, 304.

403 Ceramic Plant Design (2) **Staff**
Equipment selection, layout plans, and economics applied to specific problems. Individual project basis. Prerequisite, 402.

411 Physical Ceramics: Ceramic Equilibria (3) **Mueller**
Equilibrium diagrams and their application to ceramic research and control problems. Prerequisite, 312, or permission.

420 Abrasives (2) **Staff**
Production, preparation, products, and uses; natural and manufactured abrasives; physical properties characteristic of kinds. Prerequisites, junior standing and permission. (Offered alternate years; offered 1954-55.)

421 Ceramic Bodies Laboratory (3) **Staff**
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 ceramics industry. Prerequisite, Geology 323.

430 Foundry Sands (2) **Staff**
Physical properties and testing; compositions and compounding; uses and special applications; sources; technology of use. Prerequisites, junior standing and permission. (Offered alternate years, offered 1954-55.)

440 Glass Technology (2) **Staff**
Raw materials; chemistry and physics of glass; batches and calculations; melting and fabrication practices; physical properties; special glasses. Prerequisites, junior standing and permission. (Offered alternate years; offered 1953-54.)

441 Undergraduate Seminar (1, maximum 3) **Staff**

450 Cements, Limes, and Plasters (2) **Staff**
Composition; reactions; plant control; grinding and burning; manufacture; chemistry and physics of processes. Prerequisites, junior standing and permission. (Offered alternate years; offered 1954-55.)

460 Ceramic Coatings for Metals (2) **Staff**
Production techniques for porcelain and other ceramic coatings; enamels, insulation coatings, refractory coatings. Prerequisites, junior standing and permission. (Offered alternate years; offered 1953-54.)

470 Refractories (3) **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

501 Process Ceramics: Production Control (3) **Mueller**
Application of industrial management and production control methods in the ceramics industry; production characteristics and their effects on the product; explanation and analysis of standards for products and their effects on manufacturing methods in the industry.

502 Process Ceramics: Unit Process Control (3) **Mueller**
Principles of process control as applied in the ceramics industry; methods of measurement and evaluation of data for the control of partial size, viscosity, moisture content, fusion points, workability, humidity, temperature, drying rates, furnace atmospheres and pressures, time-temperature relationships, body and glaze textures, and imperfection causes; application of control data to plant production.

511 Theoretical Physical Ceramics (3) **Mueller**
Theory and application of colloidal phenomena to the use of ceramic raw materials; colloidal state; colloidal crystal structure; surface phenomena; electrokinetics; base exchange. Prerequisite, 312.

512 Theoretical Physical Ceramics (3) **Mueller**
Theory and measurement of physical properties of ceramics; reactions of ceramic materials; surface area determinations; zeta potentials; particle size measurement; thermal analysis; laboratory measurements. Prerequisite, 511.

513 Applied Physical Ceramics (3) **Mueller**
Application of physical ceramics principles to the control of ceramic production; instrumentation studies. Prerequisite, 512.

520 Seminar (1, maximum 3) **Staff**
Required for all graduate students.

521 Identification of Ceramic Materials (3) **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) **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) **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

BACHELOR OF SCIENCE IN METALLURGICAL ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 51). Chemistry 115, 116, and 325 should be taken instead of Chemistry 105, 106, and 107. Students who decide to transfer into metallurgical engineering may complete the chemistry requirements by rearranging the required curriculum in consultation with the Director of the School.

As part of their course, students have practice in metallurgy, foundry, smelting, milling, or industrial plants during the summer vacations following their sophomore and junior years, and must participate in scheduled field excursions.

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
Met. Engr. 201 General	1
Civil Engr. 291 Dynamics	3
H.-S.S. 265 Tech. of Comm.	3
Math. 251 Analytic Geom. & Calc.	5
Physics 217 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	17-20

SECOND QUARTER	CREDITS
Met. Engr. 203 Elements	3
Chem. 221 or 325 Quant. Analysis	5
Math. 252 Analytic Geom. & Calc.	3
Physics 218 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	16-19

THIRD QUARTER	CREDITS
Met. Engr. 300 Assaying	3
Civil Engr. 292 Mechanics	3
Geol. 221 Mineralogy	5
Mech. Engr. 201 Metal Castings	1
Physics 219 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	17-20

Third Year

FIRST QUARTER	CREDITS
Met. Engr. 361 Physical	3
Chem. 351 Physical	3
Elect. Engr. 300 Direct Currents	5
Mining Engr. 461 Mineral Dressing	3
Physics 350 Thermodynamics	3
	17

SECOND QUARTER	CREDITS
Met. Engr. 362 Physical	3
Chem. 352 Physical	3
Elect. Engr. 301 Alternating Currents	5
Mining Engr. 462 Mineral Concentration	4
	15

THIRD QUARTER	CREDITS
Met. Engr. 306 Excursion	1
Met. Engr. 321 Nonferrous	3
Met. Engr. 363 Physical	3
Chem. 353 Thermodynamics	4
H.-S.S. 331 Humanities	3
Electives	3
	17

Fourth Year

FIRST QUARTER	CREDITS
Met. Engr. 322 Calculations	3
Met. Engr. 324 Lab.	2
Met. Engr. 455 Iron & Steel	3
Met. Engr. 498 Thesis	2
Cer. Engr. 470 Refractories	3
Electives	3
	16

SECOND QUARTER	CREDITS
Met. Engr. 471 Fuel Tech.	3
Met. Engr. 472 Lab.	1
Met. Engr. 481J Mineral Econ.	3
Met. Engr. 498 Thesis	2
H.-S.S. 332 Humanities	3
Electives	3
	15

THIRD QUARTER	CREDITS
Met. Engr. 307 Excursion	1
Met. Engr. 323 Advanced	3
Met. Engr. 498 Thesis	1
H.-S.S. 333 Humanities	3
Electives	6
	14

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 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 FOR UNDERGRADUATES

201 General Metallurgy (1) — **Finley, Rowe**
An introductory study of metallurgical operations; historical development of the metallurgical industry and its applications to other industry; relationship between the constitution and the structure of metals and alloys in concepts of modern physical metallurgy; significance of properties of metallic materials.

203 Elements of Metallurgy (3) — **Finley**
Technology of basic processes in smelting and refining; roasting; calcining; smelting in reverbratory and blast furnace; fluxing; oxidizing; elementary fuels; refractories. Not open to students who have taken 403.

300 Assaying (3) — **Finley**
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) — **Finley**
Quantitative determination of gold and silver in ores and mill products; testing of reagents; sampling methods; problems of slagging, fluxing, refractory reactions, and furnace conditions. Prerequisite, Chemistry 221 or 325.

306 Metallurgy Excursion (1) — **Staff**
Plant inspection trip; junior year.

307 Metallurgy Excursion (1) — **Staff**
Plant inspection trip; senior year.

321 Nonferrous Metallurgy (3) — **Finley**
Principles and technology of the extractive metallurgy of copper, lead, zinc, aluminum, and magnesium. Prerequisite, 203.

322 Metallurgical Calculations (3) — **Finley**
Physical chemistry of extractive metallurgy; thermodynamics and reaction principles in smelting and allied processes. Prerequisite, 321.

323 Advanced Nonferrous Metallurgy (3) — **Finley**
Electrometallurgy: hydroelectric principles and applications to copper, zinc, and cadmium recovery; electrothermal refining and smelting practice; plating and electroforming. Prerequisite, 322.

324 Metallurgical Laboratory (2) — **Finley**
Quantitative experiments in extractive metallurgical processes. Roasting, sintering, smelting and reductions, slag problems, fire refining and electrolytic refining. Prerequisites, 300, 321, and 322 (which may be taken concurrently).

361 Physical Metallurgy (3) **Rowe**
Fundamental principles and theory: construction and interpretation of equilibrium diagrams; plastic deformation; stress relief; recrystallization and grain growth; solid state reactions; general and cooling properties of alloys. Laboratory practice in physical testing, temperature measurement, alloy preparations, and introduction to metallography. Prerequisite, Physics 219.

362 Physical Metallurgy (3) **Rowe**
Phase transformation in ferrous alloys; correlation of resulting structures with properties; iron-carbon constitution diagram; annealing, normalizing, quenching, and tempering ferrous alloys; surface treatments and metallurgy of cast irons. Metallographic laboratory practice in preparation and examination of specimens. Prerequisite, 361 or 441.

363 Physical Metallurgy (3) **Rowe**
Modern concepts in metallurgy of alloys; high-temperature metallurgy of metals and alloys; stress analysis; principles of corrosion; gas-metal equilibria and controlled atmospheres; application of physical metallurgy to industrial problems. Laboratory practice in physical and metallographic examination and interpretation. Prerequisite, 362.

431 Light Metal Alloys (2) **Finlay**
Detailed study of aluminum, magnesium, beryllium and their alloys; constitution, microstructure, heat treatment, physical properties, and industrial application. Prerequisite, 361 or 441.

441 Engineering Physical Metallurgy (4) **Rowe**
For mechanical, chemical, and civil engineers and other nonmajors. Elementary physical metallurgy and metallography. Properties and engineering applications of important metals and their alloys: solidification and atomic structure; relationships of constitution and structure to properties; constitution equilibrium diagrams; influence of composition, heat treatment, recrystallization and grain growth, deformation, and finish on structure and properties; phase transformations, equilibrium and nonequilibrium in the solid state; selection of metals for specialized engineering interest, such as high strength-weight ratio alloys, bearing metal, corrosion resistance, magnetic alloys, etc. Laboratory practice in metallographic examination and testing.

451 Powder Metallurgy (2) **Finlay**
Production of metallic powders by physical and chemical methods: consolidation and subsequent treatment of powder compacts; properties of powder metallurgical products as related to processing conditions; fundamentals relating to powder size, diffusion, adhesion, recrystallization, grain growth, and impurity effects; applications to industrial problems. Prerequisite, 362 or 441.

455 Iron and Steel (3) **Daniels**
Raw materials; furnaces; melting practices; forming; irons, plain carbon and alloy steels; properties and uses in engineering work. Prerequisite, junior standing in engineering.

461 Foundry Metallurgy (2) **Rowe**
Chemistry, metallurgy, and technology of cast alloys: raw materials, equipment, molding, and casting practices; effects of melting practices, composition, and heat treatment upon physical and mechanical properties of ferrous and nonferrous alloys. Prerequisites, 441, and Mechanical Engineering 201 or equivalent.

464 Metallurgical Analysis (2) **Rowe, Finlay**
Industrial methods of iron and steel analysis for carbon, sulphur, manganese, silicon, phosphorus, and special alloying elements; constituents of nonferrous alloys, slags, and furnace products. Prerequisite, Chemistry 221 or 325.

465 Metallurgical Inspection of Metals (3) **Rowe**
Elements of industrial X-ray and gamma-ray radiography; magnetic, magnaglo, zyglo, and cyclographic methods. Laboratory practice in application and interpretation. Prerequisite, 361 or 441.

466 Ferrous Alloy Technology (2) **Rowe**
Constitution, microstructure, heat treatment, and properties of alloy steels in relation to the mechanism by which alloying elements function in low- and medium-alloy steels. Prerequisite, 362 or 441.

467 Alloy Steels (2) **Rowe**
Theoretical study of steels containing chromium, tungsten, nickel, cobalt, silicon, manganese, molybdenum, vanadium, and other metals as definite alloy systems; heat treatment of complex steels. Special-purpose alloys, such as high-speed-tool, corrosion-resistant, and high-temperature steels, are especially considered. Prerequisite, 361 or 441.

471 Fuel Technology (3) **Daniels**
Primary and manufactured fuels: coals, oils, gases, and chemicals as fuels; their sources, production, and manufacture; their combustion properties; methods of utilization and elements of applied thermodynamics; specifications and economics of fuel use. Prerequisite, junior standing.

472 Fuel Technology Laboratory (1) **Finlay**
Proximate and thermal analysis of solid, gaseous, and liquid fuels. To be taken concurrently with 471.

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**
Problems in metallurgy; laboratory investigations and bibliographic research. Total of 5 credits required.

COURSES FOR GRADUATES ONLY

520 Seminar (1, maximum 3) — **Staff**
Review of research problems and recent articles in the literature. Required for all graduate students.

521 X-Ray Metallography (3) — **Mueller**
Theory and use of the diffraction X-ray in the study of metals; physical properties; generation and diffraction of X-rays; diffraction equipment; diffraction crystallography; single crystals and powders; interpretation and qualitative analysis. Prerequisite, Physics 355 or equivalent.

522 X-Ray Metallography (3) — **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 in polycrystalline metals; stress measurements. Prerequisite, 521 or equivalent.

523 X-Ray Metallography (3) — **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) — **Rowe**
Modern concepts of metallurgy: atomic arrangement in metals; metallurgical periodic tables, strain vs. solid state reactions; substitution and interstitial alloys; phase transformations; physical form of alloys; crystal elasticity; plasticity of single and polycrystalline media and alloys; creep and secondary plastic effects; twinning. Prerequisite, 362.

562 Theory of Metals and Alloys (3) — **Rowe**
Internal friction; rupture and fatigue; metal diffusion; solubility of gases in metal; theory of the iron-carbon system; electron theory of solids and its metallurgical applications; band theory; cohesion of solids; electrical and magnetic properties of metals. Prerequisite, 561.

563 Theory of Metals and Alloys (3) — **Rowe**
Crystal structure and phase boundaries; order-disorder transformation; nucleation and grain growth; precipitation phenomena; orientation and shape of new phases; causes of phase change by electronic and potential energy. Prerequisite, 562.

571 Fuels and Combustion (*) — **Daniels**
Advanced studies in combustion technology; physics and chemistry of combustion; combustion calculations; technology of coal, oil, and gaseous fuel burning. Prerequisite, 471.

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 51).

As part of their course, students have practice in mining, geology, or milling during the summer vacations following their sophomore and junior years, and must participate in scheduled field excursions.

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
Mining Engr. 321 Drilling	3
Geol. 205 Rocks & Minerals	5
Math. 251 Analytic Geom. & Calc.	5
Physics 217 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	18-21

SECOND QUARTER	CREDITS
Mining Engr. 322 Methods	4
Chem. 113 Qual. Analysis	5
Math. 252 Analytic Geom. & Calc.	3
Physics 218 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	17-20

THIRD QUARTER	CREDITS
Chem. 221 or 325 Quant. Analysis	5
Civil Engr. 314 Survey	3
Geol. 221 Mineralogy	5
Physics 219 Engr. Physics	4
Phys. Educ. Activity	1
ROTC	2-3
	18-21

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Mining Engr. 461 Preparation	3	Mining Engr. 462 Concentration	4	Mining Engr. 306 Excursion	1
Mining Engr. 480 Land Val.	2	Elect. Engr. 300 Direct Currents	5	Mining Engr. 430 Surveying	2
Civil Engr. 291 Dynamics.	3	Geol. 324 Petrography	5	Civil Engr. 292 Mechanics of Matls.	3
Geol. 323 Optical	5	Met. Engr. 203 Elements..	3	Elect. Engr. 301 Alternating Currents	5
H.-S.S. 265 Tech. of Comm.	3		17	H.-S.S. 331 Humanities ..	3
	16			Met. Engr. 300 Assaying	3
					17

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Mining Engr. 425 Barodynamics	2	Mining Engr. 481J Mineral Econ.	3	Mining Engr. 307 Excursion	1
Mining Engr. 431 Mapping	1	Mining Engr. 498 Thesis..	2	Mining Engr. 426 Exploration	3
Mining Engr. 498 Thesis..	2	Geol. 427 Ore Deposits...	5	Mining Engr. 432 Engr. ..	4
Civil Engr. 342 Hydraulics	5	H.-S.S. 333 Humanities ..	3	Mining Engr. 433 Ventilation	3
H.-S.S. 332 Humanities ..	3	Electives	3	Mining Engr. 482 Mgmt..	3
Met. Engr. 441 Physical ..	4		16	Mining Engr. 483 Laws...	1
	17			Mining Engr. 498 Thesis..	1
					16

GEOLOGICAL ENGINEERING OPTION

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Mining Engr. 461 Preparation	3	Mining Engr. 462 Concentration	4	Mining Engr. 306 Excursion	1
Mining Engr. 480 Land Val.	2	Civil Engr. 292 Mechanics of Matls.	3	Mining Engr. 430 Surveying	2
Civil Engr. 291 Dynamics.	3	Geol. 206 Physiography ..	5	Elect. Engr. 300 Direct Currents	5
Geol. 323 Optical	5	Geol. 324 Petrography ...	5	Geol. 207 Historical	5
H.-S.S. 265 Tech. of Comm.	3		17	Geol. 425 Petrology	5
	16				18

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Mining Engr. 431 Mapping	1	Mining Engr. 481J Mineral Econ.	3	Mining Engr. 307 Excursion	1
Mining Engr. 498 Thesis..	1	Mining Engr. 485 Indust..	3	Mining Engr. 426 Exploration	3
H.-S.S. 331 Humanities ..	3	Mining Engr. 498 Thesis..	2	Mining Engr. 483 Laws...	1
Geol. 308 Structural	5	Geol. 427 Ore Deposits...	5	Mining Engr. 498 Thesis..	2
Geol. 361 Stratigraphy or elective	5	H.-S.S. 332 Humanities ..	3	Elect. Engr. 301 Alternating Currents	5
	15		16	H.-S.S. 333 Humanities ..	3
				Electives	2
					17

MINERAL PREPARATION ENGINEERING OPTION

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Mining Engr. 461 Preparation	3	Mining Engr. 462 Concentration	4	Mining Engr. 306 Excursion	1
Mining Engr. 480 Land Val.	2	Civil Engr. 292 Mechanics of Matls.	3	Mining Engr. 464 Leaching	3
Civil Engr. 291 Dynamics.	3	Elect. Engr. 300 Direct Currents	5	Chem. 231 Organic	3
Geol. 323 Optical	5	Met. Engr. 203 Elements .	3	Elect. Engr. 301 Alternating Currents	5
H.-S.S. 265 Tech. of Comm.	3	Electives	2	H.-S.S. 331 Humanities ..	3
	16		17	Met. Engr. 300 Assaying..	3
					18

Fourth Year

FIRST QUARTER	CREDITS
Mining Engr. 463 Flotation	3
Mining Engr. 476 Coal Prep.	3
Mining Engr. 498 Thesis	2
Chem. 351 Physical	3
Civil Engr. 342 Hydraulics	5
	16

SECOND QUARTER	CREDITS
Mining Engr. 465 Microscopy	2
Mining Engr. 481J Mineral Econ.	2
Mining Engr. 485 Indust.	3
Mining Engr. 498 Thesis	2
Chem. 352 Physical	3
H.-S.S. 332 Humanities	3
	15

THIRD QUARTER	CREDITS
Mining Engr. 307 Excursion	1
Mining Engr. 466 Practices	2
Mining Engr. 467 Min. Dress. Des. or electives	2
Mining Engr. 482 Mgmt.	3
Mining Engr. 498 Thesis	1
H.-S.S. 333 Humanities	3
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 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

223 Mine Rescue Training (1) — **Daniels, U. S. B. M. Safety Station Staff**
Instruction and practice in use of oxygen rescue apparatus; first aid; safety; U. S. Bureau of Mines course. Physical examination required.

306 Mine Excursion (1) — **Staff**
Five-day trip to a neighboring mining region.

307 Mine Excursion (1) — **Staff**
Five-day trip similar to 306.

321 Drilling, Blasting, and Excavation (3) — **Daniels**
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; application and performance of power equipment in excavation, loading, and transportation on surface works and underground; support of excavations; safe practices and elements of cost. Prerequisite, General Engineering 102.

322 Methods of Mining (4) — **Daniels**
Working of placer, open pit, and underground mines. Prospecting and delineation of ore bodies; shafts and development; level planning and underground stoping methods; support systems; surface mining of placer and ore deposits; introduction to sampling, estimating, ventilation, hoisting, and mine organization. Prerequisite, 321 or permission.

423 Coal-Mining Methods (3) — **Daniels**
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) — **Staff**
Procurement of data by mapping, drilling and geophysical methods; principles of geophysical methods; solution of mine structural and fault problems; physiographic, mineralogical and structural guides to ore applied to mine exploration; exploration and development programs for evaluation and delineation. Prerequisite, Geology 427.

430 Mine Surveying (2) **Staff**
Practice in underground methods, use of special instruments, slope measurements, underground curves, shaft surveying, solar observations, and carrying of meridian underground. Prerequisite, Civil Engineering 314.

431 Mine Mapping (1) **Staff**
Plotting of underground field notes made in 430; production of working and geological maps and sections. Prerequisite, 430.

432 Mining Engineering (4) **Pifer**
Principles and application; mechanisms in mine machinery—foundations and erection of equipment; air compression thermodynamics—practice and distribution; pumping plant and hydraulics; electrical equipment and distribution systems in mines; plant design and construction. Studies at nearby mines and plants. Two hours lecture, six hours laboratory. Prerequisites, 222 and Electrical Engineering 301.

433 Mine Ventilation (3) **Daniels**
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) **Aplan**
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) **Aplan**
Fundamental principles of ore concentration. Flotation, gravity, magnetic, electrostatic, sink and float methods, and related methods of mineral separation; general concentrator arrangements and flow diagrams. 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) **Aplan**
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) **Aplan**
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) **Aplan**
Elements of quantitative mineragraphy, 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) **Aplan**
Study of plant operations. Methods of laboratory investigation; advanced quantitative mineragraphy and research. Prerequisites, 462 and 465.

467 Mineral Dressing Design (2) **Aplan**
General arrangement planning and design calculations for beneficiation plants on a project basis. Prerequisite, 466.

476 Coal Preparation (3) **Daniels**
Dry and wet cleaning processes; control by float-and-sink methods; characteristics of coal and associated impurities; economics of preparation; market requirements. Prerequisites, 461 and Metallurgical Engineering 471.

478 Coal Preparation Machinery (2) **Daniels**
Laboratory work in float-and-sink methods; screening, classification, tabling, jigging, and other cleaning methods. Prerequisites, 461, 476, and Metallurgical Engineering 471.

480 Mineral Land Valuation (2) **Pifer**
Mine examination methods; estimation of mineral deposits and reserves; financial calculations; reports; professional ethics; mineral land laws.

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) **Daniels**
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) **Aplan**
Nonmetallic mineral industry; sources of raw materials; processing technology and product specifications; marketing; economics and utilization. Prerequisite, 461 or equivalent.

498 Undergraduate Thesis (*, maximum 5) **Staff**
Problems in mining or mineral dressing; laboratory studies and bibliographic research. Total of 5 credits required.

COURSES FOR GRADUATES ONLY

520 Seminar (1, maximum 3) **Staff**
Lectures and discussions; review of research problems and recent literature. Required for all graduate students.

521 Metal Mining (*) **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 (*) **Daniels**
Studies in coal mining, preparation, or coking with particular reference to the Pacific Northwest. Prerequisite, graduate standing.

560 Mineral Dressing (*) **Aplan**
Special problems and research.

561 Advanced Mineral Dressing Preparation (*) **Aplan**
Unit process studies in comminution, sizing, classifying, and auxilliary processes.

562 Advanced Mineral Dressing Laboratory (*) **Aplan**
Experimental study of theoretical principles of preparation and concentration. Arranged concurrently with 561 and 563 or as required.

563 Advanced Mineral Dressing Theory (*) **Aplan**
Physics and chemistry of beneficiation.

564 Advanced Mineral Dressing Design (*) **Aplan**
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 repeated Autumn, Winter, and Spring Quarters and the fee for each quarter is $10, payable upon registration. The G. I. Bill of Rights applies to this course. The course occupies full time Monday through Friday, with occasional Saturday trips to mines and plants. A certificate is given upon completion of each quarter. Further information about the Prospector's Course is available from the Director of the School of Mineral Engineering.

N10 Prospecting and Mining (0) **Staff**
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.

N20 Milling (0) **Staff**
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 N30 Metals (0) **Daniels**
Elementary properties of metals; smelting processes; selling ores and concentrates; metal prices and smelter schedules. Two lectures weekly.

COURSES INCLUDED IN ENGINEERING PROGRAMS

COLLEGE OF ARTS AND SCIENCES

CHEMISTRY

105 General Chemisrty (3) **Staff**
For engineering students only (except those in chemical, ceramic, and metallurgical engineering). Gases, liquids, solids, solutions, and equilibria. Prerequisite, high school chemistry. Students without high school chemistry must take 103 instead of 105.

106 General Chemistry (3) **Staff**
For engineering students only (except those in chemical, ceramic, and metallurgical engineering). Reaction rates, thermo-and electro chemistry, acids and bases, oxidation and reduction. Prerequisite, 105. Students without high school chemistry must take 104 (prerequisite, 103) instead of 106.

107 General Chemistry (3) **Staff**
For engineering students. Structure, nuclear reactions, metals, organic and industrial processes. Prerequisite, 104, 106, or 112.

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**
Periodic system; some families of elements; laws of chemical combination; gases; atomic, kinetic, and ionic theories; electrolysis. Prerequisite, high school chemistry. (This course is taken by chemical, ceramic, and metallurgical engineering students.)

116 General Chemistry and Qualitative Analysis (5) **Staff**
For chemical, ceramic, and metallurgical engineering students. Content similar to 113. Prerequisites, 115 and permission.

221 Quantitative Analysis (5) **Staff**
Volumetric and gravimetric analysis. Prerequisite, 113 or 116.

231, 232 Organic Chemistry (3, 3) **Staff**
Structure, nomenclature, reactions, and synthesis of compounds. Prerequisite, 106 or 112.

241 Organic Chemistry Laboratory (2) **Staff**
Preparation of representative compounds. Prerequisite, 231 (which may be taken concurrently).

242 Organic Chemistry Laboratory (2) **Staff**
Preparations and qualitative organic analysis. Prerequisites, 232 (which may be taken concurrently) and 241.

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 majors in chemistry and chemical engineering, 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. Prerequisites, 335 (which may be taken concurrently) for 345; 336 (which may be taken concurrently) for 346.

351, 352 Elementary Physical Chemistry (3,3) **Staff**
Structure of matter, theory of solids, liquids, 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 and operation of the American economy; consideration of contemporary economic problems of money, banking, labor, international trade, and employment; proposals for promoting social welfare. Primarily for engineering and forestry students; other students by permission.

GEOLOGY

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 (5) — **Willis**
Determinative crystallography and blowpipe analysis. Prerequisites, high school chemistry and 205.

308 Structural Geology (5) — **Barksdale**
Interpretation of rock structures and their genesis. Prerequisites, 205, 206, 207, and General Engineering 101, 102, 103.

323 Optical Mineralogy (5) — **Coombs**
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, 326.

361 Stratigraphy (5) — **Wheeler**
Sedimentation and facies; rock and time units; evaluation of boundaries; principles of correlation. Prerequisites, 205, 206, and 207.

425 Petrography and Petrology (5) — **Misch**
Metamorphic rocks, petrogenesis. Prerequisite, 324.

427 Ore Deposits (5) — **Goodspeed**
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 100 may be taken concurrently as a supplement to this course. Prerequisites, one and one-half years of algebra and qualifying test (or 101), and one year of plane geometry.

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 algebra and qualifying test (or 101).

153 Analytic Geometry and Calculus (5) — **Staff**
Functional relations and loci; the straight line. Limits, derivatives, and differentiation of elementary functions; integral concept; elementary applications of calculus. Not open to students who have taken 106. Prerequisites, 104 and 105 (or exemption by qualifying test).

251 Analytic Geometry and Calculus (5) — **Staff**
Integration processes; the circle, conics, and coordinate transformations; parametric equations; further applications of differential calculus. Prerequisite, 153.

252 Analytic Geometry and Calculus (3) — **Staff**
Differential and integral calculus; application to problems in mechanics. Polar coordinates, lines and planes in space, and infinite series. Prerequisite, 251.

253 Analytic Geometry and Calculus (3) — **Staff**
Space curves and surfaces, partial differentiation, and multiple integration. 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 Ordinary and Partial Differential Equations (3,3) — **Staff**
Elementary methods of solution; linear differential equations; systems of differential equations; series solutions and elementary partial differential equations. Prerequisites, 309 or 253 for 421; 421 for 422.

423 Advanced Calculus and Vector Analysis (3) — **Staff**
Line and surface integrals; Stokes' Theorem; vector methods; elements of matrices; 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

104 through 174; 206 through 250 Physical Education Activities (Men) (1 each) — **Staff**
104, 105, basic and swimming; 106, 206, handball; 107, 207, basketball; 108, 208, tennis; 109, 209, softball; 110, 210, golf (fee, $3 Autumn and Spring, $1.50 Winter); 111, 211

track; 112, 212, crew (class), prerequisite, swimming; 113, 213, fencing; 114, 214, boxing; 115, 215, tumbling; 117, 217, wrestling; 118, 218, volleyball; 119, 219, swimming; 120, 220, soccer; 121, 221, touch football; 122, 222, badminton; 123, 223, archery; 124, 224 calisthenics; 125, 225, skiing (fee, $15); 126, 226, speedball; 127, 227, bowling (fee, $3); 128, 228, weight lifting; 129, 229, sailing; 133, 233, Pack Forest (forestry students only); 231, folk and square dancing; 141, freshman, 241, varsity basketball; 142, freshman, 242, varsity crew, prerequisite, swimming; 143, freshman, 243, varsity football; 144, freshman, 244, varsity track; 145, freshman, 245, varsity swimming; 146, freshman, 246, varsity baseball; 147, freshman, 247, varsity tennis; 148, freshman, 248, varsity golf; 149, freshman, 249, varsity skiing; 150, freshman, 250, varsity volleyball; 234, intermediate folk and square dancing.

110 Health Education (Women) (2) **McLellan, Gunn, Horne, Waters**
Health problems of freshman women. Required of all freshman women.

111 through 170; 211 through 270 Physical Education Activities (Women) (1 each) **Staff**
111, adapted activities; 113-114, basic activities; 115, archery; 118, badminton; 121, bowling (fee, $3); 124, fencing; 126, golf (fee, $3 Autumn and Spring, $1.50 Winter); 128, riding (fee); 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, European folk dance 151, modern dance; 154, social dance; 155, tap and clog; 157, canoeing; 160, adapted swimming; 161, beginning swimming; 162, elementary swimming; 215, intermediate archery; 218, intermediate badminton; 221, intermediate bowling (fee, $3); 222, advanced bowling (fee, $3); 224, intermediate fencing; 228, intermediate riding; 230, intermediate skiing (fee); 231, advanced skiing (fee); 232, ski racing (fee); 235, intermediate tennis; 248, intermediate folk and square dancing; 251, intermediate modern dance; 252, advanced modern dance; 257, intermediate canoeing; 263, intermediate swimming; 264, advanced swimming; 265, rhythmic swimming; 266, diving; 267, lifesaving; 268, water safety instruction.

175 Personal Health (Men) (2) **Reeves, Staff**
Health information that affords a basis for intelligent guidance in the formation of health habits and attitudes. Required of all freshman men; exemption by examination.

PHYSICS

217 Physics for Engineers (4) **Henderson**
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 concurrent calculus course.

218 Physics for Engineers (4) **Henderson**
Electricity and magnetism; alternating currents. Prerequisites, 217 and Mathematics 251.

219 Physics for Engineers (4) **Henderson**
Heat, sound, and light. Geometrical and physical optics. Prerequisites, 217 and calculus.

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.

340 Sound (3) **Kenworthy**
The sources of sound, transmission in different media, and elements of acoustics. Laboratory. Prerequisites, 103, 106, and 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, or 123, and calculus.

455 Introduction to Modern Physics for Engineers (3) **Schmidt**
The electrical nature of matter; electrolysis, gaseous discharges, discovery of the electron and the electronic charge. Atomic and nuclear structure: the Einstein mass-energy relation, atomic and nuclear binding energies, Rutherford, scattering, and nuclear sizes. Quantum theory: Planck radiation law, photoelectric effect, X-ray production, Compton effect, pair production, and Bohr theory of the hydrogen atom. Wave character of matter: deBroglie hypothesis and electron and neutron diffraction. Nuclear physics: radioactivity, nuclear reactions, the cyclotron, and chain reactions. Prerequisite, senior standing in engineering, or permission.

485 Nuclear Physics (4) **Neddermeyer**
Natural radioactivity; alpha, beta, and gamma spectra; nuclear energy states; energy-mass conservation. Properties of the radiations; stopping power and range for charged particles; absorption of gamma rays by photoelectric and Compton effects and by pair production. Accelerators, artificial disintegrations, example of reactions, and measurement of reaction energy. Induced radioactivity. Nuclear structure and systematics of the stable nuclei. Laboratory. Prerequisite, 323.

PSYCHOLOGY

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. Prerequisite, Humanistic-Social Studies 265 or equivalent.

SPEECH

327 Extempore Speaking (3) — **Franzke**
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) — **Cannon, Mackenzie**
Basic principles, financial statements, double-entry principles, capital and revenue expenditures, depreciation, etc.

151 Fundamentals of Accounting (3) — **Walker**
Elements of manufacturing, partnership, and corporation accounting. Prerequisite, 150.

310 Intermediate Accounting (5) — **Walker, Anton**
Advanced theory on inventory valuation, depreciation, etc.; analysis of profit variations. Prerequisite, 255 or permission.

330 Cost Accounting (5) — **Berg, Walker**
Economics of cost accounting; industrial analysis; production control through costs; types of cost systems; burden application. Prerequisite, 255 or permission.

BUSINESS LAW

307 Business Law (3) — **Botzer, Burrus**
For engineering students and architects. Development of common law; carry-over to our own legal system; organization of state and federal courts; steps and procedures in the trial of a lawsuit and appeal; explanation and definitions of common legal terms. Formation of contracts, essential elements; remedies for breach or nonperformance (cases and examples from construction and engineering fields). Capacity of parties to enter into contractual relationship (including minors and married persons); explanation of community-property system in Washington; descent and distribution of property on death, and ownership of property. Development and use of bills and notes in trading world; forms of negotiable bills and notes; essential elements in making instrument and delivering it; endorsements; rights and liabilities of persons who have endorsed or been in possession of instrument.

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 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 48). 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, then serve two years on active duty when called and six additional years in a reserve organization.

First-year Air Force ROTC students are given a thorough indoctrination course in aviation, 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 produce professionally qualified 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 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. In the first quarter of the second year, students specialize in flight operations, technical training, communications, maintenance engineering, or administration and supply. 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 a month. While attending summer camp they are paid at the rate of $75 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 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; moral and statutory 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, the air ocean, bases, and people; 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.

451 Air Science IV—Advanced (Flight Operations) (3) **Staff**
Air navigation; meteorology; theory of radar; electronic countermeasure methods; atomic energy and radiological defense; field laboratory for leadership.

461 Air Science IV—Advanced (Air Force General Technical Training) (3) **Staff**
Atomic theory and radiological defenses; guided missiles; new technological developments; familiarization and use of technical publications; Air Force technical research and development; field laboratory for leadership.

471 Air Science IV—Advanced (Air Force Communications) (3) **Staff**
Communications organization; command and administration; inspection; training; communications centers and systems; field laboratory for leadership.

481 Air Science IV—Advanced (Aircraft Maintenance Engineering) (3) **Staff**
Aircraft maintenance engineering; the air inspector and service equipment; engine operation and conditioning; cruise control and test flight; field laboratory for leadership.

491 Air Science IV—Advanced (Administration and Supply) (3) **Staff**
Air Force management; military teaching methods; the air inspector general; military law and boards; officer development; career development; staff; personnel administration; the air comptroller; field laboratory for leadership.

492, 493 Air Science IV—Advanced (General) (3,3) **Staff**
Air Force administration; Air Force inspector general; military teaching methods; Air Force career development; military law and boards; Air Force management; military customs; field laboratory for leadership.

MILITARY SCIENCE AND TACTICS

Professor of Military Science and Tactics: RAY M. O'DAY, 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.

The Department of Military Science and Tactics also offers a series of courses in Medical Corps subjects for students in the School of Medicine. (These courses are described in the bulletin of the School of Medicine.)

Courses in the first year of the basic program require classroom attendance two hours each week. First-year students are also introduced to the principles of leadership and exercise of command through practice of basic elements of drill one hour each week. Second-year students may specialize in Infantry, Antiaircraft Artillery, Quartermaster Corps, Transportation Corps, or Corps of Engineers. 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.

A further requirement for students who intend to enter the Corps of Engineers is enrollment in a curriculum leading to an engineering or other scientific degree.

Courses in the advanced program are continuations of the specialties selected in the second year of the basic program. These courses require classroom attendance four hours a week, plus one hour of practice in leadership, drill, and exercise of command. 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 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, 121, 141 Military Science I—Basic (Infantry, Antiaircraft, Artillery, Quartermaster Corps, Transportation Corps, Corps of Engineers) (2,2,2) Staff
Military organization; military policy of the United States; the National Defense Act and ROTC; evolution of warfare; map reading; individual weapons and marksmanship; first aid and hygiene; leadership, drill, and exercise of command.

201, 221, 241 Military Science II—Basic (Infantry) (2,2,2) Staff
Leadership, drill, and exercise of command; organization; weapons; marksmanship; technique of fire of the rifle squad; combat formations; observing and patrolling; tactics of the rifle squad.

202, 222, 242 Military Science II—Basic (Antiaircraft Artillery) (2,2,2) Staff
Leadership, drill, and exercise of command; introduction to antiaircraft artillery automatic weapons; characteristics, capabilities, and limitations of antiaircraft artillery automatic weapons; service of the automatic weapons fire unit; introduction to antiaircraft artillery guns; characteristics, capablities, and limitations of 90-mm. antiaircraft artillery guns; service of 90-mm. antiaircraft artillery guns; map reading; introduction to field artillery.

203, 223, 243, Military Science II—Basic (Quartermaster Corps) (2,2,2) Staff
Leadership, drill, and exercise of command; organization for supply; organization and functions of the Quartermaster Corps; classification of supplies; use of supply catalogues and bases of allowances; property accountability and responsibility; research and development of supply in the Quartermaster Corps; organization, functions, and operation of quartermaster units; unit and organizational supply.

204, 224, 244 Military Science II—Basic (Transportation Corps) (2,2,2) Staff
Leadership, drill, and exercise of command; introduction to the Transportation Corps; economics of transportation; military highway transport; convoy operation; organization and operation of railroads (continental United States); tactics of the individual soldier.

205, 225, 245 Military Science II—Basic (Corps of Engineers) (2,2,2) Staff
Leadership, drill, and exercise of command; history and traditions of the Corps of Engineers; characteristics of weapons; camouflage; defense against chemicals; explosives and demolitions; hand tools and rigging; mines and booby traps; organization and tactics of small units; organization of ground and field fortifications.

301, 321, 341 Military Science III—Advanced (Infantry) (3,3,3) Staff
Leadership, drill, and exercise of command; organization; weapons; gunnery; communications; combat intelligence; estimates of battle situations and combat orders; field fortifications; tactics of the rifle and heavy weapons platoon and companies.

302, 322, 342 Military Science III—Advanced (Antiaircraft Artillery) (3,3,3) Staff
Leadership, drill, and exercise of command; antiaircraft artillery tactics; basic gunnery—antiaircraft guns and automatic weapons; communications; motors and transportation; organization; troop movements; map reading; field artillery tactics.

303, 323, 343 Military Science III—Advanced (Quartermaster Corps) (3,3,3) Staff
Leadership, drill, and exercise of command; storage and warehousing; procurement, storage, and distribution of petroleum products; food service, bakery, commissary, laundry, and salvage operations; graves registration; station and depot supply; individual weapons and marksmanship.

304, 324, 344 Military Science III—Advanced (Transportation Corps) (3,3,3) Staff
Leadership, drill, and exercise of command; organization of a theater of war and transportation staff sections; military railway service; movements; airlift planning and operations; port operations in continental United States and overseas; stevedore operations; harborcraft and marine maintenance; highway transport service operations; individual weapons and marksmanship; tactics of a rifle squad; tactics of the rifle and heavy weapons platoons and companies.

305, 325, 345 Military Science III—Advanced (Corps of Engineers) (3,3,3) Staff
Leadership, drill, and exercise of command; bridge design and classification; engineer signal communications; engineer combat intelligence; engineer supply; military roads and runways; organization of engineer units; organization of combat divisions; tactics of engineer units; vehicle operation and maintenance; water supply; barrier planning; technique of fire.

360 Military Science III—Advanced Camp (3) Staff
Six weeks' training at an army base; intensive study in the field of specialization. (Offered Summer Quarter only.)

401, 421, 441 Military Science IV—Advanced (Infantry) (3,3,3) Staff
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; organization; command and staff; communications; motors and transportation; supply and evacuation; troop movements; new developments in weapons, aircraft, and naval craft; the military team; tactics of the infantry battalion in attack and defense.

402, 422, 442 Military Science IV—Advanced (Antiaircraft Artillery) (3,3,3) Staff
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; antiaircraft artillery matériel; advanced antiaircraft artillery tactics; command and staff; combat intelligence; gunnery; the military team; new developments in artillery matériel and guided missiles; Air Force and Navy developments; supply and evacuation; field artillery capabilities and use; map reading.

403, 423, 443 Military Science IV—Advanced (Quartermaster Corps) (3,3,3) Staff
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; fiscal procedures; procurement procedures; command and staff; combat intelligence; technical intelligence; organization and functions of the combatant arms; organization and funtions of the technical services; quartermaster operations in the zone of the interior; quartermaster operations in the theater of operations.

404, 424, 444 Military Science IV—Advanced (Transportation Corps) (3,3,3) Staff
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; military railway service in a theater of operations; highway regulation and traffic planning; movement control in a theater of operations; logistics; supply and property; command and staff; combat and transportation intelligence; the Transportation Corps officer; special defensive operations.

405, 425, 445 Military Science IV—Advanced (Corps of Engineers) (3,3,3) Staff
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; engineer support for the Air Force; engineer support for the communication zone; engineer support for the field army; command and staff; construction, utilities, and job management; motor movements; river crossing operations.

NAVAL SCIENCE

Professor of Naval Science: ARTHUR C. WOOD, 309 Clark Hall

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 a hundred 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 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

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 engnes; 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
FORESTRY
1953-1955

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 home 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
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
DIVISION OF HEALTH SCIENCES
  SCHOOL OF DENTISTRY
  SCHOOL OF MEDICINE
  SCHOOL OF NURSING
  COLLEGE OF PHARMACY
SCHOOL OF LAW

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT
SUMMER QUARTER ANNOUNCEMENT
HOME STUDY
EXTENSION CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
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BOARD OF REGENTS

Donald G. Corbett, *President*	Spokane
Grant Armstrong, *Vice-President*	Chehalis
Thomas Balmer	Seattle
Charles F. Frankland	Seattle
Mrs. J. Herbert Gardner	La Conner
John L. King	Seattle
Winlock W. Miller	Seattle

John Spiller, *Secretary*

OFFICERS OF ADMINISTRATION

Henry Schmitz, Ph.D.	*President of the University*
Harold P. Everest, M.A.	*Vice-President of the University*
Ethelyn Toner, B.A.	*Registrar*
Nelson A. Wahlstrom, B.B.A.	*Comptroller and Business Manager*

COLLEGE OF FORESTRY FACULTY

Marckworth, Gordon Dotter, 1939—*Professor of Forest Management; Dean of the College of Forestry*
B.S.F., 1916, Ohio State; M.F., 1917, Yale

Brockman, C. Frank, 1946 (1949)—*Associate Professor of Forestry*
B.S., 1924, Colorado State; M.S., 1931, Washington

Bryant, Benjamin Smyth, 1949 (1952)—*Assistant Professor of Forestry*
B.S.F., 1947; M.S.F., 1948, Washington; D. For., 1951, Yale

Covington, Duane Monroe, 1945—*Instructor in Forestry; Resident Manager of the Pack Forest*
B.S.F., 1927, Washington

Erickson, Harvey D., 1947—*Associate Professor of Forest Products*
B.S., 1933, B.S., 1934, M.S., 1936, Ph.D., 1937, Minnesota

Gessel, Stanley Paul, 1948 (1951)—*Assistant Professor of Forest Soils*
B.S., 1939, Utah State Agricultural College; Ph.D., 1950, California

Grondal, Bror Leonard, 1913 (1929)—*Professor of Forest Products*
B.A., 1910, Bethany College (Kansas); M.S.F., 1913, Washington; D.Sc. (Hon.), 1943, Bethany College

Haddock, Philip George, 1947—*Assistant Professor of Forestry*
B.S., 1934, Ph.D., 1942, California

Pearce, John Kenneth, 1934 (1943)—*Professor of Logging Engineering*
B.S.F., 1921, Washington

Robertson, James Campbell Hay, 1945—*Associate Professor of Forest Management*
B.S.F., 1927, Washington; M.S.F., 1933, California; Dr.F., 1947, Duke

Schaeffer, Walter Howard, 1952—*Associate Professor of Forestry*
B.S.F., 1936, Washington; M.S.F., 1937, Yale; Ph.D., 1952, Washington

Stenzel, George, 1949 (1951)—*Assistant Professor of Forestry*
B.S., 1938, New Hampshire; M.F., 1939, Yale

Thomas, David Phillip, 1950—*Assistant Professor of Forest Products*
B.S.F., 1941, M.F., 1948, Washington

Mulligan, Brian O.—*Director,* Arboretum
Hansen, Robert J., M.A.—*Assistant Director,* Arboretum

CALENDAR

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

AUTUMN QUARTER, 1953

REGISTRATION PERIOD

SEPT. 9-SEPT. 29	Registration for students in residence Spring Quarter, 1953. *(Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 25, but no later than September 18.)*
SEPT. 14-SEPT. 29	Registration for former students not in residence Spring Quarter, 1953. *(Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 25, but no later than September 18.)*
SEPT. 15-SEPT. 29	Registration for new students. *(August 28 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—WEDNESDAY	Instruction begins (8 a.m.)
OCT. 2—FRIDAY	President's Convocation (11 a.m.)
OCT. 6—TUESDAY	Last day to add a course
NOV. 11—WEDNESDAY	Armistice and Admission Day holiday
NOV. 26-NOV. 29	Thanksgiving recess
DEC. 18—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1954

REGISTRATION PERIOD

NOV. 23-DEC. 11	Registration for students in residence Autumn Quarter, 1953. *(Registration appointments will be issued on presentation of ASUW cards beginning October 23.)*
DEC. 29-DEC. 31	Registration for former students not in residence Autumn Quarter, 1953. *(Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 19.)*
DEC. 29-DEC. 31	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. 4—MONDAY	Instruction begins
JAN. 8—FRIDAY	Last day to add a course
FEB. 22—MONDAY	Washington's Birthday and Founder's Day holiday
MAR. 19—FRIDAY	Instruction ends

SPRING QUARTER, 1954

REGISTRATION PERIOD

FEB. 24-MAR. 12	Registration for students in residence Winter Quarter, 1954. *(Registration appointments will be issued on presentation of ASUW cards beginning January 22.)*
MAR. 24-MAR. 26	Registration for former students not in residence Winter Quarter, 1954. *(Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 18.)*
MAR. 24-MAR. 26	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. 29—MONDAY	Instruction begins
APR. 2—FRIDAY	Last day to add a course
MAY 21—FRIDAY	Governor's Day
MAY 31—MONDAY	Memorial Day holiday
JUNE 6—SUNDAY	Baccalaureate Sunday
JUNE 11—FRIDAY	Instruction ends
JUNE 12—SATURDAY	Commencement

SUMMER QUARTER, 1954

REGISTRATION PERIOD

JUNE 2-JUNE 4 JUNE 14-JUNE 18	Registration for all students. *(Registration appointments for students in residence Spring Quarter, 1954, and for former students not in residence Spring Quarter, 1954, may be obtained from the Registrar's Office beginning April 19. 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 21—MONDAY	Instruction begins
JUNE 22—TUESDAY	Last day to add a course for the first term
JUNE 25—FRIDAY	Last day to add a course for the full quarter
JULY 5—MONDAY	Independence Day holiday
JULY 21—WEDNESDAY	First term ends
JULY 22—THURSDAY	Second term begins
JULY 23—FRIDAY	Last day to add a course for the second term
AUG. 20—FRIDAY	Instruction ends

AUTUMN QUARTER, 1954

REGISTRATION PERIOD

SEPT. 8-SEPT. 28	Registration for students in residence Spring Quarter, 1954. *(Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 24, but no later than September 17.)*
SEPT. 13-SEPT. 28	Registration for former students not in residence Spring Quarter, 1954. *(Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 24, but no later than September 17.)*
SEPT. 14-SEPT. 28	Registration for new students. *(August 27 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. 29—WEDNESDAY	Instruction begins (8 a.m.)
OCT. 1—FRIDAY	President's Convocation (11 a.m.)
OCT. 5—TUESDAY	Last day to add a course
NOV. 11—THURSDAY	Armistice and Admission Day holiday
NOV. 25-NOV. 28	Thanksgiving recess
DEC. 17—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1955

REGISTRATION PERIOD

NOV. 22-DEC. 10	Registration for students in residence Autumn Quarter, 1954. *(Registration appointments will be issued on presentation of ASUW cards beginning October 22.)*
DEC. 29-DEC. 31	Registration for former students not in residence Autumn Quarter, 1954. *(Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 18.)*
DEC. 29-DEC. 31	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—MONDAY	Instruction begins
JAN. 7—FRIDAY	Last day to add a course
FEB. 22—TUESDAY	Washington's Birthday and Founder's Day holiday
MAR. 18—FRIDAY	Instruction ends

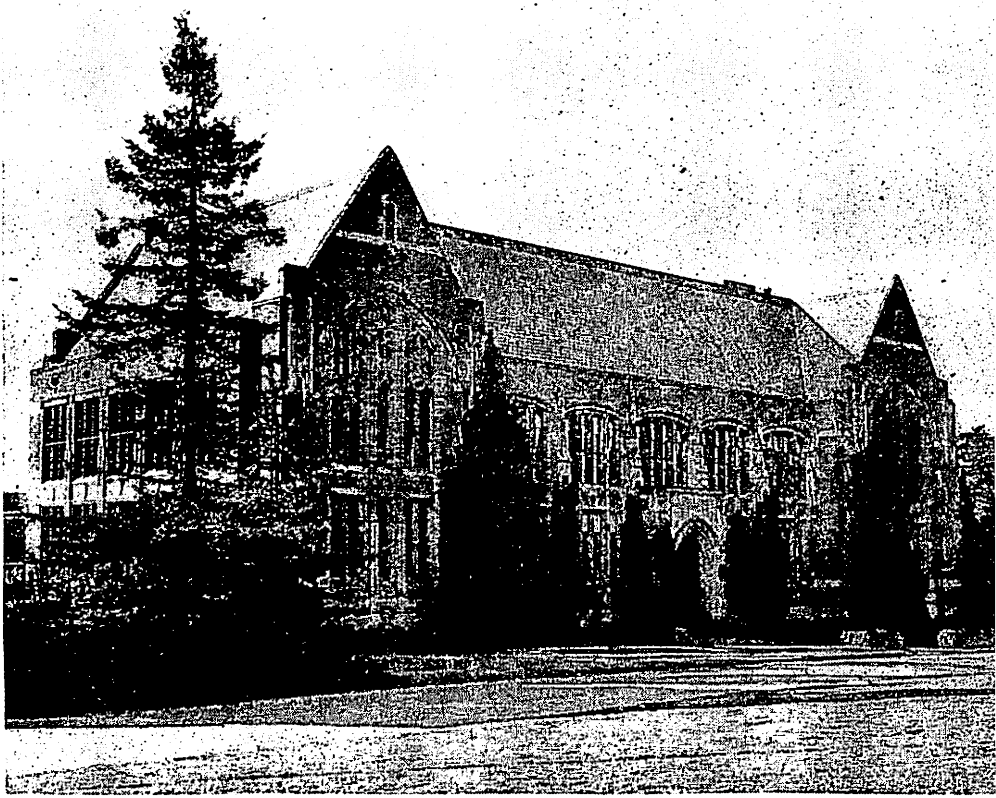
SPRING QUARTER, 1955

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



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 Northwest's important forest resources.

The College began its program with a staff of two instructors and a class of ten students. It now has thirteen faculty members and about two hundred fifty students. Since its founding, the College has pursued these objectives: first, to provide instruction in the principles and practices of forestry, and second, to promote the interests of forestry in the state of Washington by encouraging the best use of forest resources. The College is accredited by the Society of American Foresters.

Since Washington is one of the leading timber-producing states in the country, and Seattle is in the center of the Northwest timber industry, forestry students encounter the forest management and industrial problems with which they will be concerned as foresters. National forests and private holdings are laboratories in which students may study management and engineering at first hand. Sawmills, woodworking industries, and pulp and paper mills permit them to observe the techniques of wood utilization. In the College, in industry, and in the forests themselves they find opportunities to participate in forestry research. Throughout the forestry course, classroom instruction is supplemented by field studies in industry and in the University's two demonstration and experimental forests.

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.

FORESTRY LIBRARY

The College of Forestry Library, a branch of the University's Henry Suzzallo Library, contains 6,000 volumes and 15,000 pamphlets, reports, and monographs. It also possesses an excellent collection of forestry periodicals and indexes. At the beginning of the freshman year, as part of their orientation to the study of forestry. students learn how to use the library.

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 in 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 three thousand 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 for the development of new uses of wood in industry.

Sections of the laboratory are devoted to timber physics, woodworking, wood gluing, wood preservation, kiln drying, photomicrography, advanced wood technology, and wood pulp processing. 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, and a study map made, intensive growth measurements are under way, and during the winter of 1952 a first thinning was made in Douglas fir stands thirty-five and fifty-five years old.

The accessibility, stocking age, and site of the Lee Forest make it exceptionally valuable for studies and demonstrations of farm forestry practices applicable in western Washington.

PACK DEMONSTRATION FOREST

The Charles Lathrop Pack Demonstration Forest, an enlargement and development of an original gift from the Charles Lathrop Pack Forestry Trust, is a tract of more than 2,300 acres. It extends along both sides of the Mt. Rainier National Park highway at La Grande, Washington, sixty-five miles from the University. The Pack Forest is an excellent field and research laboratory as well as a public demonstration project.

Forestry sophomores spend the Spring 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 and with the Pathology Division of the Bureau of Entomology and Plant Quarantine, which also 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.

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.

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 3.1 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, but many are made available by generous

friends and alumni of the University. A handbook listing the current awards is available at 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, $100 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, $1,000 annually.

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 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.

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.

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 forestry 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.

HOUSING

Rooms in the Men's Residence Hall, which is scheduled for completion in the fall of 1953, or in University-operated temporary dormitories, may be obtained through the Office of Student Residences. This office also keeps listings of rooms, rooms with board, and a few apartments and houses; these listings must be consulted in person. The Student Cooperative Association, 1114 East Forty-fifth Street, provides housing on a cooperative basis. Students interested in living in fraternity houses should write for information to the Interfraternity Council, on the campus.

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

HEALTH CENTER

The University maintains a health center which helps to guard against infectious diseases and incipient ill health. A dispensary is available to students during class hours, and an infirmary will receive bed patients at any hour.

The infirmary 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, and the infirmary staff will cooperate closely with him.

SERVICES TO FOREIGN STUDENTS

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.

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.

ALUMNI ASSOCIATION

All graduates of the University of Washington, as well as all persons who have completed one year of college work at the University, are eligible for membership in the Alumni Association. Members receive a subscription to the *Washington Alumnus* and have library, football, swimming, voting, and other privileges. The membership fee is $5 for one year; the dual membership fee for man and wife,

which includes one suscription to the *Washington Alumnus,* is $6 for one year.

Graduates of the College of Forestry are also eligible for membership in the Washington Foresters Alumni Association. The yearly dues are $2. Members receive the *Washington Forester,* which is published twice yearly, and the Alumni Directory. An annual alumni reunion is held each spring at Pack Forest.

ADMISSION

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

Prospective students in the state of Washington may obtain official application blanks from their high school principals or from the University Registrar. Those from other states may obtain blanks by writing directly to the Registrar. Out-of-state students will also receive medical questionnaire forms, which must be filled out by a physician and returned with the application for admission. For admission in Autumn Quarter, applications should be completed and returned after high school graduation and before July 15. Complete credentials must be sent before that date directly to the Registrar by the high school principal or the registrar of the college previously attended. Applications and credentials received before July 15 have precedence over those which arrive later. The last day for new students to submit applications for admission in Autumn Quarter, 1953, is August 28; for Autumn Quarter, 1954, the last day is August 27. For admission in other quarters, applications and credentials must be received at least thirty days before the beginning of the quarter.

ADMISSION FROM ACCREDITED HIGH SCHOOLS

Graduates of accredited senior high schools who meet University entrance requirements are eligible for admission as freshmen with regular standing. The University requires 16 high school units, including at least 9 units in academic subjects, with a grade-point average of 2.0 (equivalent to a C average on the Washington grading system). The units used for admission cannot include any unit with less than a passing grade. For entrance to the College of Forestry, the 16 units should 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.

Graduates of accredited high schools who meet the scholarship standard and the entrance requirements in English and have either 1 unit of algebra or 1 unit of plane geometry may petition the Dean of the College for entrance with provisional standing. Those who are admitted provisionally must register each quarter for make-up courses in the subject they lack until the entrance deficiency is removed. No student may apply for a degree until he has made up all entrance deficiencies. First-year algebra and plane geometry are offered through the University Division of Adult Education for a fee of $12 a quarter and do not carry credit toward University graduation.

Graduates of accredited high schools in Washington and Alaska whose grade-point average is below 2.0 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. Students cannot be pledged to fraternities, run for office in student organizations, or participate in intercollegiate athletics until they are removed from probation.

No student will be accepted for admission who would not be officially recommended to the university of his own state.

ADMISSION BY EXAMINATION

Graduates of nonaccredited high schools in Washington and Alaska may petition the Board of Admissions for entrance with freshman standing if they meet other entrance requirements and are recommended by their high school principals. The Board usually requires these students to take special entrance examinations.

Prospective students who are not high school graduates must pass College Entrance Board examinations and 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

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 can 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. Applicants who have completed a year or more of college work must have a 2.0 grade-point average in their entire college records. Those with less than a year of college work must have a 2.0 average in both their college and high school records.
3. Complete transcripts and letters of honorable dismissal must be sent to the University Registrar by the registrar of the former school.
4. 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.
5. 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. Up to 10 extension or correspondence credits from this University can apply toward the work of the senior year.
6. The Board of Admissions reserves the right to determine the exact amount of transfer credit to be accepted. Definite advanced standing is determined at the end of the student's first quarter in the University.

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.

ADMISSION OF FOREIGN STUDENTS

Foreign students must meet the same general requirements as those from American schools and must demonstrate a satisfactory command of the English language. The official record of Canadian students is the matriculation certificate or university admission certificate of their province. A student who has graduated

from a school system that provides less than twelve years of instruction may be required to take additional high school work.

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 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 and do not receive any credit for course work.

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 when they appear for their appointments.

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 on campus each quarter.

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.

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 other new students is Professor Schaeffer, whose office is in 210 Anderson Hall; for sophomores, Professor Brockman, 105 Anderson, and Professor Stenzel, 226 Anderson; for forest management juniors and seniors, Professor Robertson, 216 Anderson; for logging engineering juniors and seniors, Professor Pearce, 201 Anderson; and for forest products juniors and seniors, Professor Erickson, 202 Forest Products Laboratory.

APTITUDE AND ACHIEVEMENT TESTS

New freshman students (including transfer students with less than 45 quarter credits) take achievement tests in English, social science, natural science, and mathematics, and a general aptitude test as part of the registration requirements. Test results do not affect admission but are used in advising and in assigning students to appropriate sections of English, mathematics, and other courses. 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.

Veterans who are accepted for entrance to the College of Forestry 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 two months before registration begins. Those who do not have certificates 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 consult a Veterans Administration regional office at least one month before the beginning of the quarter. 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, because allowances are not made until after monthly attendance is established.

Principal fees for Autumn, Winter, and Spring quarters are listed below.

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 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 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.

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; special students are exempt.

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 sophomore year when course is taken at Pack Forest.

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 each.

Graduation Fee 10.00

SPECIAL FEES

From $2 to $5 is charged for late registration, $2 for changed registration, and $6 for late medical examination and X-ray. Fees for special examinations, certification of credits from unaccredited schools, and removal of Incompletes range from $1 to $5.

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.

ESTIMATE OF YEARLY EXPENSES

Tuition, Incidental, and ASUW Membership Fees

Full-time resident student	165.00
Full-time nonresident student	315.00

Athletic Admission Ticket (optional) 5.00

Accident Insurance (optional) 4.05

Special Fees and Deposits 38.50

Military uniform deposit, breakage ticket, and locker fees.

Books and Supplies 75.00

Board and Room

Double room in campus temporary dormitory, with meals in University Commons and Student Union Cafeteria, or double room and meals in Men's Residence Hall	500-585.00
Room and meals in student cooperative house	435.00
Room and meals in fraternity house	600.00

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

Personal Expenses 200.00

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. Requirements for graduation through one of these curricula include the University requirements in military training, physical education, general scholarship, and senior-year residence, and the course requirements of one of the three curricula.

Students should apply for bachelor's degrees during the first quarter of the senior year. No student may apply for a degree until he has made up all entrance deficiencies.

MILITARY TRAINING

Male students entering the University as undergraduates, except those granted exemptions as listed below, are required to complete six quarters of military training. This requirement should be met during the first two years of residence.

Exemptions from the requirement are granted to:

1. Those who are twenty-three years of age or over at the time of original entry to the University.
2. Those who enter as juniors or seniors.
3. Special students.
4. Those registered for 6 credits or less.
5. Those who are not citizens of the United States.
6. Those who because of physical condition are exempted by the University Health Officer.
7. Those who seek exemptions on grounds other than specified above, and whose petitions for exemption are first processed by the Dean of Students Office.

Complete or partial exemptions, depending on length of service, are granted for previous active service in the Armed Forces or Coast Guard. Students who

are active enlisted members of the National Guard, the Organized Reserve, or the Coast Guard may arrange at the time of entrance to substitute equivalent credits in other University courses for the military training requirement.

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.

PHYSICAL EDUCATION

Six quarters of physical education activity courses are required of all male undergraduate students except those twenty-five or older, those entering with junior or senior standing, those registered for 6 credits or less, and special students. This requirement must be completed during the first six quarters of University residence.

Physical education courses are offered by the School of Physical Education in the College of Arts and Sciences. Freshman students must take Physical Education 104, a basic skills course, in their first quarter, and must take swimming in their second or third quarter. For the other four quarters of physical education activity, students may choose from a variety of gymnastics and sports.

Physical Education 175, a course in personal health, is required of male students who have not satisfied this requirement in an accredited college or university. This course should be taken during the first quarter of residence and must be taken during one of the first three quarters. Students may be exempted from this course by passing a health knowledge test given each quarter.

SCHOLARSHIP AND CREDITS

Freshman students in their first three quarters, and transfer students in their first quarter, must maintain a 1.8 grade-point average. All other students must maintain a 2.0. A cumulative average of 2.0 is required for graduation from the University.

Grade points are awarded on the following basis: a grade of A earns 4 points for each credit the course carries; B, 3 points; C, 2 points; and D, 1 point. The average is computed by dividing the total number of points by the total number of credits.

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 191 academic credits plus physical education activity and military training.

SENIOR-YEAR RESIDENCE

In the work of the senior year, at least 35 credits must be earned in three quarters of residence (that is, registered in regular University classes). An additional 10 credits earned in this University's extension or correspondence courses may be applied toward senior-year requirements.

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
For. 101 Development	3
Bot. 114 Forestry Bot.	3
Math. 154 Math.	3
Physics 101 or 104 General	5
Phys. Educ. 175 Health	2
Phys. Educ. activity	1
ROTC	2-3
	19-20

SECOND QUARTER	CREDITS
For. 130 Elem. For. Fire Control	3
Bot. 115 Forestry Bot.	3
Engl. 101 Composition	3
Math. 155 Math.	3
Physics 102 or 105 General	5
Phys. Educ. activity	1
ROTC	2-3
	20-21

THIRD QUARTER	CREDITS
For. 103 Problems	3
For. 106 Dendrology	3
G.E. 107 Engr. Drawing	3
Math. 156 Math.	3
Physics 103 or 106 General	5
Phys. Educ. activity	1
ROTC	2-3
	20-21

Second Year

FIRST QUARTER	CREDITS
For. 107 Dendrology	3
For. 205 Gen. Lumbering	3
Chem. 111 or 115 General	5
Econ. 211 General	3
Engl. 102 Composition	3
Phys. Educ. activity	1
ROTC	2-3
	20-21

SECOND QUARTER	CREDITS
For. 260 Mensuration	5
Bot. 116 Forestry Bot.	3
Chem. 112 or 116 General	5
Geol. 215 Soils & Water	3
Phys. Educ. activity	1
ROTC	2-3
	19-20

THIRD QUARTER	CREDITS
For. 220 Silvicultural Field Studies	2
For. 261 Field Problems	6
Civil Engr. 256 Surveying	8
Phys. Educ. activity	1
ROTC	2-3
	19-20

With the approval of their faculty advisers, third-year students choose a specialty and enter one of the three upper-division curricula in forestry.

CURRICULUM IN FOREST MANAGEMENT

Third Year

FIRST QUARTER	CREDITS
For. 306 Wood Technology	4
For. 310 Gen. Forest Soils	3
For. 321 Silvics	3
For. 403 Timber Physics	3
Engl. 253 Factual Writing	3
	16

SECOND QUARTER	CREDITS
For. 322 Silvicultural Methods	3
For. 373 Forest Utilization	5
For. 440 Construction	4
Electives	3
	15

THIRD QUARTER	CREDITS
For. 423 Application of Methods	4
For. 430 Adv. Forest Fire Control	3
Bot. 361 Forest Pathol.	5
Civil Engr. 315 Photogrammetry	3
	15

Fourth Year

FIRST QUARTER	CREDITS
For. 408 Forest Econ.	5
For. 441 Forest Engr.	5
Acctg. 150 Accounting	4
Electives	2
	16

SECOND QUARTER	CREDITS
For. 335 Insect Control	3
For. 409 Forest Policy	3
For. 460 Forest Mgmt.	5
Electives	3
	14

THIRD QUARTER	CREDITS
For. 466 Field Studies	5
For. 467 Field Studies	5
For. 468 Field Studies	4
For. 469 Field Studies	2
	16

CURRICULUM IN LOGGING ENGINEERING

Third Year

FIRST QUARTER	CREDITS
For. 306 Wood Technology	4
For. 321 Silvics	3
For. 404 Timber Physics	5
Civil Engr. 312 Route Surveying	3
	15

SECOND QUARTER	CREDITS
For. 322 Silvicultural Methods	3
For. 373 Forest Utilization	5
For. 440 Construction	4
Civil Engr. 313 Location & Earthwork	3
	15

THIRD QUARTER	CREDITS
For. 335 Insect Control	3
For. 430 Adv. Forest Fire Control	3
Bot. 361 Forest Pathol.	5
Civil Engr. 315 Photogrammetry	3
	14

Fourth Year

FIRST QUARTER	CREDITS
For. 401 Safety Practices	2
For. 408 Forest Econ.	5
For. 441 Forest Engr.	5
Acctg. 150 Fundamentals	4
	16

SECOND QUARTER	CREDITS
For. 442 Logging Engr.	5
For. 460 Forest Mgmt.	5
Bus. Law 307 Bus. Law	3
Electives	3
	16

THIRD QUARTER	CREDITS
For. 446 Field Studies	3
For. 447 Field Studies	5
For. 448 Field Studies	5
For. 449 Field Studies	3
	16

CURRICULUM IN FOREST PRODUCTS

Third Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 306 Wood Technology	4	For. 307 Wood Structure	3	For. 320 Silviculture	3
Bot. 361 Forest Pathol.	5	For. 404 Timber Physics	5	For. 370 Wood Preservation	3
Electives	6	Mech. Engr. 220 Heat Engines	3	For. 371 Preservation Lab.	2
	15	Electives	5	For. 471 Timber Design	3
			16	Acctg. 150 Fundamentals	4
					15

Fourth Year

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 408 Forest Econ.	5	For. 470 Industries	3	For. 406 Microtechnique	3
For. 481 Milling	5	For. 472 Plywood	4	For. 476 Wood Pulp	5
Bus. Law 307 Bus. Law	3	For. 483 Kiln Drying	3	For. 482 Manufacturing	5
Electives	2	Electives	5	Electives	3
	15		15		16

ADVANCED DEGREES

Students who intend to work toward a Master of Forestry, Master of Science in Forestry, or Doctor of Philosophy degree must apply for admission to the Graduate School and meet the requirements outlined in the *Graduate School Bulletin*. For graduate study, the approval of both the Graduate School and the College of Forestry is necessary.

There is no foreign language requirement for the master's degrees, but two foreign languages are required for the doctorate.

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 and will be arranged with students individually.

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*, which is published just before registration begins.

FORESTRY 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.

102, 103 Forestry Problems (2,3) — **Schaeffer**
Methods of attack, emphasizing accuracy, analysis, and interpretation of forestry data Prerequisites, Mathematics 154 and 155.

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, methods of presuppression, detection, and suppression of fires. Prerequisite, 101 or 301.

201 First Aid to the Injured (2) — **Staff**

205 General Lumbering (3) — **Stenzel, Thomas**
Comparative methods in the lumbering regions of the United States. Prerequisite to all courses in logging and milling. Prerequisites, 106 and 107.

220 Silvicultural Field Studies (2) **Gessel, Covington**
Field problems in silviculture and in nursery practice. Given at Pack Forest. A five-day field trip is required. Prerequisite, 106.

260 Forest Mensuration (5) **Stenzel**
Theory of scaling; volume and taper tables; sample-plot methods; determination of contents of stands; growth; yield. Prerequisites, 101, 103, and Mathematics 156.

261 Field Problems in Forest Mensuration (6) **Stenzel**
Field problems, including site, stocking, volume tables, timber cruising, and growth. Given at Pack Forest. Prerequisites, 107, 260, and General Engineering 107.

301 Survey of Forestry (3) **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.

306 Wood Technology (4) **Erickson, Thomas**
Identification, uses, basic physical and chemical properties of wood. Prerequisites, 106, 107, Physics 103 or 106, 10 credits in chemistry, and Botany 116.

307 Wood Structure (3) **Thomas**
Identification, xylotomy, and elementary microtechnique. Prerequisite, 306.

310 General Forest Soils (3) **Gessel**
Physical, chemical, biological, and profile characteristics of soils as related to soil formation; soil classification and soils of the United States. Three field trips are required. Prerequisites, Botany 116, Chemistry 112 or 116, Geology 215, Physics 101 or 104, and Mathematics 156.

320 Elements of Silviculture (3) **Haddock**
The natural basis of silviculture; methods of controlling growth and reproduction of forests. For students specializing in forest products only. Prerequisites, 106, 107, 220, 261, Botany 116, and Geology 215.

321 Silvics (3) **Haddock**
Relation of trees and forests to soil, moisture, light, and temperature; forest ecology. Two Saturday field trips are required. Prerequisites, 101, 106, 107, 220, 261, Botany 116, and Geology 215.

322 Silvicultural Methods (3) **Haddock**
Type and site classification; intermediate and final cuttings; natural and artificial regeneration. One Saturday field trip is required. Prerequisites, 220 and 321.

335 Forest Insect Control (3) **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.

353 Range Management (3) **Gessel**
Fundamentals of range management; interrelations of plants, animals, and man. Methods and economics of proper management. Two Saturday field trips are required. Prerequisites, Botany 114, 115, 116, and permission of instructor.

356 Forest Recreation (3) **Brockman**
Recreational needs, values, resources, and objectives; planning and development of outdoor recreational resources. Prerequisite, 101 or 301.

370 Wood Preservation (3) **Erickson**
Classification and control of wood-destroying agencies; pressure and nonpressure treating methods; fire-retardant technique. Prerequisite, 307.

371 Wood-Preservation Laboratory (2) **Erickson**
Evaluation of preservatives; methods of testing and inspecting treated material. Field trips are required. Must be preceded or accompanied by 370.

373 Forest Utilization (5) **Erickson, Thomas**
Secondary and derived forest products; principles of seasoning and preservation. Field trips are required. Prerequisite, 306.

380 Lumber Grading (2) **Bryant**
Principles and practice of lumber and shingle grading; field trips. Prerequisites, 205, 306, and 403 or 404.

401 Safety Practices in Forest Industries (2) **Pearce**
Frequency and cost of accidents; methods of accident prevention.

403 Timber Physics (3) **Bryant**
The mechanical properties of wood; solution of design problems by graphic statics; timber testing. For forest management students only. Prerequisites, 103, Mathematics 156, and Physics 101 or 104.

404 Timber Physics (5) **Bryant**
The mechanical properties of wood; statics; timber testing; introduction to beam and truss design. Prerequisites, Mathematics 156 and Physics 101 or 104.

406 Microtechnique (3) **Thomas**
Preparation, sectioning, staining, and mounting of woody tissues and fibers. Prerequisite, 307.

408 Forest Economics and Finance (5) — **Robertson**
Position of forests in the economic structure; cost of growing timber; valuation of land for forest production. Prerequisites, 260 and Economics 211.

409 Forest Policy and Administration (3) — **Marckworth**
Development of forest policies and forest laws in the United States.

410 Advanced Forest Soils (3) — **Gessel**
Relations of soils to plant growth. Laboratory study of some physical, chemical, and biological properties of forest soils. Prerequisite, 310.

420 Artificial Regeneration (3) — **Haddock**
Establishment of forests by artificial methods; biological and economic aspects of forest planting. One all-day field trip is required. Prerequisites, 310 and 321.

423 Application of Silvicultural Methods (4) — **Haddock**
Principles and practice of silviculture applied to the forest regions of the United States. Three Saturday and three half-day field trips are required. Prerequisite, 322.

424 Advanced Practices in Silviculture (3) — **Haddock**
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 and bridges. Prerequisites, 403 or 404, General Engineering 107, and Civil Engineering 256.

441 Forest Engineering (5) — **Pearce**
Logging plans and cost analysis; surveys, subdivision and boundaries. Prerequisites, 322 and 440.

442 Logging Engineering (5) — **Pearce**
Machinery, equipment, and problems. Prerequisites, 205 and 441.

446, 447, 448, 449 Logging-Engineering Field Studies (3,5,5,3) — **Pearce**
446: logging plans. Prerequisites, 442 and Civil Engineering 313 and 315. 447: topographic and timber surveys. Prerequisite, 446. 448: road location surveys. Prerequisite, 447. 449: logging cost analysis. Development of a complete logging plan and cost analysis in a large operation. Prerequisite, 448.

460 Forest Management (5) — **Robertson**
Economic and technical principles involved in the management of forest lands for sustained yield. Prerequisites, 261, 408, and 423.

466, 467, 468, 469 Senior Management Field Studies (5,5,4,2) — **Robertson**
466: surveys, use of aerial photographs in mapping vegetative types and estimating timber volumes. 467: forest and land inventory. 468: growth and yield studies, permanent sample plots. 469: reports and summary of work accomplished by field studies. The courses lead to the development of a working plan for a large operation. They are taken during the same quarter and the entire quarter is spent off campus. Prerequisites, 460 and Civil Engineering 315.

470 Forest-Products Industries (3) — **Erickson**
Secondary and derived forest products, other than lumber, plywood, and pulp. Prerequisite, 307.

471 Timber Design (3) — **Bryant**
Beams, columns, trusses, timber connectors and fastenings; design, fabrication, and erection of timber structures. Prerequisite, 403 or 404.

472 Plywood, Lamination, and Glues (4) — **Bryant**
Manufacture of plywood and laminated wood; theory and use of wood adhesives. Prerequisites, 307 and 404.

476 Wood Pulp (5) — **Grondal**
Design of waste conversion plants; wood-pulp manufacture. Prerequisites, 306, and 373 or 470.

478 Advanced Wood Technology (5) — **Erickson, Bryant**
The physical and chemical nature of the constituents of wood; surface properties; fundamentals of its behavior; chemical modification. Prerequisites, 370, 470, 472, 483, and permission.

481 Milling (5) — **Thomas**
Organization, planning, operation, and administration of sawmills. Prerequisites, 306, 403 or 404, and Mechanical Engineering 220.

482 Manufacturing Problems (5) — **Thomas**
Distribution and marketing of lumber and other forest products; regional competition; industry problems. Prerequisites, 481 and Accounting 150.

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. Prerequisites, 306, and 373 or 470.

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.

OTHER COURSES FOR UNDERGRADUATES

Accounting 150 Fundamentals of Accounting (4) **Cannon, Mackenzie**
Basic principles, financial statements, double-entry principles, capital and revenue expenditures, depreciation, etc.

Botany 114, 115, 116 Forestry Botany (3,3,3) **Hitchcock, Blaser, Walker**
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.

Botany 361 Forest Pathology (5) **Stuntz**
Common wood-destroying fungi and diseases of forest trees. Prerequisite, Botany 115 or equivalent.

Business Law 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.

Chemistry 111 General Chemistry (5) **Staff**
Open only to students without high school chemistry. For engineering and premedical students and science majors, who may continue through Chemistry 113 or 107.

Chemistry 112 General Chemistry (5) **Staff**
Prerequisite, Chemistry 111 or 115.

Chemistry 115 General Chemistry (5) **Staff**
For students who have had high school chemistry and who plan to take more than 10 credits in chemistry. Departmental advisers should be consulted as to whether this course should be followed by Chemistry 112 or 116.

Chemistry 116 General Chemistry and Qualitative Analysis (5) **Staff**
Prerequisites, Chemistry 115 and permission.

Civil Engineering 256 Forest Surveying (8) **Hoag**
The use of steel tape, compass, clinometer, level, transit, and plane table. Given at Pack Forest for forestry students only.

Civil Engineering 312 Route Surveying (3) **Chittenden, Colcord, Collier**
Alignment survey problems associated with the location of highways and railways, including preliminary and final location, staking of curves, compensation for curvature and sight distance, and preparation of location maps for highways. Prerequisite, Civil Engineering 256 or General Engineering 121.

Civil Engineering 313 Location and Earthwork (3) **Chittenden, Colcord, Collier**
Highway and railway grades, profiles, cross sections, earthwork quantities, including shrinkage and swell, and application of the mass diagram to the problems of haul; legal description and estimates. Prerequisite, Civil Engineering 256 or General Engineering 121.

Civil Engineering 315 Photogrammetry (3) **Chittenden, Colcord**
Characteristics of aerial photography; photointerpretation; uses of aerial photographs; map compilation and flight planning. Prerequisite, Civil Engineering 256 or 314.

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.

English 253 Factual Writing (3) **Staff**
Scholarly and technical writing. Prerequisites for foresters, English 101 and 102.

General Engineering 107 Engineering Drawing (3) **Warner, Hoag**
Short course for forestry and art students.

Geology 215 Soils and Water Resources (3) **Wheeler**
Basic physical geology in relation to soils and water resources. Primarily for forestry and sanitary engineering students.

Mathematics 154, 155, 156 Mathematics for Architects (3,3,3) **Staff**
Selected topics from college algebra, trigonometry, and analytic geometry. Analytic geometry is emphasized. Not open to students who have taken Mathematics 104, 105, 106, 122, or 153. Does not count toward a mathematics major.

Mechanical Engineering 220 Heat Engines (3) **Cooper, Crain, Krause, Watson**
Various apparatus used in modern power plants; construction, use, and reason for installation. Prerequisite, General Engineering 102.

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, Physics 101. 103: heat and light. Prerequisite, Physics 101.

Physics 104, 105, 106 General Physics (5,5,5) **Staff**
Prerequisite, plane geometry; 104 for 105 and 106.

COURSES FOR GRADUATES ONLY

512 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) — **Haddock**
A study of recent advances in the field of forest tree physiology and ecology, with special reference to the silviculture of western forest types. Prerequisites, 410, 423, and permission of instructor.

522 Advanced Silviculture (5) — **Haddock**
The use of ecological principles in controlling reproduction and growth of forests; the application of cultural methods to existing forests; a study of research methods and case histories. Prerequisites, 423 and permission.

540 Advanced Forest Engineering (5) — **Pearce**
Logging, management, cost analysis, stumpage and logging appraisal, financial reports. Prerequisites, 446, 447, 448, and 449.

555 Forest Influences (4) — **Gessel, Haddock**
A study of the effects of vegetation on climate, water, and soil, with application to the conservation of water and soil and the control of floods. Prerequisites, 321, 322, 353, 410, and permission of instructor.

560 Forest History and Policy (3) — **Marckworth**
The development of forestry policy in the United States and other countries. Prerequisites, 409 and 460.

562 Forest-Management Plans (3-5) — **Robertson**
Preparation of management plans for large areas, public and private. Prerequisite, 469.

570 Advanced Wood Preservation (3) — **Erickson**
Theory of penetrance; design of treating plants; fireproofing and fireproofing compounds. Prerequisites, 370 and 371.

590, 591, 592 Graduate Studies (2-5 each quarter) — **Staff**
Study in fields for which there is not sufficient demand to warrant the organization of regular courses.

600 Research (*) — **Staff**

Thesis (*) — **Staff**

CHANGES IN UNIVERSITY REGULATIONS

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BULLETIN
UNIVERSITY
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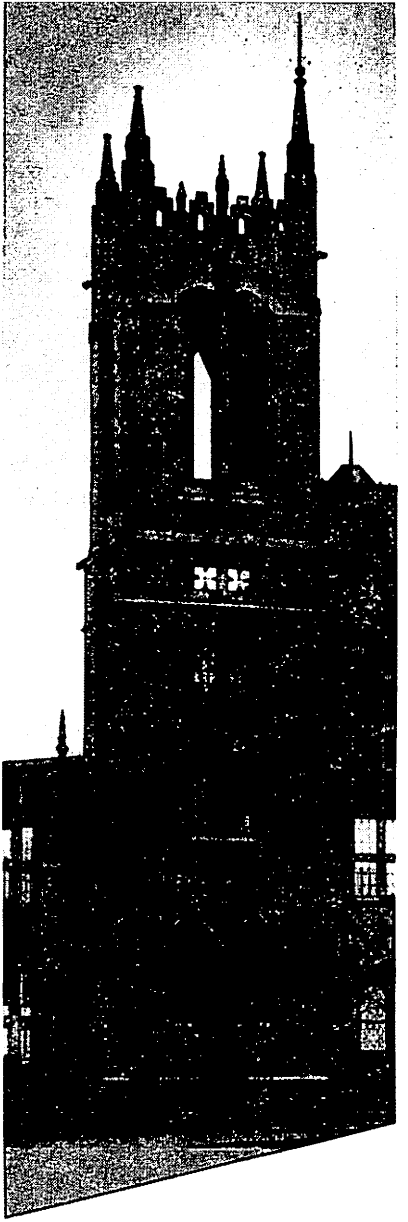

GRADUATE SCHOOL
1953-1955

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 home 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
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
DIVISION OF HEALTH SCIENCES
  SCHOOL OF DENTISTRY
  SCHOOL OF MEDICINE
  SCHOOL OF NURSING
  COLLEGE OF PHARMACY
SCHOOL OF LAW

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT
SUMMER QUARTER ANNOUNCEMENT
HOME STUDY
EXTENSION CLASSES

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 874
October, 1953

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CONTENTS

CALENDAR

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

AUTUMN QUARTER, 1953

REGISTRATION PERIOD

SEPT. 8-SEPT. 29	Registration for students in residence Spring Quarter, 1953. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 25, but no later than September 18.*)
SEPT. 11-SEPT. 29	Registration for former students not in residence Spring Quarter, 1953. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 25, but no later than September 18.*)
SEPT. 14-SEPT. 29	Registration for new students. (*August 28 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—WEDNESDAY	Instruction begins (8 a.m.)
OCT. 2—FRIDAY	President's Convocation (11 a.m.)
OCT. 6—TUESDAY	Last day to add a course
OCT. 14—WEDNESDAY	Last day for filing applications for the master's degree for Autumn Quarter
NOV. 11—WEDNESDAY	Armistice and Admission Day holiday
NOV. 26-NOV. 29	Thanksgiving recess
DEC. 18—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1954

REGISTRATION PERIOD

NOV. 23-DEC. 11	Registration for students in residence Autumn Quarter, 1953. (*Registration appointments will be issued on presentation of ASUW cards beginning October 23.*)
DEC. 29-DEC. 31	Registration for former students not in residence Autumn Quarter, 1953. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 19.*)
DEC. 29-DEC. 31	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. 4—MONDAY	Instruction begins
JAN. 8—FRIDAY	Last day to add a course
JAN. 18—MONDAY	Last day for filing applications for the master's degree for Winter Quarter
FEB. 22—MONDAY	Washington's Birthday and Founder's Day holiday
MAR. 19—FRIDAY	Instruction ends

SPRING QUARTER, 1954

REGISTRATION PERIOD

FEB. 24-MAR. 12	Registration for students in residence Winter Quarter, 1954. (*Registration appointments will be issued on presentation of ASUW cards beginning January 22.*)
MAR. 24-MAR. 26	Registration for former students not in residence Winter Quarter, 1954. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 18.*)
MAR. 24-MAR. 26	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. 29—MONDAY	Instruction begins
APR. 2—FRIDAY	Last day to add a course
APR. 12—MONDAY	Last day for filing applications for the master's degree for Spring Quarter
MAY 21—FRIDAY	Governor's Day
MAY 31—MONDAY	Memorial Day holiday
JUNE 6—SUNDAY	Baccalaureate Sunday
JUNE 11—FRIDAY	Instruction ends
JUNE 12—SATURDAY	Commencement

SUMMER QUARTER, 1954

REGISTRATION PERIOD

JUNE 2-JUNE 4 JUNE 14-JUNE 18	Registration for all students. (*Registration appointments for students in residence Spring Quarter, 1954, and for former students not in residence Spring Quarter, 1954, may be obtained from the Registrar's Office beginning April 19. 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 21—MONDAY	Instruction begins
JUNE 22—TUESDAY	Last day to add a course for the first term
JUNE 25—FRIDAY	Last day to add a course for the full quarter
JULY 5—MONDAY	Independence Day holiday
JULY 6—TUESDAY	Last day for filing applications for the master's degree for Summer Quarter
JULY 21—WEDNESDAY	First term ends
JULY 22—THURSDAY	Second term begins
JULY 23—FRIDAY	Last day to add a course for the second term
AUG. 20—FRIDAY	Instruction ends

AUTUMN QUARTER, 1954

REGISTRATION PERIOD

SEPT. 7-SEPT. 28	Registration for students in residence Spring Quarter, 1954. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 24, but no later than September 17.*)
SEPT. 10-SEPT. 28	Registration for former students not in residence Spring Quarter, 1954. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 24, but no later than September 17.*)
SEPT. 13-SEPT. 28	Registration for new students. (*August 27 is the last day for new students to submit applications, with complete credentials, for admission in Autumn Quarter. Registration appointment will be mailed with notification of admission.*)

ACADEMIC PERIOD

SEPT. 29—WEDNESDAY	Instruction begins (8 a.m.)
OCT. 1—FRIDAY	President's Convocation (11 a.m.)
OCT. 5—TUESDAY	Last day to add a course
OCT. 13—WEDNESDAY	Last day for filing applications for the master's degree for Autumn Quarter
NOV. 11—THURSDAY	Armistice and Admission Day holiday
NOV. 25-NOV. 28	Thanksgiving recess
DEC. 17—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1955

REGISTRATION PERIOD

NOV. 22-DEC. 10	Registration for students in residence Autumn Quarter, 1954. (*Registration appointments will be issued on presentation of ASUW cards beginning October 22.*)
DEC. 29-DEC. 31	Registration for former students not in residence Autumn Quarter, 1954. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 18.*)
DEC. 29-DEC. 31	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—MONDAY	Instruction begins
JAN. 7—FRIDAY	Last day to add a course
JAN. 17—MONDAY	Last day for filing applications for the master's degree for Winter Quarter
FEB. 22—TUESDAY	Washington's Birthday and Founder's Day holiday
MAR. 18—FRIDAY	Instruction ends

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
APR. 11—FRIDAY	Last day for filing applications for the master's degree for Spring Quarter
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

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.

ADMINISTRATION

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Henrietta Wilson, M.A.	*Assistant to the Dean*

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Robert E. L. Faris, *Sociology*
Clement A. Finch, *Medicine*
Edwin Guthrie, *Psychology*
W. Stull Holt, *History*
G. Donald Hudson, *Geography*
Arthur W. Martin, *Zoology*
J. B. McDiarmid, *Classics*
Hans Neurath, *Biochemistry*
Herschel L. Roman, *Botany*
Edwin A. Uehling, *Physics*
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W. R. Hill, *Electrical Engineering*
W. Stull Holt, *History*
William S. Hopkins, *Economics*
Arthur Lorig, *Business Administration*
Gordon D. Marckworth, *Forestry*
Howard L. Nostrand, *Romance Languages and Literature*
Francis Powers, *Education*
Curtis C. D. Vail, *Germanic Languages and Literature*

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James E. Lynch (Fisheries), Harvey Erickson (Forestry), E. E. Day (Mechanical Engineering), Edward A. Rowe (Mineral Engineering), Richard Fleming (Oceanography).

IV. SOCIAL SCIENCES

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VI. HEALTH SCIENCES

H. S. Bennett (Anatomy), Hans Neurath (Biochemistry), Alton Moore (Dentistry), Russell S. Weiser (Microbiology), Lillian Patterson (Nursing), J. M. Dille (Pharmacology), Elmer Plein (Pharmacy), Loren D. Carlson (Physiology and Biophysics), Robert D. Ray (Surgery).

GRADUATE FACULTY

ADAMS, ROBERT PARDEE, 1947 ..... *Associate Professor of English*
B.A., 1931, Oberlin College; Ph.D., 1937, Chicago

AGGARWAL, OM PRAKASH, 1952 ..... *Assistant Professor of Mathematics*
B.A., 1939, M.A., 1941, Hindu College (Delhi University, India)

ALLENDOERFER, CARL BARNETT, 1951 ..... *Professor of Mathematics; Executive Officer of the Department of Mathematics*
B.S., 1932, Haverford College; B. A., 1934, M.A., 1939, Oxford (England); Ph.D., 1937, Princeton

ALPS, GLEN EARL, 1945 (1950) ..... *Assistant 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, FREDERICK NEIL, 1945 (1950) ..... *Instructor in Art*
B.A., 1943, Washington

ANDERSON, JULIA M., 1950 ..... *Assistant Professor of Nursing*
B.S., 1931, Minnesota; M.N., 1942, Washington; R.N., 1936, Huntington Memorial School of Nursing

ANTON, HECTOR ROQUE, 1950 ..... *Acting Assistant Professor of Accounting, Finance, and Statistics*
B.S., 1942, M.B.A., 1947, University of California at Los Angeles

APLAN, FRANK FULTON, 1951 ..... *Assistant Professor of Mineral Engineering*
B.S., 1948, South Dakota School of Mines; M.S., 1950, Montana School of Mines

ARESTAD, SVERRE, 1937 (1948) ..... *Associate Professor of Scandinavian Languages; Executive Officer of the Department of Scandinavian Languages*
B.A., 1929, Ph.D., 1938, Washington

ARMSTRONG, LINCOLN, 1952 ..... *Acting Assistant Professor of Sociology*
B.A., 1941, Columbia; M.A., 1945, Ph.D., 1951, Pennsylvania

ARSOVE, MAYNARD GOODWIN, 1951 (1953) ..... *Assistant Professor of Mathematics*
B.S., 1943, Lehigh; M.S., 1948, Ph.D., 1950, Brown

AVANN, SHERWIN PARKER, 1946.....*Assistant Professor of Mathematics*
B.S., 1938, Washington; M.S., 1940, Ph.D., 1942, California Institute of Technology

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.....*Assistant 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*

BALL, RICHARD WILLIAM, 1948 (1952).....*Assistant Professor of Mathematics*
B.A., 1944, M.A., 1945, Ph.D., 1948, Illinois

BALLANTINE, JOHN PERRY, 1926 (1937).....*Professor of Mathematics*
A.B., 1918, Harvard; Ph.D., 1923, Chicago

BALLIS, WILLIAM BELCHER, 1948.....*Professor of Russian Government and Politics*
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.....*Associate Professor of Oceanography*
B.S., 1930, Ph.D., 1936, Washington

BARNOWE, THEODORE JOSEPH, 1947 (1951).....*Associate Professor of Policy,*
B.A., 1939, Morningside College; *Personnel Relations, and Production*
M.A., 1940, Ph.D., 1946, Washington

BARR, JOHN ALTON, 1947 (1949).....*Assistant Professor of Guidance*
B.S., 1936, M.A., 1938, Minnesota; Ph.D., 1948, Washington

BASKERVILLE, BARNET, 1948.....*Assistant Professor of Speech*
B.A., 1940, M.A., 1944, Washington; Ph.D., 1948, Northwestern

BEALE, JAMES MACARTHUR, JR., 1948.....*Assistant Professor of Music*
B.A., 1945, Harvard; B.Mus., 1946, M.Mus., 1947, Yale

BEAUMONT, ROSS ALLEN, 1940 (1948).....*Associate Professor of Mathematics*
A.B., 1936, M.S. 1937, Michigan; Ph.D., 1940, Illinois

BENNETT, H. STANLEY, 1948.....*Professor of Anatomy; Executive Officer of the*
A.B., 1932, Oberlin College; M.D., 1936, Harvard *Department of Anatomy*

BENSON, EDNA GRACE, 1927 (1936).....*Associate Professor of Art*
B.A., 1909, Iowa; M.A., 1923, Columbia

BERG, KENNETH BERNARD, 1950.....*Assistant Professor of Accounting*
B.S.C., 1939, North Dakota; M.S., 1941, Illinois

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

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 WYLAM, 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 University (Lwow, Poland)

BLANDAU, 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

BONE, HUGH ALVIN, 1948.....*Professor of American Government and Politics*
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)

BOROUGHS, 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

BRAZEAU, WENDELL PHILLIPS, 1945 (1950).....*Assistant 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

BREWER, STANLEY HAROLD, 1946 (1953).....*Associate Professor of Transportation*
B.A., 1942, M.B.A., 1943, Washington

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 (1948).....*Assistant 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

BROWNELL, 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, University of California *and Production*
at Los Angeles; 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.....*Instructor in German*
B.A., 1942, Amherst College; M.A., 1948, Yale

BURD, HENRY ALFRED, 1924 (1949).....*Professor of Marketing; Executive Officer*
B.S., 1910, Illinois Wesleyan; *of the Department of Marketing,*
M.A., 1911, Ph.D., 1915, Illinois *Transportation, and Foreign Trade*

BURKE, AGNES EVELYN, 1943 (1953).....*Associate Professor of Nursing*
R.N., 1930, Western Reserve; B.S., 1930, Akron Municipal; 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.....*Assistant 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 (1949)—*Associate Professor of Civil Engineering*
B.S. in C.E., 1934, Washington; M.S. in C.E., 1938, Massachusetts Institute of Technology

CANNON, ARTHUR MONROE, JR., 1947 (1951)—*Professor of Accounting, Finance, and Statistics*
B.S., 1933, M.A., 1947, Oregon; C.P.A., 1936, State of Oregon; C.P.A., 1936, State of Washington

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 Economics; Assistant Director of the Institute of Labor Economics*
A.B., 1940, M.A., 1942, Ph.D., 1950, Stanford

CHANG, KUN, 1951—*Instructor in Far Eastern and Slavic Languages and Literature*
B.A., 1938, National Tsinghua University (China); M.A., 1949, Yale

CHAPMAN, DOUGLAS GEORGE, 1949 (1953)—*Associate Professor of Mathematics*
B.A., 1938, B.A. (Hon.), 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; Executive Officer of the Department of Meteorology and Climatology*
B.S., 1923, Chicago; M.A., 1932, Ph.D., 1937, Clark

CLARK, KENNETH COURTWRIGHT, 1948—*Assistant 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 (1952)—*Professor of Politics and Public Law; Executive Officer of the Department of Political Science; Codirector of the Institute of Public Affairs*
B.Litt. in Law, 1924, Oxford (England); Ph.D., 1930, Harvard

COMISH, NEWEL WILLIAM, 1949—*Acting Assistant Professor of Marketing*
B.S., 1947, M.S., 1948, Oregon

CONWAY, JOHN ASHBY, 1927 (1950)—*Professor of Drama*
B.A., 1927, Carnegie Institute of Technology

COOMBS, HOWARD ABBOTT, 1934 (1952)—*Professor of Geology; Executive Officer of the Department of Geology*
B.S., 1929, M.S., 1932, Ph.D., 1935, Washington

COOPER, LEMUEL BROWNING, 1939 (1943)—*Assistant Professor of Mechanical Engineering*
B.S. in M.E., 1931, Washington

CORBALLY, JOHN EDWARD, 1927 (1948)—*Professor of Secondary Education; Director of Cadet Teaching*
B.A., 1918, Whitworth College; M.A., 1925, Ph.D., 1929, Washington

CORNU, MAX DONALD, 1928 (1953)—*Professor of English*
LL.B., 1922, M.A., 1926, Ph.D., 1928, Washington

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; Ph.D., 1939, Johns Hopkins *Languages*

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 Laboratories*

CROWELL, LAURA IRENE, 1949..... *Assistant 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, University of *of Economics*
California at Los Angeles

CULBERT, SIDNEY SPENCE, 1947 (1950)..... *Assistant Professor of Psychology*
B.A., 1943, Ph.D., 1950, Washington

CUTLER, RUSSELL KELSEY, 1946 (1952)..... *Associate Professor of Physical*
B.Ed., 1930, University of *Education; Executive Officer of the*
California at Los Angeles; *Department of Physical*
M.S., 1934, Oregon *Education for Men*

DANDLIKER, WALTER BEACH, 1951..... *Assistant Professor of Biochemistry*
B.S., 1940, Rollins College; Ph.D., 1945, California Institute of Technology

DANIELS, JOSEPH, 1911 (1923)..... *Professor of Mining Engineering and*
S.B., 1905, Massachusetts Institute of *Metallurgical Engineering*
Technology; M.S., 1908, E.M., 1933, Lehigh

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

DAVID, JEAN FERDINAND, 1936..... *Assistant Professor of Romance Languages*
B.A., 1929, M.A., 1932, Saskatchewan; Ph.D., 1936, Johns Hopkins

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 (1950)..... *Associate Professor of Mechanical*
B.A., 1936, East Texas State Teachers College; *Engineering*
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

DE MARSH, QUIN BERNARD, 1947..... *Assistant Professor of Anatomy;*
B.S., 1935, Washington; M.S., 1937, *Clinical Assistant Professor*
B.M., 1939, M.D., 1940, Northwestern *of Medicine*

DEMMERY, JOSEPH, 1928 (1949)..... *Professor of Business Fluctuations and Real*
Ph.B., 1920, *Estate; 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 Officer of the Department of Pharmacology*
B.S., 1930, M.S., 1933, Nebraska; Ph.D., 1935, Georgetown; M.D., 1946, Illinois

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 Washington Public Opinion Laboratory*
B.S., 1922, M.A., 1924, Ph.D., 1926, Princeton

DONALDSON, LAUREN RUSSELL, 1935 (1948)—*Professor of Fisheries; Director of the Applied Fisheries Laboratory*
A.B., 1926, Intermountain Union College; M.S., 1931, Ph.D., 1939, Washington

DORNBUSCH, SANFORD MAURICE, 1952—*Acting Assistant Professor of Sociology*
A.B., 1948, Syracuse; M.A., 1950, Ph.D., 1952, Chicago

DOUGLAS, HOWARD CLARK, 1941 (1950)—*Associate Professor of Microbiology*
A.B., 1936, Ph.D., 1949, California

DOWD, LAWRENCE PHILLIPS, 1950—*Acting Assistant Professor of Marketing*
B.A., 1938, Washington; M.A., 1940, Hawaii

DRAPER, EDGAR MARIAN, 1925 (1952)—*Professor of Curriculum; Director of In-Service Teacher Training*
A.B., 1916, M.A., 1925, Ph.D., 1926, Washington

DRESSLAR, MARTHA ESTELLA, 1918 (1937)—*Associate Professor of Home Economics*
B.A., 1913, Southern California; B.S., 1917, Washington; M.S., 1918, Columbia

DU PEN, EVERETT GEORGE, 1945 (1947)—*Assistant Professor of Art*
B.F.A., 1937, Yale

DVORAK, AUGUST, 1923 (1948)—*Professor of Education; Director of the Bureau of Admissions Research*
A.B., 1920, Ph.D., 1923, Minnesota

EARLE, FRANCES M., 1931 (1941)—*Associate Professor of Geography*
A.B., 1918, Winthrop College; M.S., 1926, Columbia; Ph.D., 1929, George Washington

EASTMAN, AUSTIN V., 1924 (1942)—*Professor of Electrical Engineering; Executive Officer of the Department of Electrical Engineering*
B.S. in E.E., 1922, M.S. in E.E., 1929, Washington

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 Anthropology*
B.A., 1934, M.A., 1935, Washington

EMERSON, DONALD EUGENE, 1946 (1953)—*Associate Professor of History*
A.B., 1937, Ph.D., 1942, Johns Hopkins; A.M., 1938, Columbia

ENGLE, NATHANAEL HOWARD, 1941—*Professor of Business Research; Director of the Bureau of Business Research*
A.B., 1925, A.M., 1926, Washington; 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—*Assistant Professor of Far Eastern and Slavic Languages and Literature*
M.A., 1937, Free Polish University (Warsaw, Poland)

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 Officer of the Department of Microbiology*
B.S., 1935, B.M., 1936, M.D., 1937, Ph.D., 1942, Minnesota

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

FARIS, ROBERT E. LEE, 1948—*Professor of Sociology*
Ph.B., 1928, M.A., 1930, Ph.D., 1931, Chicago

FARQUHARSON, FREDERICK BURT, 1925 (1945)—*Professor of Civil Engineering; Director of the Engineering Experiment Station*
B.S. in M.E., 1923, M.E., 1927, Washington

FARWELL, GEORGE WELLS, 1948—*Assistant Professor of Physics*
S.B., 1941, Harvard; Ph.D., 1948, Chicago

FERGUSON, GRACE BEALS, 1941 (1945)—*Professor of Medical 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, LOUIS, 1935 (1945)—*Professor of Pharmacy*
B.S., 1926, Ph.C., 1926, M.S., 1928, Ph.D., 1933, Washington

FLEAGLE, ROBERT GUTHRIE, 1948 (1951)—*Associate Professor of Meteorology and Climatology*
A.B., 1940, Johns Hopkins; M.S., 1944, Ph.D., 1949, New York

FLEMING, RICHARD HOWELL, 1951—*Professor of Oceanography; Executive Officer of the Department of Oceanography*
B.A., 1929, M.A., 1931, British Columbia; Ph.D., 1935, California

FOOTE, HOPE LUCILE, 1923 (1948)—*Professor of Art*
A.B., 1920, Iowa State Teachers College; M.A., 1923, Columbia

FOWLER, DAVID COVINGTON, 1952 (1953)—*Assistant Professor of English*
B.A., 1942, Florida; M.A., 1947, Ph.D., 1949, Chicago

FOX, WILLIAM MCNAIR, 1952—*Acting Assistant Professor of Policy, Personnel Relations, and Production*
B.B.A., 1948, M.B.A., 1948, Michigan

FRANZKE, ALBERT LEONARD, 1936 (1939)—*Associate Professor of Speech*
B.A., 1916, M.A., 1923, Lawrence College (Wisconsin)

FULLER, STEVEN D., 1946 (1953)—*Acting Assistant Professor of Art*
B.A., 1939, M.F.A., 1948, Washington

GADACZ, MARY AGNES, 1951—*Acting Assistant Professor of Nursing*
B.S., 1937, Minnesota

GANZER, VICTOR MARTIN, 1947 (1953)—*Professor of Aeronautical Engineering; Executive Officer of the Department of Aeronautical Engineering*
B.A., 1933, Augustana College (Illinois); B.S. in A.E., 1941, Washington

GARCIA-PRADA, CARLOS, 1925 (1939)—*Professor of Romance Languages and Literature*
Ph.B., 1918, Colegio Del Rosario (Bogotá, Colombia); M.A., 1924, Michigan; Ph.D., 1929, Universidad Nacional (Bogotá, Colombia)

GARFIELD, VIOLA EDMUNDSON, 1937 (1945)—*Assistant Professor of Anthropology*
B.A., 1928, M.A., 1931, Washington; 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 (1946)—*Assistant 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

GILLINGHAM, JOHN BENTON, 1947 ..... *Assistant Professor of Economics; Assistant Director of the Institute of Labor Economics*
A.B., 1939, Washington State College; M.A., 1941, Wisconsin

GOGGIO, CHARLES, 1920 (1936) ..... *Professor of Romance Languages and Literature*
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

GOLDSTEIN, BERNARD JON, 1952 ..... *Assistant Professor of Speech*
A.B., 1942, Brooklyn College; M.A., 1947, Ph.D., 1952, Columbia

GOODRICH, FOREST JACKSON, 1914 (1939) ..... *Professor of Pharmacy; Dean of the College of Pharmacy*
Ph.C., 1913, B.S., 1914, M.S., 1917, Ph.D., 1927, Washington

GOODSPEED, GEORGE EDWARD, 1919 (1934) ..... *Professor of Geology*
S.B., 1910, Massachusetts Institute of Technology

GORDON, DONALD FLEMMING, 1950 ..... *Assistant Professor of Economics*
B.A., 1944, Saskatchewan; M.A., 1946, Toronto; Ph.D., 1949, Cornell

GORDON, GUY GILBERT, 1949 (1953) ..... *Acting Assistant Professor of Marketing, Transportation, and Foreign Trade*
B.A., 1949, M.B.A., 1950, Washington

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

GROMAN, NEAL BENJAMIN, 1950 ..... *Instructor in Microbiology*
S.B., 1947, Ph.D., 1950, Chicago

GRONDAL, BROR LEONARD, 1913 (1929) ..... *Professor of Forestry*
A.B., 1910, D.Sc. (Hon.), 1943, Bethany College (Kansas); M.S.F., 1913, Washington

GRUMMEL, WILLIAM CHARLES, 1950 ..... *Assistant 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 Engineering*
B.S. in M.E., 1942, Lehigh

GUNTHER, ERNA, 1923 (1941) ..... *Professor of Anthropology; Executive Officer of the Department of Anthropology; Director of the Washington State Museum*
B.A., 1919, Barnard College; M.A., 1920, Ph.D., 1928, Columbia

GUSTAFSON, PAUL VICTOR, 1948 ..... *Assistant Professor of Microbiology*
B.S., 1936, Whitworth College; M.S., 1937, Ph.D., 1942, Illinois; M.D., 1947, Chicago

GUTHRIE, EDWIN RAY, 1914 (1928) ..... *Professor of Psychology; Dean Emeritus of the Graduate School*
B.A., 1907, M.A., 1910, Nebraska; Ph.D., 1912, Pennsylvania; LL.D. (Hon.), 1946, Nebraska

HAAGA, AGNES MARIE, 1952 ..... *Instructor in Drama*
B.A., 1936, Siena College (Tennessee)

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 ..... *Assistant 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

HALSEY, GEORGE DAWSON, JR., 1951 ..... *Assistant Professor of Chemistry*
B.S. in Ch.E., 1943, South Carolina; Ph.D., 1948, Princeton

HAMACK, FRANK HARTMOND, 1921 (1942) ..... *Lecturer in Accounting, Finance, and Statistics*
LL.B., 1916, Georgetown

HAMILTON, ALBERT CHARLES, 1952 ..... *Assistant Professor of English*
B.A., 1945, Manitoba; M.A., 1948, Toronto

HANAHAN, DONALD JAMES, 1948 (1949) ..... *Assistant Professor of Biochemistry*
B.S., 1941, Ph.D., 1944, Illinois

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

HANSON, KERMIT OSMOND, 1948 (1952) ..... *Associate Professor of Accounting, Finance, and Statistics; Associate Director of the Bureau of Business Research*
A.B., 1938, Luther College; M.S., 1940, Ph.D., 1950, Iowa State College

HARKINS, HENRY NELSON, 1947 ..... *Professor of Surgery; Executive Officer of the Department of Surgery*
B.S., 1925, M.S., 1926, Ph.D., 1928, M.D., 1931, Chicago

HARRINGTON, DONAL FRANCIS, 1938 (1952) ..... *Professor of Drama*
B.A., 1928, Montana; M.A., 1933, Columbia

HARRIS, EDISON 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)

HATCH, MELVILLE HARRISON, 1927 (1941) ..... *Professor of Zoology*
A.B., 1919, M.A., 1921, Ph.D., 1925, Michigan

HAYDEN, ALICE HAZEL, 1942 (1952) ..... *Professor of Education*
Ph.C., 1928, B.S., 1929, M.S., 1929, Oregon State; Ph.D., 1932, Purdue

HAYNE, DONALD FRANCIS, 1950 ..... *Acting Assistant 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 Clinical Psychologist in the Counseling Center*
B.A., 1933, Washington; Ph.D., 1940, Yale

HECHTMAN, ROBERT AARON, 1949 (1953) ..... *Professor of Civil Engineering*
B.S. in C.E., 1938, M.S. in C.E., 1939, Washington; Ph.D., 1948, Illinois

HEILMAN, ROBERT BECHTOLD, 1948 ..... *Professor of English; Executive Officer of the Department of English*
A.B., 1927, Lafayette College; M.A., 1930, Ohio; M.A., 1931, Ph.D., 1935, Harvard

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

HENDERSON, JOSEPH EDMONDS, 1929 (1947) ..... *Professor of Physics; Director of the Applied Physics Laboratory*
B.S., 1922, College of Wooster; Ph.D., 1928, Yale

HENDRICKSON, HAROLD MARTIN, 1949 (1950) ..... *Associate Professor of Mechanical Engineering*
B.S. in M.E., 1927, M.E., 1935, Washington

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 (1953) ..... *Associate Professor of Accounting, Finance, and Statistics*
A.B., 1938, M.A., 1940, Ph.D., 1952, University of California at Los Angeles

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

HENSLEY, MERDECES HOOVER, 1939 (1952)—*Lecturer in Art*
B.F.A., 1930, M.F.A., 1938, Washington

HEWITT, EDWIN, 1948 (1950)—*Associate 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

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

HIXSON, WILLIAM JOHN, 1950—*Instructor in 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; M.N., 1941, Washington

HOLT, W. STULL, 1940—*Professor of History; Executive Officer of the*
A.B., 1920, Cornell; Ph.D., 1926, Johns Hopkins *Department of History*

HOLZMAN, FRANKLYN DUNN, 1952—*Assistant Professor of Economics*
A.B., 1940, North Carolina; M.A., 1948, Ph.D., 1952, Harvard

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, Ph.D., *Executive Officer of the Department of*
1932, Princeton *Correspondence Study*

HOWERY, VICTOR I., 1952 (1953)—*Professor in the Graduate School of Social*
B.S., 1941, State Teachers College *Work; Director of the Graduate*
(Platteville, Wisconsin); Ph.M., 1946, *School of Social Work*
M.S., 1948, Ph.D., 1949, Wisconsin

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; M.A., *of the Department of Economics*
1933, Ph.D., 1937, Princeton

HUDSON, G. 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—*Assistant Professor of Biochemistry*
B.S., 1943, Ph.D., 1948, California

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., 1932, Western Reserve

ILLG, PAUL LOUIS, 1952—*Assistant Professor of Zoology*
A.B., 1936, M.A., 1941, California

INOUE, SHINYA, 1951 ..... *Instructor in Anatomy*
B.A., 1944, Tokyo (Japan); Ph.D., 1951, Princeton

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; Director of the School of Art*
B.S.F.A., 1909, James Millikin

JACOBS, MELVILLE, 1928 (1952) ..... *Professor of Anthropology*
A.B., 1922, College of the City of New York; A.M., 1923, Ph.D., 1931, Columbia

JACOBSOHN, BORIS ABBOTT, 1948 ..... *Assistant 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)

JACOBSON, FREDERIC 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

JANSEN, MARIUS BERTHUS, 1950 ..... *Assistant 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 Education*
A.B., 1920, Earlham College; M.A., 1924, Iowa

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, Finance, and Statistics*
B.B.A., 1924, Washington

JOHNSON, ROBERT JOSEPH, 1946 (1951) ..... *Associate Professor of Anatomy*
M.D., 1943, Iowa

JOHNSON, WALTER GILBERT, 1948 (1949) ..... *Associate Professor of Scandinavian Languages and Literature*
B.A., 1927, Augsburg College; M.A., 1929, Minnesota; Ph.D., 1935, Illinois

JONES, ERNEST MORGAN, 1945 ..... *Professor of Operative Dentistry; Dean of the School of Dentistry*
D.D.S., 1916, Northwestern

KAHN, ROBERT LUDWIG, 1948 (1950) ..... *Instructor in German*
B.A., 1944, M.A., 1945, Dalhousie (Nova Scotia); Ph.D., 1950, Toronto

KATCHER, ALLAN, 1951 ..... *Assistant Professor of Psychology*
B.S., 1946, Michigan; M.A., 1949, College of the City of New York

KATZ, SOLOMON, 1936 (1950) ..... *Professor of History*
A.B., 1930, Ph.D., 1933, Cornell

KELLER, ABRAHAM CHARLES, 1948 (1952) ..... *Associate Professor of Romance Languages and Literature*
B.S., 1936, A.B., 1936, M.A., 1937, Ohio; 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 ..... *Acting Assistant Professor of Accounting, Finance, and Statistics*
B.Ed., 1944, State Teachers College (Whitewater, Wisconsin)

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

KINSCELLA, 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

KIRCHHOFF, PAUL, 1947 (1953) ..... *Professor of Anthropology and Far Eastern and Slavic Languages and Literature*
Ph.D., 1931, Leipzig (Germany)

KLEIN, HAROLD PAUL, 1951 ..... *Instructor in Microbiology*
B.A., 1942, Brooklyn College; Ph.D., 1950, California

KOKORIS, LOUIS A., 1952 ..... *Instructor in Mathematics*
S.B., 1947, S.M., 1948, Chicago

KREBS, EDWIN GERHARD, 1948 (1952) ..... *Associate Professor of Biochemistry*
B.S., 1940, Illinois; M.D., 1943, Washington University (St. Louis)

KRUCKEBERG, ARTHUR RICE, 1950 ..... *Instructor in Botany*
B.A., 1941, Occidental College; Ph.D., 1950, California

KRUPSKI, EDWARD, 1944 (1949) ..... *Assistant 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., 1938, B.S.D., 1938, M.S., 1941, Northwestern

LEAHY, KATHLEEN MABEL, 1927 (1949) ..... *Professor of Nursing; Director of Public Health Nursing*
R.N., 1921, Stanford; A.B., 1926, C.P.H.N., 1927, Oregon; M.S., 1931, Washington

LEIPNIK, ROY BERGH, 1950 ..... *Assistant Professor of Mathematics*
S.B., 1945, S.M., 1948, Chicago

LEPPARD, HENRY MILTON, 1951 ..... *Visiting Professor of Geography*
B.A., 1919, Queen's University (Ontario); Ph.D., 1928, Chicago

LEWIS, LAUREL JONES, 1946 (1949) ..... *Associate 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

LOOMIS, TED ALBERT, 1947 (1949) ..... *Associate Professor of Pharmacology*
B.S. in Pharm., 1939, Washington; M.S., 1941, Ph.D., 1943, Buffalo; M.D., 1946, Yale

LORIG, ARTHUR NICHOLAS, 1934 (1949) ..... *Professor of Accounting*
B.A., 1922, Wisconsin; M.A., 1932, Stanford; Ph.D., 1936, Chicago; C.P.A., 1927, 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 (1950) ..... *Instructor in Drama*
A.B., 1946, Western Reserve

LUCAS, HENRY STEPHEN, 1921 (1934) ..... *Professor of History*
A.B., 1913, Olivet College; A.M., 1915, Indiana; Ph.D., 1921, Michigan

LUNDBERG, GEORGE ANDREW, 1945 ..... *Professor of Sociology; Executive Officer of the Department 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 ..... *Supervisor of Field Work in Social Work*
B.A., 1936, Washington

MACKENZIE, DONALD HECTOR, 1929 (1948) ..... *Professor of Accounting; Executive Officer of the Department of Accounting, Finance, and Statistics*
B.B.A., 1925, M.B.A., 1925, Washington; C.P.A., 1933, State of Washington

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., 1948, B.Med., 1948, Oxford (England)

MAKI, JOHN MCGILVREY, 1939 (1950) ..... *Associate Professor of Japanese Government and Politics*
B.A., 1932, M.A., 1936, Washington; 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 (1948) ... *Professor of Political Science; Codirector of the Institute of International Affairs*
B.A., 1917, M.A., 1920, Adelaide (Australia)

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

MARCKWORTH, GORDON DOTTER, 1939 (1945) *Professor of Forestry; Dean of the College of Forestry*
B.S.F., 1916, Ohio; M.F., 1917, Yale

MARTIN, ARTHUR WESLEY, JR., 1937 (1950) ..... *Professor of Physiology; Executive Officer of the Department of Zoology*
B.S., 1931, College of Puget Sound; Ph.D., 1936, Stanford

MARTIN, CHARLES EMANUEL, 1924 (1948) ..... *Professor of Political Science; Codirector of the Institute of International Affairs*
B.Litt., 1914, M.A., 1915, California; Ph.D., 1918, Columbia; LL.D., (Hon.), 1942, 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 (1950) ..... *Assistant Professor of Geography*
B.A., 1937, M.A., 1944, Washington

MASON, ALDEN C., 1946 (1952) ..... *Assistant Professor of Art*
B.A., 1942, M.F.A., 1947, Washington

MATHEWS, JACKSON, 1949 (1953) ..... *Professor of English*
A.B., 1928, M.A., 1931, Georgia; Ph.D., 1946, Columbia

MATSON, WALLACE IRVING, 1950 ..... *Assistant Professor of Philosophy*
A.B., 1942, M.A., 1948, Ph.D., 1949, California

MCADAMS, LAURA ELIZABETH, 1941 (1951) ..... *Associate Professor of Home Economics*
B.S., 1923, M.S., 1932, Kansas State College

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 Chemistry*
B.S., 1943, Massachusetts Institute of Technology; Ph.D., 1949, Indiana

MCCLAIN, ERNEST PAUL, 1950 ..... *Acting Instructor in Meteorology and Climatology*
M.S., 1950, Chicago

MCCULLOUGH, WILLIAM HAYWORTH, 1943 (1951) ..... *Associate Professor of Social Work*
A.B., 1932, DePauw; A.M., 1940, Chicago

McDIARMID, JOHN BRODIE, 1949—*Associate Professor of Classics; Executive Officer of the Department of Classics*
B.A., 1936, Toronto; Ph.D., 1940, Johns Hopkins

McDONALD, DONALD FIEDLER, 1949 (1952)—*Assistant Professor of Surgery; Head of Division of Urology*
M.D., 1942, Chicago

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 of General Business*
Ph.B., 1948, Marquette; M.B.A., 1950, Columbia

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 Eastern and Slavic Languages and Literature*
A.B., 1947, A.M., 1949, Harvard

McLELLAN, HELEN, 1937 (1945)—*Associate Professor of Physical Education*
B.S., 1930, Wisconsin; M.A., 1931, Columbia

McMINN, BRYAN TOWNE, 1920 (1946)—*Professor of Mechanical Engineering; Executive Officer of the Department of Mechanical Engineering*
B.S. in M.E., 1918, Oregon State; M.S. in M.E., 1926, M.E., 1931, Washington

MEEUSE, BASTIAAN JACOB DIRK, 1952—*Assistant Professor of Botany*
B.Sc., 1936, Leiden (Holland); Dr., 1943, Delft (Holland)

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

MERENDINO, K. ALVIN AURELIUS, 1948—*Associate Professor of Surgery*
B.A., 1936, Ohio; M.D., 1940, Yale; Ph.D., 1946, Minnesota

MEYER, HERMAN CARL HENRY, 1934 (1942)—*Associate Professor of Germanic Languages*
B.A., 1924, Capital; Ph.D., 1936, Chicago

MICHAEL, FRANZ H., 1942 (1948)—*Professor of Far Eastern History and Government; Assistant Director of the Far Eastern and Russian Institute*
Dr.Jur., 1933, Freiburg (Germany)

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

MILLS, BLAKE DAVID, JR., 1946 (1947)—*Professor of Mechanical Engineering*
B.S. in M.E., 1934, B.S. in E.E., 1934, Washington; S.M. in M.E., 1935, Massachusetts Institute of Technology; M.E., 1947, Washington

MISCH, PETER H., 1947 (1950)—*Professor of Geology*
D.Sc., 1932, Goettingen (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; Director of Graduate Dental Education; Executive Officer of the Department of Orthodontics*
D.D.S., 1941, California; M.S., 1948, Illinois

MORGAN, TIRZAH MAY, 1949—*Acting Assistant Professor of Nursing*
R.N., 1938, B.S., 1938, California; M.A., 1946, Columbia

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

MOSELEY, SPENCER ALTEMONT, 1948 (1951)..... *Instructor in 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 (1951)..... *Associate 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

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 of the*
Ph.D., 1933, University of Vienna *Department of Biochemistry*

NORDQUIST, WILLIAM BERTIL, 1947 (1949)..... *Assistant 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, California

NOSTRAND, HOWARD LEE, 1939..... *Professor of Romance Languages and*
B.A., 1932, Amherst College; A.M., *Literature; Executive Officer of the*
1933, Harvard; Docteur, 1934, *Department of Romance Languages*
Université de Paris (France) *and Literature*

ODOR, D. LOUISE, 1950..... *Instructor in Anatomy*
B.A., 1945, American University; M.S., 1948, Ph.D., 1950, Rochester

OGILVIE, 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

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*

OSTERUD, KENNETH LELAND, 1949..... *Assistant Professor of Zoology*
B.A., 1935, Randolph-Macon College; Ph.D., 1941, New York

PALMER, CHESTER LEROY, 1950 (1951)..... *Assistant Professor of Physical Education*
B.S., 1942, Rice Institute; A.M., 1949, Ed.D., 1951, Columbia

PALMER, JOHN MILTON, 1952 (1953)..... *Acting Assistant Professor of Speech*
B.A., 1946, M.A., 1950, Washington; Ph.D., 1952, Michigan

PATTERSON, LILLIAN BEATRICE, 1945 (1952)..... *Professor of Nursing; Dean of*
R.N., 1923, Presbyterian Hospital, Chicago; *the School of Nursing*
B.A., 1941, M.A., 1943, Washington

PATTERSON, VIOLA HANSEN, 1947 (1953)..... *Acting Assistant Professor of Art*
B.A., 1921, 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 Forestry*
B.S.F., 1921, Washington

PECK, CHARLES ELWIN, 1951..... *Assistant Professor of Marketing, Transportation,*
B.A., 1935, Wichita; M.A., 1947, Ph.D., 1950, Iowa *and Foreign Trade*

PENCE, ORVILLE LEON, 1941 (1946)..... *Assistant Professor of Speech*
B.A., 1935, M.A., 1939, Washington; Ph.D., 1946, Iowa

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

PERUZZI, EMILIO GIOVANNI, 1952..... *Assistant Professor of Romance Languages*
Dr., 1947, Florence (Italy) *and Literature*

PETERSON, RAYMOND PAUL, JR., 1950 (1952)... *Assistant Professor of Mathematics*
B.A., 1947, M.A., 1948, Ph.D., 1950, University of California at Los Angeles

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., 1929, 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)

PORTERFIELD, JAMES TEMPLE S., 1952 (1953)..... *Acting Assistant Professor*
A.B., 1942, California; *of Marketing, Transportation, and*
M.B.A., 1948, Stanford *Foreign Trade*

POWELL, SARGENT GASTMAN, 1919 (1943)..... *Professor of Chemistry*
B.S., 1916, 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 (1950)..... *Assistant Professor of History*
A.B., 1940, A.M., 1941, Ph.D., 1949, Harvard

RABINOVITCH, BENTON SEYMOUR, 1948 (1953)..... *Associate Professor of Chemistry*
B.S., 1939, Ph.D., 1942, McGill

RABINOWITZ, WILSON GERSON, 1948 (1951)..... *Acting Assistant Professor*
A.B., 1940, California *of Classics*

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 Officer of*
A.B., 1920, Willamette; M.A., 1927, *the Department of Speech*
Ph.D., 1935, Iowa

RATTRAY, MAURICE, JR., 1950..... *Assistant Professor of Oceanography*
B.S., 1944, M.S., 1947, 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

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*

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 (1948) ..... *Associate Professor of Far Eastern and Slavic*
Dr. Rer. Pol., 1931, Vienna (Austria) *Languages and Literature*

REISS, GRACE DEWEY, 1945 ..... *Lecturer and Supervisor of Field Work in*
B.A., 1932, Iowa; M.A., 1940, Minnesota *Social Work*

REY, WILLIAM HENRY, 1950 ..... *Assistant Professor of Germanic Languages*
Ph.D., 1937, Frankfurt (Germany) *and Literature*

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.G., 1924, B.S., 1924, Oregon State; 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

ROBERTSON, JAMES CAMPBELL H., 1945 ..... *Associate Professor of Forestry*
B.S.F., 1927, Washington; M.S.F., 1933, California; Dr. F., 1947, Duke

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, 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,*
B.B.A., 1934, Washington *Finance, and Statistics*

ROMAN, HERSCHEL LEWIS, 1942 (1952) ..... *Professor of Botany*
A.B., 1936, Ph.D., 1942, Missouri

ROOSEN-RUNGE, EDWARD RUDOLF C., 1952 ..... *Assistant Professor of Anatomy*
M.D., 1936, Hamburg (Germany)

ROSINBUM, RALPH RAMBO, 1948 (1953) ..... *Assistant Professor of Music*
B.A., 1947, M.A., 1948, Washington

ROWE, EDWARD A., 1948 (1949) ..... *Associate Professor of Mineral Engineering*
B.S., 1935, M.S., 1939, Ph.D., 1948, Michigan State College

ROWNTREE, JENNIE IRENE, 1925 (1946) ..... *Professor of Home Economics;*
B.S., 1918, Wisconsin; M.S., 1925, *Director of the School of Home*
Chicago; Ph.D., 1929, Iowa *Economics*

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*
B.S., 1936, M.D., 1939, Chicago *and Biophysics*

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 Languages*
B.A., 1928, M.A., 1930, Buffalo; Ph.D., 1936, Cornell *and Literature*

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

SCHALLERT, WILLIAM LOUIS, 1951..... *Acting Assistant Professor of Meteorology*
B.S., 1938, State Teachers College (LaCrosse, Wisconsin)

SCHER, ALLEN MYRON, 1950..... *Instructor in Physiology and Biophysics*
B.A., 1942, Ph.D., 1951, Yale

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, Washington

SCHRIEBER, ALBERT NATHAN, 1948 (1951)..... *Associate Professor of Policy,*
B.S. in M.E., 1938, Illinois Institute of *Personnel Relations, and Production*
Technology; M.B.A., 1947, Harvard

SCHUBERT, WOLFGANG MANFRED, 1947 (1949)..... *Assistant 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

SHERMAN, JOHN CLINTON, 1942 (1948)..... *Assistant 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 University (China); *Slavic Languages*
M.A., 1930, Yenching University (China); *and Literature*
Ph.D., 1939, Southern California

SHIPMAN, GEORGE ANDERSON, 1946 (1948)..... *Professor of Political Science;*
B.A., 1925, M.A., 1926, Wesleyan *Codirector of the Institute of*
University (Connecticut); Ph.D., 1931, Cornell *Public Affairs*

SIKS, 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*
A.B., 1920, M.A., 1924, Ph.D., 1928, Washington *Languages and Literature*

SIMPSON, WILLIAM TRACY, 1948 (1949)..... *Assistant 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 GOODSELL, 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, College of the City 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 German*
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*
M.A., 1926, Northwestern; Ph.D., 1928, Chicago *Languages and Literature*

STANTON, WILLIAM JOHN, 1948 (1951)..... *Associate Professor of Marketing*
B.S., 1940, Lewis Institute (Illinois); M.B.A., 1941,
Ph.D., 1948, Northwestern

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

STIBBS, GERALD DENIKE, 1948 ..... *Professor of Operative Dentistry; Executive*
B.S., 1931, *Officer of the Departments of Operative Dentistry and*
D.M.D., Oregon *Fixed Partial Dentures; Director of the Dental Operatory*

STIRLING, BRENTS, 1932 (1949) ..... *Professor of English*
LL.B., 1926, Ph.D., 1934, Washington

STOKE, HAROLD W., 1951 ..... *Professor of Political Science; Dean of the*
B.A., 1924, Marion College; M.A., 1925, Southern *Graduate School*
California; Ph.D., 1930, Johns Hopkins; LL.D., (Hon.) 1946, Maine

STOUT, THOMAS MELVILLE, 1948 (1953) ..... *Assistant Professor of Electrical*
B.S. in E.E., 1946, Iowa State College; M.S.E., 1947, Michigan *Engineering*

STRAYER, GEORGE DRAYTON, JR., 1949 ..... *Professor of Education*
B.S., 1927, Princeton; M.A., 1928, Ph.D., 1934, Columbia

STREET, ROBERT ELLIOTT, 1948 (1949) ..... *Associate Professor of Aeronautical*
B.S., 1933, Rensselaer Polytechnic Institute; *Engineering*
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 Policy, Personnel*
A.B., 1934, Harvard; M.A., 1942, Washington *Relations, and Production*

SVIHLA, ARTHUR, 1938 (1943) ..... *Professor of Zoology*
A.B., 1925, Illinois; M.S., 1928, Ph.D., 1931, Michigan

SWARM, H. MYRON, 1947 (1951) ..... *Assistant Professor of Electrical Engineering*
B.S. in E.E., 1940, Washington

TAKANO, WILLIAM SHIGERU, 1950 ..... *Instructor in Orthodontics*
D.D.S., 1949, Marquette; M.S., 1950, Washington

TAYLOR, GEORGE EDWARD, 1939 (1946) ..... *Professor of Far Eastern History and*
A.B., 1927, *Politics; Executive Officer of the Department of Far*
A.M., 1928, *Eastern and Slavic Languages and Literature; Director*
Birmingham (England) *of the Far Eastern and Russian Institute*

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 Forestry*
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

TIDWELL, MELVIN FRED, 1948 ..... *Associate Professor of General Business*
B.S., 1933, Oklahoma Southwestern Institute of Technology; M.A., 1936,
Oklahoma Agricultural and Mechanical College; Ed.D., 1947, Stanford

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*
B.S., 1928, Washington; M.A., 1930, Columbia *Education*

TREADGOLD, DONALD WARREN, 1949 ..... *Assistant Professor of Russian History;*
B.A., 1943, Oregon; M.A., 1947, Harvard; *Assistant Professor of History*
D. Phil., 1950, Oxford (England)

TSCHUDIN, MARY STICKELS, 1942 (1948)—*Associate Professor of Nursing; Assistant Dean of the School of Nursing*
R.N., 1935, B.S., 1935, M.S., 1939, Washington

TSUTAKAWA, GEORGE, 1946 (1952)—*Assistant Professor of Art*
B.A., 1937, M.F.A., 1950, Washington

TURBAYNE, COLIN MURRAY, 1950—*Assistant Professor of Philosophy*
B.A., 1940, M.A., 1947, Queensland (Australia); Ph.D., 1950, Pennsylvania

TURNBULL, FLORENCE LOUISA, 1952—*Assistant Professor of Home Economics*
B.Sc., 1943, Manitoba; M.S., 1945, Minnesota

TYLER, RICHARD GAINES, 1929—*Professor of Civil Engineering*
C.E., 1908, Texas; B.S. in C.E., 1910, Massachusetts Institute of Technology

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, Ph.D., 1942, Chicago; A.M., 1935, Harvard

UTTERBACK, CLINTON LOUIS, 1918 (1934)—*Professor of Physics*
B.S., 1908, Purdue; M.S., 1918, Washington; Ph.D., 1926, Wisconsin

VAIL, CURTIS CHURCHILL 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-BARON, ANIBAL, 1949—*Associate Professor of Romance Languages and Literature*
B.A., 1926, Asbury College; M.A., 1929, Ph.D., 1943, Washington

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—*Associate Professor of Marketing, Transportation, and Foreign Trade*
B.A., 1938, Washington; M.A., 1940, Minnesota

WALKER, LAUREN MCNEAL, 1946 (1953)—*Associate Professor of Accounting, Finance, and Statistics*
B.A., 1939, C.P.A., M.B.A., 1943, Washington

WALKER, RICHARD BATTSON, 1948 (1950)—*Assistant Professor of Botany*
B.S., 1938, Illinois; Ph.D., 1948, California

WARD, ARTHUR ALLEN, JR., 1948 (1949)—*Associate Professor of Surgery; Head of the Division of Neurosurgery*
B.A., 1938, M.D., 1942, Yale

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

WATSON, WARREN KENNETH, 1948 (1952)—*Assistant Professor of Mechanical Engineering*
B.S. in M.E., 1943, Washington State College

WEBSTER, DONALD HOPKINS, 1939 (1948)—*Professor of Political Science; Director of the Bureau of Governmental Research and Services and the Bureau of Municipal Research and Services*
B.A., 1929, LL.B., 1931, Ph.D., 1933, Washington

WEIKEL, RAYMOND CHESTER, 1948—*Assistant Professor of Aeronautical Engineering*
A.B., 1932, Wabash College; A.M., 1939, Illinois

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 (1948)—*Assistant Professor of Fisheries*
B.S., 1934, M.S., 1940, Ph.D., 1946, Washington

WEST, THEODORE CLINTON, 1949 ..... *Instructor in Pharmacology*
B.S., 1948, M.S., 1949, Washington

WHEELER, BAYARD O., 1948 (1953) ..... *Professor of General Business*
A.B., 1928, Ph.D., 1942, California; M.A., 1930, Washington

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

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*
Ph.D., 1932, Berlin (Germany) *Slavic Languages and Literature*

WILKIE, RICHARD FRANCIS, JR., 1942 (1948) ..... *Assistant Professor of Germanic*
B.A., 1934, M.A., 1936, Washington *Languages and Literature*

WILLIAMS, CURTIS TALMADGE, 1920 (1936) ..... *Professor of Education*
A.B., 1913, Kansas State Normal School; M.A., 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 and Literature*

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*
M.S., 1936, Wisconsin *Education for Women*

WILSON, WILLIAM CHARLES EADE, 1926 (1947) ..... *Professor of Romance*
B.A., 1922, Montana; M.A., 1925, *Languages and Literature*
Ph.D., 1928, 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

WOODBURY, J. WALTER, 1950 (1953) ..... *Assistant Professor of Physiology*
B.S., 1943, M.S., 1947, Ph.D., 1950, Utah *and Biophysics*

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

YOUNG, ALLEN CHARLES, 1949 (1951) ..... *Assistant Professor of Physiology*
B.A., 1930, M.A., 1932, British Columbia; *and Biophysics*
Ph.D., 1934, Toronto

YOUNG, HARRY ALLEN, 1948 ..... *Professor of Prosthodontics; Executive Officer*
D.D.S., 1919, Indiana *of the Department of Prosthodontics*

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

ZETLIN, EMMANUEL ROMAN, 1947 ..... *Professor of Music*
B.A., 1916, Imperial Conservatory (Petrograd, Russia); Dr. of Mus. (Hon.),
1936, Washington College of Music (Washington, D.C.)

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 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 eighty 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 2.5, during the senior year will, if the student is admitted, result in provisional standing. No student with a grade-point average of less than 2.5 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.

All applicants must submit two official transcripts of all undergraduate work and of any graduate work. It is the student's responsibility to make sure that credentials covering all of his previous education are forwarded to the Registrar. To be official, they must be mailed by the registrars of institutions previously attended directly to the Registrar of the University. These records become part of the permanent file and may not be returned to the student.

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 and credentials is August 28, 1953, or August 27, 1954. For admission in other quarters, applications and credentials should be submitted at least thirty days before the opening of the quarter. It is important that students observe these dates 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.

The University can accept no responsibility for applicants who come to the campus before their credentials have been forwarded and approved, or before they have been notified of acceptance.

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 DEGREES

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.

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 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 on the day of their appointments. Students expecting to return to the University after an absence of a quarter or more (excluding Summer Quarter) can obtain registration appointments by writing or telephoning the Registrar's Office at the time specified in the Calendar (see page 4).

Students in residence can obtain appointments at the time announced on campus each quarter.

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 in the 400's, 500's, and 600's can be taken for graduate credit in the major field. Courses numbered in the 300's 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 by permission of the Dean of the Graduate School. Students admitted to Graduate School may, under special conditions, register during the second week of the quarter upon payment of a late registration fee of $5.

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 not more than 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 $1,500 for a nine-month period. Predoctoral associates are exempt from tuition and incidental fees, and 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 $135 a month. These appointments provide exemption from tuition and incidental fees, and 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 $135 a month. These appointments provide exemption from tuition and incidental fees, and 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 Chemistry, 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.

Veterans who are accepted for entrance to the Graduate School 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 two months before 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 consult a Veterans Administration regional office at least one month before the beginning of the quarter. 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, because allowances are not made until after monthly attendance is established.

Principal fees for each quarter (Autumn, Winter, and Spring) are listed below.

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

Advanced-degree students in 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.

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 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.

Incidental Fee, per quarter

Full-time students — 21.50

Part-time students (registered for 6 credits or less) — 7.00

Auditors do not pay an incidental fee; there are no other exemptions.

Thesis Only Fee — 21.50

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 (for ASUW members, optional), per year — 5.00

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

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; the 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

A fee of $2 is charged for each change of registration; $5 for a late medical examination; and $1 for a late X ray. The fee for a special examination is $1; and for removal of an Incomplete, $2.

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.

ESTIMATE OF YEARLY EXPENSES

The figures given below are minimum estimates for an academic year, which includes Autumn, Winter, and Spring Quarters. Special charges and the cost of books and supplies vary according to the course program and may change from year to year. 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
Athletic Admission Ticket (optional)	5.00
Accident Insurance (optional)	4.95
Books and Supplies	75.00
Board and Room	
Double room in campus temporary dormitory, with meals in University Commons and Student Union Cafeteria, or double room and meals in Men's Residence Hall	500-570.00
Room and meals in Women's Residence Halls—single, $600.00; double	525.00
Room and meals in student cooperative house	445-460.00
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 to the association's executive committee for action.

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 also has 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 him. Students 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, which is scheduled for completion in the fall of 1953, 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, provides housing for men and women.

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 SERVICES

The University Health Center helps to guard against infectious diseases and incipient ill health. Treatment is available for most cases of illness. A dispensary serves students during class hours, and an infirmary receives bed patients at any hour. Infirmary patients receive nursing care, medicine, and the attendance of a staff doctor up to one week each quarter without charge; after the first week, the cost is $2 a day. At their own expense, patients may consult any licensed physician in good standing.

To supplement the protection of the Health Center, the ASUW and the Board of Regents have approved a student accident insurance plan. This low-cost group policy is underwritten by a private insurance company and provides twenty-four-hour coverage up to $500 for accidental injuries sustained on or off campus. Participation is optional. Detailed information about quarterly cost and limits of coverage is given to students during registration.

PLACEMENT

Part- and full-time work off campus may be obtained through the University Placement Office. Placement services are available to students and graduates of the University and to the wives and husbands of University students. Application should be made in person after residence in Seattle has been established.

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 Office of Nonacademic Personnel.

Working students must be sure to correlate their employment with Graduate School regulations governing study loads (see Registration, page 32).

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, Chinese, classics, drama, economics, English, Far Eastern and Russian studies, fisheries, general literature, geography, geology, Germanic languages, history, home economics, linguistics, mathematics, meteorology, music, oceanography, philosophy, physical education, physics, political science (including public administration), psychology, Romance languages, Russian, Scandinavian languages, 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.* An interdepartmental program in *Urban Planning* is administered by a Graduate School committee.

Programs leading to the Doctor of Philosophy degree are offered through the following schools and colleges: *Arts and Sciences:* anthropology, botany, chemistry, Chinese, economics, English, fisheries, general and comparative literature, geography, geology, Germanic languages, history, linguistics, mathematics, meteorology, oceanography, philosophy, physics, political science, psychology, Romance languages, sociology, and zoology; *Education; Engineering:* chemical and electrical engineering; *Forestry; Medicine:* anatomy, biochemistry, microbiology, pharmacology, and physiology and biophysics; and *Pharmacy.*

A program leading to the degree of Doctor of Commercial Science 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 Uni-

versity 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.

COURSE CREDIT

Courses numbered 500 and above are intended for and restricted to graduate students. Those numbered in the 300s and 400s are open both to graduates and to upper-division undergraduates. These courses, when acceptable to the major department and the Graduate School, may be part of the graduate program. The Graduate School accepts credit in 300 courses for the minor or supporting fields only; 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 Dean of the Graduate School and the instructor of the class.

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 not be more than 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.

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. 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 Commercial Science and the Doctor of Education 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 not be more than 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.

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 is approved by the Graduate School only after the prescribed requirements of residence and study have been met.

After receiving the approved warrant, the department notifies the Graduate School of the time, place, and manner of the general examination. 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 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 Library, and if he wishes he may apply for a copyright. Publication in microfilm does not preclude other forms of publication.

COLLEGE OF ARTS AND SCIENCES

Dean: LLOYD S. WOODBURNE, 122 Thomson Hall

ANTHROPOLOGY

Executive Officer: ERNA GUNTHER, 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.

As part of the graduate offering a field school is being established at La Paz, Baja California, in conjunction with La Escuela Nacional de Antropología y Historía de México. Arrangements have been made for a coordinated program consisting of the following courses: 501, 523, 571, and 581.

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

310	**North American Indians (3)**	**Gunther**
312	**Peoples of Oceania (3)**	**Elmendorf**
313	**Peoples of Africa (3)**	**Staff**
314	**Peoples of Central and Northern Asia (3)**	**Kirchhoff**
315	**Native Peoples of Latin America (3)**	**Massey**
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)** (Offered alternate years; offered 1953-54.)	**Staff**
380	**Primate and Human Evolution (3)**	**Hulse**
390	**Introduction to Anthropology (5)**	**Gunther**
411	**Indian Cultures of the Pacific Northwest (3)**	**Garfield**
413	**Aboriginal Peoples of Australia (3)**	**Staff**
417	**Middle American Civilization (2)**	**Kirchhoff**
431	**Primitive Literature (3)**	**Garfield**
432	**Magic, Religion, and Philosophy (3)**	**Elmendorf**
433	**Primitive Art (3)**	**Gunther**

435, 436 Early Economic Systems (3,3) — **Massey**

437 Primitive Social and Political Institutions (3) — **Staff**

441 Culture and Personality (5) — **Jacobs**

442 Socialization of the Child in Primitive Cultures (3) — **Staff**

450J Introduction to General Linguistics (5) — **Jacobs, Reed**

451 American Indian Languages (3) — **Jacobs**
(Not offered 1953-54.)

460 History of Anthropological Theory (2) — **Jacobs**

480, 481, 482 Physical Anthropology (3,3,3) — **Staff**

501 Laboratory Analysis of Field Data (2) — **Staff**
(Offered at La Paz Field School only.)

505 Field Techniques in Ethnography (3) — **Gunther**

511 Cultural Problems of the Northwest Coast (3) — **Garfield**

519J Seminar on Asia (3) — **Wilhelm, Kirchhoff, Staff**
The large cultural regions of the continent are studied in succession with special reference to anthropological problems. Offered jointly with the Far Eastern and Russian Institute.

521 Native American Culture History (4) — **Kirchhoff**
A historical interpretation of the geographical distribution of critical aspects of North and South American Indian cultures.

522 Cultural Problems of Western America (3) — **Elmendorf**

523 Colloquium on Arid America (5) — **Staff**
(Offered at La Paz Field School only.)

525 Seminar in Culture Processes (3) — **Staff**

531 Analysis of Oral Literature (3) — **Garfield**

542 Personality Patterns in Japanese Culture (3) — **Staff**

551 Field Techniques in Linguistics (3) — **Staff**

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) — **Gunther**

570 Seminar in Archaeology (3) — **Osborne**

571 Field Course in Archaeology and Historic Anthropology (5) — **Staff**
(Offered at La Paz Field School only.)

580 Anthropology in Contemporary Problems (3) — **Staff**

581 Field Course in Migration and Population Study (5) — **Staff**
(Offered at La Paz Field School only.)

600 Research (*) — **Staff**

Thesis (*) — **Staff**

ART

Director: WALTER F. ISAACS, 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.

Only courses given in this School may be applied toward the degree. In lieu of a thesis, candidates may undertake a problem in painting, sculpture, or design.

COURSES

303 Ceramic Art (2-3) — **Bonifas**

304 Ceramic Art (2-3) — **Bonifas**

306 Advanced Lettering (3) — **Anderson, Benson**

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)	**Benson**
375, 376 Advanced Painting: Oil (3,3)	**Staff**
377 Advanced Painting: Water Color (3)	**Staff**
382, 383, 384 Eastern Art (3,3,3)	**Rogers**
413 Oriental Ceramic Art (2)	**Staff**
423, 424, 425 Art History and Criticism (1,1,1)	**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)	**Benson**
472, 473, 474 Advanced Interior Design (5,5,5)	**Foote**
479, 480, 481 Advanced Costume Design and Illustration (2,2,2)	**Benson**
485, 486, 487 Advanced Ceramic Art (5,5,5)	**Bonifas**
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

351 Human Genetics (3)	**Roman**
401 Cytology (3)	**Hsu**
401L Cytology Laboratory (2)	**Hsu**
408 Cellular Physiology (3)	**Whiteley**
408L Cellular Physiology Laboratory (2)	**Staff**
451 Genetics (3 or 5)	**Roman**
452 Cytogenetics (3 or 5)	**Roman**
453 Topics in Genetics (2, maximum 6)	**Roman**
454 Evolutionary Mechanisms (3) (Offered alternate years; offered 1953-54.)	**Kruckeberg**

472 Principles of Ecology (3) — **Edmondson**

472L Ecology Laboratory (2) — **Edmondson**

473 Limnology (5) — **Edmondson**

501 Advanced Cytology (5) — **Staff**
(Offered alternate years; offered 1953-54.)

573 Topics in Limnology (2) — **Edmondson**
May be repeated for credit.

BOTANY

331 Ornamental Plants (3) — **Kruckeberg**

332 Taxonomy Field Trip (*, maximum 27) — **Staff**
(Offered alternate summers; offered 1954.)

361 Forest Pathology (5) — **Stuntz**

371 Elementary Plant Physiology (5) — **Meeuse, Walker**

431, 432 Taxonomy (5,5) — **Hitchcock**
(Offered alternate years; offered 1953-54.)

441, 442, 443 Morphology (5,5,5) — **Blaser**
(Offered alternate years; offered 1954-55.)

444 Plant Anatomy (5) — **Blaser**
(Offered alternate years; offered 1953-54.)

445 Algology (6) — **Staff**
(Offered at Friday Harbor during Summer Quarter only.)

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) — **Meeuse**
(Offered alternate years; offered 1954-55.)

474 Plant Physiology (5) — **Walker**
(Offered alternate years; offered 1953-54.)

475 Problems in Algal Physiology (6) — **Meeuse**
(Offered at Friday Harbor during Summer Quarter only.)

498 Special Problems in Botany (1-15) — **Staff**

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 Master of Science and Doctor of Philosophy. Candidates for advanced degrees must take entrance, or qualifying, examinations, which are designed to assess the student's knowledge and understanding of the material normally contained in an undergraduate program with a major in chemistry. These examinations are usually given on the 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. Candidates for this degree usually present German as their foreign language.

DOCTOR OF PHILOSOPHY. Students who have completed at least one year of satisfactory graduate study and are acceptable for work leading to the doctorate are required to take "cumulative" examinations regularly, twice each quarter. They are not then required to take formal examinations in courses offered by the

Department, except as may be specified by their research professors or advisory committees. The cumulatives are general examinations in the student's area of specialization (analytical, inorganic, organic, or physical chemistry) and are designed to stimulate independent study and thought. They attempt to evaluate the breadth of knowledge gained from courses, seminars, and literature, and the student's ability to apply this knowledge to diverse problems. The cumulative requirement is satisfied when six examinations are passed, usually out of the first twelve taken.

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

COURSES

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, Gregory, Ritter**

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 Chemical Laboratory (2-3) — **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, 426 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 Advanced Organic Chemistry (3,3,3) — **Dauben**
Consideration of synthetic methods, structure determinations, and reaction mechanisms for acyclic, alicyclic, and aromatic compounds, with emphasis on modern theory and practice. Prerequisites, 337 and 445, or permission.

535, 536 Chemistry of Natural Organic Compounds (3,3) — **Anderson**
Structure determination, synthesis and reactions of carbohydrates, fats, oils, terpenoids, steroids, aminoacids, alkaloids, heterocyclics, vitamins, and accessory dietary factors of natural origin. Chemotherapeutics. Prerequisite, permission.

537 Physical Organic Chemistry (3) — **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, 437 and 457, 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) — **Gregory, Rabinovitch, Simpson**
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, 456 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, 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.

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.

R354 Review of Physical Chemistry (4)

R411 Inorganic Chemistry (4)

R412 Chemistry of Less Familiar Elements (4)

R413 Elements of Radio Chemistry (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 (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 3) **Staff**

322 Herodotus and the Persian Wars (3) **Rabinowitz**
(Offered alternate years; offered 1953-54.)

323 Thucydides and the Peloponnesian War (3) **Rabinowitz**
(Offered alternate years; offered 1953-54.)

330 Attic Orators (3) **Rabinowitz**
(Offered alternate years; offered 1953-54.)

360 Lyric Poetry (3) — **Staff**
(Offered alternate years, offered 1954-55.)

361 Hellenistic Poetry (3) — **Staff**
(Offered alternate years; offered 1954-55.)

N391 Sight Reading (0) — **Staff**

413 The Pre-Socratic Philosophers (3) — **McDiarmid**
(Offered alternate years; offered 1954-55.)

414 Plato: Phaedo (3) — **Rabinowitz**
(Offered alternate years; offered 1954-55.)

415 Aristotle: Selections from the Metaphysics (3) — **Staff**
(Offered alternate years; offered 1954-55.)

442 Introduction to Greek Drama: Euripides (3) — **Staff**
(Offered alternate years; offered 1953-54.)

443 Sophocles (3) — **Staff**
(Offered alternate years; offered 1953-54.)

444 Aeschylus (3) — **Staff**
(Offered alternate years; offered 1953-54.)

453 Pindar: The Epinician Odes (3) — **Staff**
(Offered alternate years; offered 1954-55.)

490 Supervised Study (3-5, maximum 15) — **Staff**

520 Seminar (5, maximum 15) — **Staff**

540, 541, 542 Literary Criticism: Aeschylus (3,3,3) — **McDiarmid**
Textual criticism. Aristotle and other ancient critics. Independent study of one play.

600 Research (3-5) — **Staff**

Thesis (*) — **Staff**

LATIN

309 Advanced Grammar and Composition (1, maximum 3) — **Read**

322 Livy (3) — **Staff**
(Offered alternate years; offered 1953-54.)

324 Tacitus (3) — **Staff**
(Offered alternate years; offered 1953-54.)

326 Roman Biography (3) — **Staff**
(Offered alternate years; offered 1953-54.)

342 Roman Drama (3) — **Staff**
(Offered alternate years; offered 1954-55.)

355 Catullus (3) — **Grummel**
(Offered alternate years; offered 1954-55.)

356 Horace (3) — **Staff**
(Offered alternate years; offered 1954-55.)

N391 Sight Reading (0) — **Staff**

401 Medieval Latin (3) — **Grummel**

404 Comparative Grammar of Latin and Greek (3) — **Staff**

412 Lucretius (3) — **Staff**
(Offered alternate years; offered 1954-55.)

414 Seneca (3) — **Staff**
(Offered alternate years; offered 1954-55.)

415 Cicero's Philosophical Works (3) — **Staff**
(Offered alternate years; offered 1954-55.)

430 Latin Novel (3) — **Staff**
(Offered alternate years; offered 1953-54.)

451 Roman Satire (3) — **Staff**
(Offered alternate years; offered 1953-54.)

459 Lucan (3) — **Staff**
(Offered alternate years; offered 1953-54.)

490 Supervised Study (3-5, maximum 15) — **Staff**

520 Seminar (5, maximum 15) — **Staff**

600 Research (3-5) — **Staff**

Thesis (*) — **Staff**

CLASSICAL COURSES IN ENGLISH

322 Greek Literature (2)	**Staff**
326 Greek and Roman Epic in English (3)	**Staff**
327 Greek and Roman Drama in English (3)	**Staff**
330 Greek and Roman Mythology (3)	**Staff**
340 Greek and Roman Critics in English (3)	**Staff**

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 Theatrical Costume Design and Construction (3)	**Crider**
406 Makeup (3)	**Davis**
411, 412, 413 Playwriting (3,3,3)	**Hughes**
414 Stage Lighting (3)	**Conway, Lounsbury**
415 Advanced Stage Lighting (3)	**Staff**
417, 418, 419 Advanced Theater Workshop (2,2,2)	**Staff**
421, 422, 423 Advanced Acting (3,3,3)	**Harrington**
427, 428, 429 History of the Theater (2,2,2)	**Conway**
434, 435, 436 Children's Theater (3,3,3)	**Carr**
437, 438, 439 Creative Dramatics with Children (3,3,3)	**Hagga, Staff**
441, 442, 443 Radio Acting and Production (2,2,2)	**Morris**
444, 445, 446 Radio Writing (3,3,3)	**Morris**
451, 452, 453 Representative Plays (3,3,3)	**Hughes**
481, 482, 483 Directing (3,3,3)	**Harrington**
497 Theater Organization and Management (2)	**Hughes**
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 and the history of economic thought; money, banking, and cycles; government regulation, public utilities, and transportation (students may be permitted to concentrate their work in two of these sub-fields); labor economics; public finance and taxation; economic history; international trade; and national economies.

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

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

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

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

Doctoral candidates offering a minor in economics must demonstrate competence in two fields, including economic theory. While normally 30 credits in courses approved for graduate credit will be required, candidates with an adequate background may offer less. In any case a minimum of 15 credits in graduate courses, including 10 credits in economic theory, must 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 1953-55.)

306 Development of Economic Thought (5) — **Gordon, Morris, North**

404 Advanced Price Analysis (5) — **Crutchfield**

503 Economics of the Firm (3) — **Worcester**
Analysis of the price and output behavior of the individual business firm; the allocation of resources under conditions of pure competition, imperfect competition, monopoly, and oligopoly. Prerequisite, permission.

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. Prerequisites, 301 and 302, or permission.

506 Income and Employment Theory (3) — **Cartwright**
Theories of employment, output, and income of the Keynesian and neo-Keynesian groups. Prerequisite, 505 or permission.

507 Neo-Classical Economics and Its Critics (3) — **Gordon**
Prerequisite, permission.

510 Contemporary Developments in Income and Employment Theory (3) — **Cartwright**
(Offered alternate years; offered 1954-55.)

511 Mathematical Relationships in Economic Theory (3) — **Gordon**
Mathematical analysis applied to economic problems. Consideration of indifference curves, elasticity of demand, the description of economic equilibria, and problems relating to rates of change, time lags, and related phenomena. Prerequisites, 503 and 506, or permission.

512 Advanced Theory of the Firm (3) — **Worcester**
The problems of profit maximization in all major types of market interdependence under both static and dynamic conditions. Prerequisites, 503 and 505, or permission.

513 Capital and Distribution Theory (3) — **Mund**
(Offered alternate years; offered 1954-55.)

515 History of Economic Thought (3) — **Gordon, North**
Prerequisite, permission.

MONEY, BANKING, AND CYCLES

320 Money and Banking (5) — **Crutchfield, Hald**

421 Money, Credit, and the Economy (5) — **Crutchfield**

422 Economic Cycles (5) — **Hald**

423 Monetary, Banking, and Cycle Policies (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**
(Not offered 1953-55.)

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**
The development of modern American capitalism in the context of the changing industrial structure. Prerequisite, permission.

INTERNATIONAL TRADE

370 Economic Principles of Foreign Trade (5) — **Sheldon**

373 Foreign Trade of Latin America (5) — **Staff**
(Not offered 1953-55.)

471 International Economic Problems (5) — **Holzman, Huber**

472 International Monetary Policies (5) — **Huber**

571 International Trade Theory (3) **Huber**
Theories of international trade, prices, payments, and capital movements. Modern developments in theory of national income and 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) **Staff**

493 Economic Problems of China (5) **Staff**
(Not offered 1953-55.)

495 The Economy of Soviet Russia (5) **Holzman**

595 Soviet Economics (3) **Holzman**
Analysis of problems of development, optimum resource allocation, 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 37 to 40 credits, including 10 credits in one period or type of literature. Those who wish to take a minor may include in the total credit requirements a maximum of 10 credits in a related field. Courses required for 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. An alternate program without thesis may also be elected. Candidates majoring in advanced writing may present an original work in imaginative or factual writing in lieu of a thesis.

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

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

A minimum of 90 credits must be completed before the general examination. Courses required for 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.

A maximum of 20 credits may be taken in courses given by other departments.

The subject of the dissertation must be approved by the Graduate Studies Committee of the Department before the candidate begins work on it.

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) a type of literature—drama, fiction, poetry, or essay; and (3) twelve major figures selected by the student from three of the following fields (four from each of the 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 5,000-word critical essay in the candidate's field of specialization, which is to be submitted in the first three weeks of the quarter in which he takes the examination. The essay must be a critical evaluation of an assigned literary work in the candidate's field; any approach or technique, critical or scholarly, may be used, but a reasoned judgment is required. It will be read before the oral examination by all members of the examining committee and will be evaluated for its style and organization as well as its content.

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

Courses leading to the degrees of Master of Arts and Doctor of Philosophy with specialization in general and comparative literature are offered through the General and Comparative Literature program (see page 60).

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**

350, 351, 352 Old and Middle English Literature (5,5,5) — **Ethel, Kaufman, Person**

353, 354 English Literature: 1476-1642 (5,5) — **Adams**
(Offered alternate years; offered 1954-55.)

361, 362, 363 American Literature (5,5,5) — **Blankenship, H. Burns, Davis, Harrison, Hilen, Phillips**

367, 368,369 Seventeenth-Century Literature (5,5,5) — **Stein, Ethel**

370, 371, 372 Shakespeare (5,5,5) — **Adams, Hamilton, Kaufman, Pellegrini, Stirling, Willis**

374, 375, 376 Late Nineteenth-Century Literature (5,5,5) — **Brown, Winther**

377, 378, 379 Early Nineteenth-Century Literature (5,5,5) — **Bostetter, Zillman**

380, 381, 382 Old English Language (5,5,5) — **Staff**
(Not offered 1953-54.)

387 English Grammar (3) — **Emery**

388 Current English Usage (3) — **Perrin**

404 Modern European Literature (5) — **Harrison, Hall**

406 Modern English Literature (5) — **Harrison, Hall**

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) — **Heilman**
(Offered alternate years; offered 1953-54.)

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 1953-54.)	**Adams**
447, 448, 449 The English Novel (5,5,5)	**Heilman, Winther, W. Burns**
456, 457, 458 Novel Writing (5,5,5)	**Staff**
466 Modern American Literature (5)	**Blankenship, Harrison, Davis, Hall, 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)	**Winther, H. Burns**
509 Methods of Contemporary Criticism (5)	**Bostetter, Mathews, Stein**
510, 511, 512 The Renaissance and Spenser (5,5,5)	**Adams, Stirling**
513 Shakespeare's Dramatic Contemporaries (5)	**Adams**
514, 515 Chaucer (5,5) 514: *Canterbury Tales;* 515: other poems.	**Fowler**
517, 518, 519 Shakespeare (5,5,5)	**Hamilton, Stirling**
521, 522, 523 Seventeenth-Century Literature (5,5,5)	**Stein**
524, 525, 526 American Literature (5,5,5)	**Harrison, Davis, Eby**
527, 528 Studies in Medieval Literature (5,5)	**Staff**
530 The English Language (5) A historical and descriptive survey.	**Reed**
531 Introductory Reading in Old English (5)	**Person**
532 Advanced Reading in Old English (5)	**Person**
533 Foundations of American English (3) History and present state of American English.	**Reed**
534 American English Dialectology (3) Research methods, history, and analysis.	**Reed**
538, 539, 540 Early Nineteenth-Century Literature (5,5,5)	**Bostetter**
541, 542, 543 Victorian Literature (5,5,5)	**Brown, W. Burns, Winther**
544, 545, 546 Eighteenth-Century Literature (5,5,5)	**Cornu**
547 Rhetoric (5)	**Perrin**
548 Twentieth-Century Literature (5)	**Hall**
553 Current Rhetorical Theory (5)	**Perrin**
586 Graduate Writing Conference (5)	**Staff**
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 p. 57). 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 Law School; the Director of the Library; and the executive officers of the cooperating departments.

The Institute itself does not grant degrees. It arranges the programs for Bachelor of Arts and Master of Arts degrees in Far Eastern studies and the Doctor's degree in Chinese language and literature, all of which are given through the Department of Far Eastern and Slavic Languages and Literature. Doctor's

degrees with Far Eastern and Russian emphasis are sponsored by the Institute in cooperation with the Departments of Anthropology, Economics, History, Political Science, and others. Graduate students receive training in their respective disciplines which they apply to their study of the Far East. The requirements for doctor's degrees include at least one Far Eastern language and a thesis which deals with a Far Eastern topic. These so-called 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.

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) — **Michael, Taylor, Williston, Maki**

323 Survey of the Soviet Union (5) — **Treadgold**

335J Japanese Foreign Policy in Asia (3) — **Maki**

345J Japanese Government (3) — **Maki**

422J Early Russian History (5) — **Treadgold**

423J Recent Russian History (5) — **Treadgold**

424J Russian Revolutionary Movement (3) — **Treadgold**

430 Survey of Mongol Culture (3) — **Poppe**

443 Chinese Social Institutions (5) — **Hsiao**

444 Chinese History: Earliest Times to 221 B.C. (5) — **Wilhelm**
(Offered alternate years; offered 1954-55.)

445 Chinese History: 221 B.C. to 906 A.D. (5) — **Wilhelm**
(Offered alternate years; offered 1954-55.)

446 Chinese History: 906 A.D. to 1840 A.D. (5) — **Wilhelm**
(Offered alternate years; offered 1954-55.)

447 Modern Chinese History (5) — **Taylor**

451J History of Chinese-Japanese Relations (5) — **Jansen**

452J Early Japanese History (5) — **Jansen**

453J Tokugawa Period (5) — **Jansen**

454J Modern Japanese History (5) — **Jansen**

478 Russia in Asia (3) — **Meyer**

490 Undergraduate Seminar on China (3) — **Williston**

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

Anthropology 312 Peoples of Oceania (3)

Anthropology 314 Peoples of Central and Northern Asia (3)

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 Eastern Foreign Trade Problems (5)

Geography 303 Asia (5)

Geography 433 U.S.S.R. (3)

Geography 435 Southeast Asia (5)

Geography 436 China (3)

Geography 437 Japan (3)

Philosophy 428 Chinese Philosophy (5)

Political Science 342 Comparative Governments of the Far East (5)

Political Science 344 Chinese Government (5)

Political Science 414 Oriental Political Thought (5)

Political Science 420 The 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) — **Kirchhoff, 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 1953-54.)

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.)

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) — **Staff**
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 Seminar in 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) — **Erlich, Treadgold**
Research problems in the impact of tsarist Russia and the Soviet Union on Asia.

598 Inner Asia Research Colloquium (5, maximum 15) — **Kirchhoff, Carrasco, K. Chiang, Lin, Poppe, Staff**

599 Colloquium on Chinese History Research (5, maximum 15) — **Michael, C. L. Chang, Hsiao, 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 (3)

Geography 503 Problems in the Geography of Asia (3, maximum 9)

History 531 Modern European History: Russia (5)

FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE

Executive Officer: GEORGE E. TAYLOR, 406 Thomson Hall

The Department of Far Eastern and Slavic Languages and Literature offers courses leading to the degrees of Master of Arts and Doctor of Philosophy.

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. A degree is offered in 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 of at least one European language is required.

COURSES

CHINESE

301 Chinese Language. Intensive C (10) — **Li, Chang**

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) — **Wilhelm**
(Offered alternate years; offered 1954-55.)

455, 456, 457 Chinese Literature (5,5,5) — **Wilhelm**
(Offered alternate years; offered 1953-54.)

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**
(Offered alternate years; offered 1953-54.)

529 Chinese Phonology (3) — **Li**

530 Studies in Chinese Prose (5) — **Shih, Wilhelm**

531 Studies in Chinese Poetry (5) — **Shih, Wilhelm**

532 Studies in Chinese Drama and Novel (5) — **Shih**
(Offered alternate years; offered 1954-55.)

550 Seminar on Chinese Literature (4, maximum 8) — **Shih, Wilhelm**

555 Seminar on Chinese Linguisitics (3) — **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) — **Jansen**

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) — **Staff**
(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 Mongol Language (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.

RUSSIAN

301 Russian Language. Intensive C (10) — **Ifland, Pahn**

302 Russian Grammar and Composition (5) — **Shaw**

303 Advanced Conversation and Composition (5) — **Novikow**

304 Advanced Russian Language (5, maximum 10) — **Gershevsky**

330 Conversational Russian (2-4) — **Staff**
(Offered Summer Quarter only.)

407, 408, 409 Advanced Russian Reading (5,5,5) — **Shaw**

410, 411 Advanced Russian Grammar and Composition (5,5) — **Erlich**

475 Soviet Press Translation (5) — **Shaw**
(Offered alternate years; offered 1953-54.)

521 Advanced Russian Syntax (3) — **Staff**
(Offered alternate years; offered 1953-54.)

526 Pushkin (4) — **Staff**
(Offered alternate years; offered 1954-55.)

557 Seminar in Russian Language (3) — **Gershevsky, Mickleson**
Examination and discussion of Russian masterpieces.

Thesis (*) — **Staff**

SLAVIC

491 Introduction to Slavic Philology (3) — **Mickleson**

522 Phonetic Structure of Slavic Languages (3) — **Staff**
(Offered alternate years; offered 1954-55.)

523 Morphological Features of Slavic Languages (3) — **Staff**
(Offered alternate years; offered 1954-55.)

531 Old Church Slavonic (3) — **Staff**
Descriptive study of the phonology and grammar of Old Church Slavonic. (Offered alternate years; offered 1954-55.)

532 Readings in Old Church Slavonic (3) — **Staff**
Reading and grammatical interpretation of Old Church Slavonic texts. (Offered alternate years; offered 1953-54.)

TIBETAN

402 Introduction to Literary Tibetan (3) — **K. Chang**

403 Reading in Tibetan Literature (3) — **K. Chang**

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 1954-55.)

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) — **Mickleson**

Russian 425 Dostoevski in English (3) — **Spector**
Open only to majors in a language or literature.

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. 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) — **Staff**
(Offered Spring Quarter only.)

461 Water Management and Fish Resources (5) — **Staff**
(Offered Autumn Quarter only.)

480, 481 Introduction to Commercial Fishing Industry (3,3) — **Staff**

484 Canning and Curing of Fish (5) — **Staff**

485 Refrigeration of Fish (5) — **Staff**

486 Preparation of Fish By-products (5) — **Staff**

495 Introduction to Fisheries Literature (2, maximum 6) — **Staff**

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 Cleve**
Training in methods of searching fisheries literature.

556 Age and Growth of Fishes (5) — **Van Cleve**
Principles of growth; methods of determining age and rates of growth in fresh-water and marine fishes. Prerequisites, 402, and either 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**

GENERAL AND COMPARATIVE LITERATURE

Chairman: JACKSON MATHEWS, 7 Parrington Annex B

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 53).

COURSES

300, 301, 302 Masterpieces of European Literature (5,5,5)	**Mathews**
350, 351 Romanticism and the Nineteenth Century in Europe (5,5)	**Mathews**
400 European Literary Criticism since 1900 (5)	**Mathews**
450 The Art of Translation (5)	**Mathews**
480, 481 The Symbolist Movement (5,5)	**Mathews**
510, 511 Studies in General and Comparative Literature (5,5)	**Mathews**
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 321 Contemporary Russian Literature in English (5)
Russian 322 Russian Plays in English (5)
Russian 424 The Russian Symbolists in English (3)
Russian 425 Dostoevski in English (3)

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

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 N500.

COURSES

SYSTEMATIC GEOGRAPHY

325 Geographical Background of American History (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)	**Staff**
477 Urban Geography (3-5)	**Ullman**
510 Settlement and Urban Geography (3, maximum 9)	**Ullman**
537 Economic Geography (3, maximum 9)	**Garrison, Marts, Ullman**

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)	**Garrison**
432 Islands of the Pacific (3)	**Earle**
433 U.S.S.R. (3)	**Staff**
435 Southeast Asia (5)	**Earle**
436 China (3)	**Murphey**
437 Japan (3)	**Eyre**
503 Problems in the Geography of Asia (3, maximum 9)	**Earle, Eyre, Murphey**
504 Problems in the Geography of Europe (3, maximum 9)	**Leppard, Martin**
506 Geography of Anglo-America (3, maximum 9)	**Hudson, Marts**

GEOGRAPHIC TECHNIQUES

358	Maps and Map Reading (2)	Leppard, Sherman
360	Introductory Cartography (5)	Leppard, Sherman
363	Aerial Photograph Interpretation (2)	Marts
425J	Graphic Techniques in the Social Sciences (5)	Schmid
461	Intermediate Cartography (5)	Leppard, Sherman
462	Advanced Cartography (5)	Leppard, Sherman
464	Map Reproduction (3)	Sherman
501	Source Materials in Geographic Research (3)	Earle
551	Recent Trends in Geographic Research (3, maximum 9)	Staff
555	History and Theory of Geography (*, maximum 6)	Staff

GENERAL

N500	Geography as a Professional Field (0)	Staff
502	Seminar: Writing and Critique (3)	Martin
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.

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

DOCTOR OF PHILOSOPHY. Candidates must present French and German for the language requirement.

COURSES

308	Structural Geology (5)	Barksdale
310	Engineering Geology (5)	Willis
323	Optical Mineralogy (5)	Coombs, Willis
324	Petrography and Petrology (5)	Coombs
330	General Paleontology (5)	Mallory
332	Advanced Paleontology (5)	Mallory
344	Field Methods (5)	Barksdale
361	Stratigraphy (5)	Wheeler
400	Advanced or Field Work in General Geology (*) (Offered Summer Quarter only.)	Willis
412	Physiography of the United States (5)	Mackin
414	Map Interpretation: Constructional Landforms (5)	Mackin
425	Petrography and Petrology (5)	Misch
426	Sedimentary Petrography (5)	Willis
427	Ore Deposits (5)	Goodspeed
429	Advanced Ore Deposits (3)	Goodspeed
436	Micropaleontology (5)	Mallory
443	Advanced Structural Geology (5)	Misch

450	Elements of Seismology (5)	Jones
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 Studies, Research, or Field Work in Physiography (*)	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 (*)	Wheeler
532	Stratigraphic Paleontology (3)	Wheeler
540	Advanced Studies or Research in Structural Geology (*)	Barksdale, Misch
545	Structure of Eurasia (5)	Misch
546	Structure of the Pacific Rim (5)	Misch
550	Advanced Study or Research in Geophysics (*, maximum 9)	Neumann
560	Advanced Work in Stratigraphy (*)	Wheeler
565	Paleozoic Stratigraphy (5)	Wheeler
568	Mesozoic Stratigraphy (3)	Wheeler
570	Advanced or Research Work in Mineralogy, Petrography, and Petrology (*)	Goodspeed, Coombs, Misch
580	Advanced or Research Work in Economic Geology (*)	Goodspeed, Coombs
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. Candidates must pass a reading examination in some other suitable foreign language and complete 30 credits of course work for a major.

A German minor for the master's degree requires 15 credits in German courses.

DOCTOR OF PHILOSOPHY. Candidates must pass a reading examination in French, unless some other non-Germanic language seems more advisable, and complete an approved program of studies.

COURSES

300	Phonetics (2)	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)	Vail, Meyer, Roy
404	History of the German Language (5) (Offered 1953-54.)	Meyer
410, 411, 412	History of German Literature (3,3,3) (Offered 1954-55.)	Buck, Wilkie, Kahn

415, 416, 417 Nineteenth-Century Literature (3,3,3) — **Sommerfeld, Sauerlander, Rey**
(Offered 1953-54.)

418, 419 Naturalism, Expressionism, and Twentieth-Century Realism (3, 3) — **Rey**
(Offered 1955-56.)

422 Analysis of German Poetry (3) — **Sommerfeld**
(Offered 1954-55.)

431 Lessing's Life and Dramatic Works (3) — **Vail**
(Offered 1953-54.)

433 Goethe: The Early Years (3) — **Vail**
(Offered 1954-55.)

434 Goethe: Life and Works 1775-88 (3) — **Buck**
(Offered 1954-55.)

436 Goethe's Faust I (3) — **Sommerfeld**
(Offered 1953-54.)

437 Goethe's Faust II (3) — **Vail**
(Offered 1953-54.)

438 Schiller's Historical Dramas (3) — **Vail**
(Offered 1955-56.)

450J Introduction to General Linguistics (5) — **Jacobs, Reed**

497 Studies in German Literature (1-5) — **Staff**

498 Studies in German Philology (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) — **Sommerfeld**
(Offered 1953-54.)

510 Literature of the Middle Ages (5) — **Buck**
(Offered 1954-55.)

511 Reformation and Renaissance (3) — **Wilkie**
(Offered 1954-55.)

512 Baroque (3) — **Wilkie**
(Offered 1954-55.)

513 Eighteenth-Century Movements (3) — **Kahn**
(Offered 1954-55.)

515 The Romantic Movement (4) — **Sommerfeld**
(Offered 1953-54.)

516 The Drama of the Nineteenth Century (4) — **Sauerlander**
(Offered 1953-54.)

517 The Literature of the Later Nineteenth Century (4) — **Rey**
(Offered 1953-54.)

518, 519 The Literature of the Twentieth Century (3,3) — **Rey**
(Offered 1955-56.)

531 Lessing (3) — **Vail**
(Offered 1953-54.)

534 Goethe: Life and Works 1775-88 (4) — **Buck**
(Offered 1954-55.)

535 Goethe: Life and Works 1788-1832 (4) — **Sommerfeld**
(Offered 1954-55.)

538 Schiller (4) — **Vail**
(Offered 1955-56.)

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 1953-54.)	**Reed**
550	**Gothic (5)** (Offered 1953-54.)	**Meyer**
552	**Old High German (5)** (Offered 1953-54.)	**Reed**
555	**Old Saxon (5)** (Offered 1956-57.)	**Reed**
556	**Middle High German (5)** (Offered 1954-55.)	**Meyer**
557	**Middle High German Literature in the Original (5)** (Offered 1954-55.)	**Reed**
560	**Modern Dialects (3)** (Offered 1954-55.)	**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: W. STULL HOLT, 308 Smith Hall

The Department of History offers courses leading to the degrees of Master of Arts and Doctor of Philosophy. Before beginning graduate work, students should have completed an undergraduate history major, or the equivalent. It is expected that students specializing in Far Eastern history will have had sound undergraduate preparation in history.

The requirements for both advanced degrees include work in selected fields of history. Each field is a brief period or a restricted topic which is part of a general subject in one of three major divisions of history. Subjects within the first division are ancient history, medieval history, and Renaissance history; those within the second division are modern European history, English history, and British Empire history; and the subjects within the third division are American 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 the three divisions of history.

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

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

DOCTOR OF PHILOSOPHY. Candidates must complete History 501, 502, and at least two years of seminar work, participate in the work of the advanced seminar, and take at least 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. 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 three divisions of history.

COURSES

401	**Greece in the Age of Pericles (3)** (Offered 1954-55 and every four years.)	**Katz**
402	**Alexander the Great and the Hellenistic Age (5)** (Offered 1955-56 and every four years.)	**Katz**
403	**The Roman Republic (3)** (Offered 1956-57 and every four years.)	**Katz**
404	**The Roman Empire (3)** (Offered 1953-54 and every four years.)	**Katz**
410	**The Byzantine Empire (5)**	**Katz**
411	**Medieval Civilization (5)** (Offered 1953-54 and every three years.)	**Lucas**
412	**Medieval Civilization (5)** (Offered 1954-55 and every three years.)	**Lucas**
413	**Medieval Civilization (5)** (Offered 1955-56 and every three years.)	**Lucas**
414	**Culture of the Renaissance (5)**	**Lucas**
415	**The Reformation (5)**	**Lucas**
422J	**Early Russian History (5)**	**Treadgold**
423J	**Recent Russian History (5)**	**Treadgold**
424J	**Russian Revolutionary Movement (3)** (Offered 1955-56.)	**Treadgold**
429	**France from the Reformation to the French Revolution (5)** (Not offered 1953-55.)	**Lytle**
430	**The French Revolution and Napoleonic Era (5)**	**Lytle**
431	**Europe, 1814-1870 (5)**	**Lytle, Emerson**
432	**Europe, 1870-1914 (5)**	**Lytle, Emerson**
433J	**Europe, 1914-1945 (5)**	**Emerson**
436	**Germany, 1648-1914 (5)** (Offered 1954-55 and alternate years.)	**Emerson**
437	**Germany, 1914-1945 (5)** (Offered 1953-54 and alternate years.)	**Emerson**
441	**American Revolution and Confederation (5)** (Offered 1953-54 and every four years.)	**Savelle**
442	**The Colonial Mind (5)** (Offered 1956-57 and every four years.)	**Savelle**
443	**The Intellectual History of the United States (5)** (Offered 1957-58 and every four years.)	**Savelle**
447	**History of the Civil War and Reconstruction (5)**	**Pressly**
450	**Twentieth-Century America (5)**	**Pressly**
451J	**History of Chinese-Japanese Relations (5)**	**Jansen**
452J	**Early Japanese History (5)**	**Jansen**
453J	**Tokugawa Period (5)**	**Jansen**
454J	**Modern Japanese History (5)**	**Jansen**
457	**The Diplomatic History of North America, 1492-1763 (5)** (Offered 1954-55 and every four years.)	**Savelle**
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**
471	**England in the Eighteenth Century (5)** (Offered 1955-56.)	**Costigan**

472 England in the Nineteenth Century (5) — **Costigan**
(Offered 1953-54.)

473 England in the Twentieth Century (5) — **Costigan**
(Offered 1953-54 and alternate years.)

474 Modern Irish History (5) — **Costigan**
(Offered 1953-54 and alternate years.)

475 History of Canada (5) — **Dobie**

480 History of the British Empire Since 1783 (5) — **Dobie**
(Offered 1953-54, and alternate years.)

481 History of the Commonwealth of Nations (5) — **Dobie**
(Offered 1954-55 and alternate years.)

501 Historiography: Ancient, Medieval, and Early Modern European (5) — **Katz, Staff**

502 Historiography: Modern European and American (5) — **Katz, 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.

503-504 Philosophy of History (5-5) — **Costigan**
(Offered 1954-55 and alternate years.)

510 Greek and Roman History (5) — **Katz**

514 Medieval and Renaissance History (5) — **Lucas**

531 Modern European History: Russia (5) — **Treadgold**

532 Modern European History (5) — **Emerson**

533 Modern European History (5) — **Lytle**

541 American History (5) — **Savelle**

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

517-518-519 Seminar in Ancient or Medieval History (5-5-5) — **Lucas**

521-522-523 Seminar in Modern European History (5-5-5) — **Emerson**

551J Seminar in Japanese History (3, maximum 6) — **Janson**
Offered jointly with the Far Eastern and Russian Institute. Prerequisite, permission.

553-554-555 Seminar in American History (5-5-5) — **Savelle**

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.

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) — **Rowntree, Johnson**

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**

354 Family Economics and Finances (5) — **Turnbull**

407 Advanced Nutrition (3) — **Rowntree**

408 Diet Therapy (3) — **Johnson, Morrison**

415 Experimental Cookery (3) — **Dresslar**

425 Advanced Textiles (3) — **Brockway**

426 Historic Textiles (3) — **Hosmer, Brockway**

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) — **Rowntree, Deisher**

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 (2-6, maximum 6) — **Staff**

507 Readings in Nutrition (*) — **Rowntree, Johnson**
Library research. Prerequisite, 407 or equivalent.

515 Readings in Food Selection and Preparation (*) — **Dresslar**
Professional literature on recent developments.

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 class work for graduates in institution management and dietetics. An administrative dietetics internship approved by the American Dietetic Association. Fee, $25 (payable first quarter).

600 Research (*)
In registration, field of interest should be indicated by letter. Prerequisite, permission.

A. Institution Administration	Terrell
B. Costume Design	Payne
C. Nutrition	Johnson, Rowntree
D. Textiles	Brockway
E. Family Economics	Turnbull
F. Foods	Dresslar
G. Education	McAdams

Thesis (*) — **Staff**

LINGUISTICS

Committee: M. JACOBS, Anthropology; F.-K. LI, N. POPPE, Far Eastern; C. E. REED, Germanic

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 at least 15 credits in mathematical statistics courses numbered 500 or above.

DOCTOR OF PHILOSOPHY. The general examination of a candidate for this degree covers (1) the subject matter usually covered in first-year graduate courses in algebra, real variable, complex variable, and at least one other field chosen by the candidate; and (2) additional material related to the candidate's field of special interest, such as that included in second-year graduate courses.

COURSES

307, 308, 309 Differential and Integral Calculus (5,5,5) Staff

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) 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

441 Foundations of Geometry (3) Staff

442 Advanced Analytic Geometry (3) Staff

443 Differential Geometry (3) Staff

451, 452 Elementary Topology (3,3) Staff

462, 463 Interpolation and Approximation (3,3) Staff
(Offered alternate years; offered 1954-55.)

465, 466 Methods of Applied Mathematics (3,3) Staff
(Offered alternate years; offered 1953-54.)

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) Staff
(Offered when demand is sufficient.)

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.

511, 512, 513 Special Topics in Algebra (3,3,3) Staff
Each may be repeated twice for credit.

521, 522, 523 Functions of a Complex Variable (3,3,3) Staff
Analytic functions, contour integration, power series, conformal representation, analytic continuation, and other topics. Prerequisite, 426, 429, or equivalent.

524, 525, 526 Functions of a Real Variable (3,3,3) Staff
Real numbers; cardinal numbers; theory of sets; topological spaces; sequences; functions; advanced topics in series; measure; theory of integration, including Lebesgue and Stieltjes integrals. Prerequisite, 426 or equivalent.

527, 528, 529 Methods of Mathematical Physics (5,5,5) 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. Prerequisites, 426, 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.

544, 545, 546 Differential Geometry (3,3,3) Staff
Differential geometry of curves and surfaces in ordinary space and in n-space. Riemannian geometry. (Offered alternate years; offered 1953-54.)

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.)

551, 552, 553 Special Topics in Geometry (3,3,3) Staff
Each may be repeated twice for credit.

581 General Theory of Estimation and Testing Hypotheses (5) Staff
The Neyman-Pearson theory; maximum likelihood statistics; general theory of confidence regions; elements of decision theory. Prerequisite, 484.

582 Analysis of Variance and Design of Experiments (5) **Staff**
Analysis of variance and covariance to determine factors producing variation; use of randomized blocks, Latin squares, and other techniques in planning experiments. Prerequisite, 482.

590 Seminar in Probability and Statistics (*, 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)

R481 Calculus of Probabilities (5)

R482 Classical Methods of Statistical Inference (5)

R491 Mathematical Statistics (5)

R492 Mathematical Statistics (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.

MASTER OF SCIENCE. The requirements are: 27 credits exclusive of research and thesis, at least 18 in approved meteorology courses and the remainder in minor or supporting courses.

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**

328 Applied Climatology (5) **Church**

329 Microclimatology (3) **Church**

340, 341 Physical Meteorology (5,5) **Fleagle**

350 Meteorological Laboratory (5) **Schallert, McClain**

360 Meteorological Instruments and Observations (5) **Badgley**

414, 415 Synoptic Meteorology (5,5) **Schallert, McClain**

442 Introduction to Atmospheric Motions (5) **Fleagle**

445 Atmospheric Thermodynamics (3) — **Badgley**

451, 452 Meteorological Laboratory (5,5) — **Schallert, McClain**

462 Oceanographic Meteorology (6) — **Fleagle**
(Offered at Friday Harbor during Summer Quarter only.)

492 Readings in Meteorology or Climatology (*) — **Staff**

493 Special Problems in Meteorology or Climatology (*) — **Staff**

494 Meteorological Statistics (*) — **Staff**

495 Climatological 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.

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. Prerequisite, 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 constant vorticity trajectories, relation of pressure and velocity fields, stability criteria; use of characteristics; energy transformation; divergenceless waves in barotropic atmosphere. Prerequisite, 541 or permission.

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. Prerequisite, 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) — **Schallert**
Preparation of data and the techniques required for selected advanced non-routine 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 will be 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. Prerequisite, permission. (Offered Summer Quarter only.)

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**

MUSIC

Director: STANLEY CHAPPLE, 104 Music Building

The School of Music offers courses leading to the degree of Master of Arts in Music.

MASTER OF ARTS IN MUSIC. The School of Music offers majors in composition, music education, musicology, music performance (piano, violin, voice, organ, conducting), and opera. Undergraduate prerequisites for each major are listed in the leaflets on "Graduate Studies" prepared by the School of Music.

All candidates must demonstrate proficiency in piano and in sight reading, and show a satisfactory general knowledge of music theory and music literature. Musicology is the only major which requires a reading knowledge of either French or German.

A major in composition, music education, or musicology requires 39 credits, 18 of which must be in courses in the major field numbered 500 or above. Not more than 12 credits of the 39 may be in supporting courses in the 300's in music, or supporting courses numbered 300 or above in other departments. The thesis must be in addition to the 39 credits.

A major in music performance or opera requires four quarters of graduate study with 42 credits, 18 of which must be in courses in the major field numbered 500 or above. Not more than 12 credits of the 42 may be in supporting courses in the 300's in music, or supporting courses numbered 300 or above in other departments. The thesis must be in addition to the 42 credits.

COURSES

301, 302 Contemporary Idioms (3,3) **McKay**
304 Choral Literature (2) **Hall, Terry**
307, 308, 309 Music Literature and History (3,3,3) **Terry**
311, 312 Modal Counterpoint (3,3) **Risegari**
314 Music in Broadcasting (3) **Welty**
317 Music Appreciation: Chamber Music (2) **Heinitz**
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, 346J Elementary School Music, Junior High School Music, Senior High School Music (4,2,3) **Sorensen, Hall, Normann**
347 Music in the Americas (3) **Kinscella**
348 Music in the Americas (3) **Kinscella**
350 Vocal or Instrumental Instruction (2-3, maximum 18) **Staff**
354 Band Arranging (2) **Welke**
356 Instrumental Music in the Schools (2) **Normann**
357 Church Music (2) **Root**
360 University Symphony Orchestra (1, maximum 6) **Chapple**
361, 362 Musical Form (3,3) **Woodcock**
377, 378, 379 Score Reading (2,2,2) **Irvine**
380 Advanced Chamber Music (1,maximum 6) **Staff**

384, 385, 386 Conducting (1,2,1) — Munro, Chapple, Kirchner, Welke
407, 408, 409 Music Literature and History (3,3,3) — Irvine, Munro, McKay
411, 412 Counterpoint (3,3) — Verrall
417 Music of the Middle Ages (3) — Irvine
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 Pre-Classic Music (3) — Terry
447 Schumann (3) — Woodcock
450 Vocal or Instrumental Instruction (2-3, maximum 18) — Staff
460 Sinfonietta (1, maximum 9) — Chapple
461, 462 Orchestration (3,3) — Verrall
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) — Beale
(Offered Summer Quarter only.)
484, 485, 486 Orchestral Conducting (2,1,1) — Chapple, Munro, Welke
487, 488 History of Opera (3,3) — Munro, Wilson, Irvine
490 Collegium 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) — Munro
Prerequisite, one or more undergraduate courses in the same field.
508 Seminar in Classic and Romantic Music (3, maximum 6) — Irvine
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.
524, 525, 526 Seminar in Music Education (3,3,3) — Normann, Sorensen
524: special problems in the teaching and supervision of music in the elementary grades and junior high school. 525: selected topics in secondary school and junior college music. 526: special problems of a more general nature in music education and related fields.
547 Seminar in American Music (3, maximum 6) — Kinscella
Studies in the history and literature of music in the United States from 1600 to the present.
550 Vocal or Instrumental Instruction (3, maximum 12) — Staff
Prerequisite, 30 credits in the same branch of music. Fee, $37.50.
561 Problems in Choral and Orchestral Scoring (2-5) — Verrall
Studies in special techniques of choral, orchestral, and dramatic composition. Original composition and research, with emphasis on the evolution of ensemble types and forms.
564, 565, 566 Opera Direction and Production (4,4,4) — Rosinbum
Practical experience with problems of the opera theater.
568, 569 Historiography and Criticism (3,3) — Irvine
577, 578 Seminar in Theory and Notation (3,3) — Irvine
579 Seminar in Musicology (3, maximum 6) — 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, Verrall
600 Research (2-5) — Irvine, Munro
Individual study. 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 in either physical, chemical, geological, or biological oceanography is permitted. However, students without an undergraduate major in oceanography must take oral and/or written tests covering the contents of courses required of undergraduate majors in oceanography. Such tests are in addition to those normally required for postgraduate degrees and should be passed before advancement to candidacy.

German, Russian, and French are the most valuable languages in the study of oceanography.

Instruction and training are given in the Oceanographic Laboratories on the campus and also during the summer 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.

All courses offered during Summer Quarter are held at the Friday Harbor Laboratories.

COURSES

401-402 General Physical Oceanography (3-3) — **Barnes**

410 Physical Oceanography (3) — **Barnes**

411 Ocean Tides and Waves (3) — **Rattray**

412 Ocean Currents (3) — **Barnes**

421-422 Chemical Oceanography (3-3) — **Thompson**

430 Conditions of Life in the Sea (3) — **Fleming**

431 Biological Oceanography of the Plankton (3) — **Frolander**

432 Biological Oceanography of the Nekton and Benthos (3) — **Frolander**

440, 441, 442 Undergraduate Seminar (2,2,2) — **Thompson**

450 Origin of the Oceans (3) — **Staff**

451 Marine Sedimentation (3) — **Staff**

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. Prerequisite, a major in a physical science or permission. (Offered Summer Quarter when demand is sufficient.)

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, 513, or permission.

518 Seminar in Physical Oceanography (3, maximum 9) — **Staff**
Lectures, discussions, 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. Prerequisites, 421-422.

531 Seminar in Biological Oceanography (3, maximum 9) — **Staff**
Lectures, discussions, field and laboratory work on selected problems of current interest. Prerequisites, 430, 431, and 432.

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) — **Staff**
Lectures, discussions, field and laboratory work on selected problems of current interest. Prerequisites, 450 and 451.

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

320-321 History of Philosophy (5-5) — **Matson**

330 Philosophic Issues in World Affairs (3) — **Rader**

347 Philosophy in Literature (5) — **Matson**

423 Recent Philosophical Tendencies (5) — **Turbayne**

424 American Philosophy (5) — **Murphy**

428 Chinese Philosophy (5) — **Shih**

431 Philosophy of Plato (5) — **Matson**
(Not offered 1953-54.)

433 Philosophy of Aristotle (5) — **Matson**
(Not offered 1953-54.)

435 Hellenistic Philosophy (5) — **Staff**
(Not offered 1953-54.)

436 British Empiricism (5) — **Staff**
(Not offered 1953-54.)

437 Philosophy of Hume (5) — **Melden**
(Not offered 1953-54.)

438 The Philosophy of Kant (5) — **Staff**
(Not offered 1953-54.)

440 Advanced Ethics (5) — **Melden**

445 Philosophy of Art (5) — **Rader**

450 Epistemology (5) — **Smullyan**

453 Semantics (5) — **Smullyan**
(Not offered 1953-54.)

455-456 Metaphysics (3-3) — **Murphy**

460 Introduction to the Philosophy of Science (5) — **Crombie, Smullyan**

463 Philosophy of Mind (5) — **Turbayne**

465 Philosophy of History (5) — **Rader**

467 Philosophy of Religion (5) — **Rader**

470, 471 Advanced Logic (5,5) — **Smullyan**

472-473 History of Scientific Thought (5-5) — **Crombie**

484 Reading in Philosophy (1-4, maximum 12) — **Staff**

487 Contemporary Analytic Philosophy (5) — **Melden**

490 The Philosophy of Leibniz (5) — **Melden**

514-515-516 Seminar in Logic (2-4-2-4-2-4) — **Staff**
(Not offered 1953-54.)

517-518 Seminar in Logic and Scientific Method (2-2) **Crombie**
Selected problems concerning the nature and use of hypotheses, explanation, proof, and scientific laws. Prerequisite, 120 or permission.

521-522-523 Seminar in Metaphysics (2-2-2) **Staff**
(Not offered 1953-54.)

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 offers courses leading to the degrees of Master of Science and Master of Science in Physical Education.

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

PROFESSIONAL COURSES

301 Methods and Materials in Gymnastics, Stunts, and Tumbling (WOMEN) (3) **MacLean, Broer**

304, 305, 306 Officiating (WOMEN) (2,2,2) **Fox, Horne, Kidwell**

309 The School Dance Program (MEN and WOMEN) (2) **Wilson**

311 Rhythmic Activities for Small Children (WOMEN) (2) **de Vries**

312 Elementary School Athletic Program (WOMEN) (3) **Rulifson**

318 Analysis of Rhythm (WOMEN) (3) **de Vries, Wilson**

322 Kinesiology (MEN and WOMEN) (3) **Cutler**

324 Playground Programs (MEN and WOMEN) (3) **Kunde**

334 Management and Operation of Playgrounds and Recreation (MEN) (2) **Kunde**

336 Athletic Training and Conditioning (MEN) (1) **Clark**

340 Administration of Intramural Sports (MEN) (3) **Stevens**

344 Organization and Administration of Camp Programs (MEN and WOMEN) (3) **Kunde, McLellan**

345 Principles of Physical Education (MEN and WOMEN) (3) **Torney**

355 Dance Composition (WOMEN) (2) **de Vries**

356 Methods and Materials in Teaching Modern Dance (WOMEN) (2) **de Vries**

362 Methods and Materials in Teaching Folk, Tap, and Clog Dancing (WOMEN) (2) **Wilson**

363 Methods and Materials in Teaching Sports (MEN and WOMEN) (men, 2; women, 3) **Rulifson, MacLean, Peek**

364 Methods and Materials in Teaching Swimming (MEN and WOMEN) (men, 2; women, 3) **MacLean, Torney**

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) **Edmundson**

373 Methods in Teaching Baseball (MEN) (2) **Badgro**

424 Observation and Practice Teaching in Recreation (MEN) (2) **Kunde**

429 Methods in Teaching First Aid and Safety (MEN and WOMEN) (2) **Reeves**

435 Adapted Activities (MEN and WOMEN) (3) **Waters, Cutler**

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) McLellan

459-460 Dance Production (WOMEN) (2-2) de Vries

465 The School Health Education Program (MEN and WOMEN) (3) Reeves

466 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) Broer, Torney
Prerequisites, 345 and 450.

502 Problems in Physical Education (MEN and WOMEN) (2½) Waters
Prerequisites, 345 and 450, or permission. (Offered Summer Quarter only.)

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. Prerequisites, 345 and 450.

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, 504.

547 Seminar in Research Procedures (MEN and WOMEN) (2½) Broer
Prerequisites, 447 and Mathematics 281 or equivalent. (Offered Summer Quarter only.)

600 Research (MEN and WOMEN) (2-5) Broer, 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 Master of Science and Doctor of Philosophy.

The graduate student who is majoring in physics is expected to have an undergraduate preparation in physics equivalent to that given by the prescribed curriculum. He should have an undergraduate scholastic average of B or better and this average must be maintained if he is to continue his graduate work. A good reading knowledge of French and German is of considerable value, and deficiencies in this respect should be made up at an early date.

In addition to other requirements, the student working toward an advanced degree will satisfactorily complete a basic program of graduate studies; acquire a general understanding of the problems of current research in physics as described in the current literature and at the numerous meetings of physical societies; and complete a selected research program leading to a definite contribution to knowledge.

Students majoring in other fields who wish to complete work leading to a graduate minor in physics for a master's degree must fulfill the following requirements: 18 credits beyond general physics selected from Physics 321, 322 (or 455), 325, 326, 340, 350, 360, 361, 491, 492, 495, 496, and 497; and at least one graduate course in physics. A minor for a doctor's degree requires the equivalent of the undergraduate elective curriculum and three graduate courses selected from Physics 505, 509, 510, 517, 524, 550, 552, 558, and 564.

COURSES

315 Photography (4) Higgs

321, 322 Introduction to Modern Physics (3,3) Utterback

323 Introductory Nuclear Physics (3) — **Manley**

325, 326 Electricity (3,3) — **Streib**

327 Low- and High-Frequency Measurements (4) — **Streib**

340 Sound (3) — **Kenworthy**

350 Heat and Introduction to Thermodynamics and Kinetic Theory (3) — **Utterback**

360, 361 Optics (3,3) — **Clark**

367, 368, 369 Special Problems (*,*,*) — **Staff**

370 Spectrometry (3) — **Staff**

380 History of Physics (2) — **Staff**

455 Introduction to Modern Physics for Engineers (3) — **Schmidt**

491, 492 Mechanics (4,4) — **Geballe**

495, 496 Experimental Atomic Physics (3,3) — **Higgs**

497 Experimental Nuclear Physics (3) — **Jakobson**

505, 506 Advanced Mechanics (*, maximum 6 each) — **Staff**
Dynamics of a particle and of rigid bodies; generalized coordinates and Lagrangian theory; variational principles. Hamilton's equations of motion, vibration, and normal coordinates.

509, 510 Atomic, Molecular, and Nuclear Structure (*, maximum 6 each) — **Staff**
Energy-level systems of nuclear, atomic, and molecular aggregates of elementary particles studied primarily on the vector model and other phenomenological modes of description; radioactive transitions and selection rules; atomic and molecular spectra; nuclear interactions and transitions.

513, 514, 515 Electricity and Magnetism (*, maximum 6 each) — **Staff**
The properties of electric and magnetic fields as boundary value problems; application of harmonic function and conformal representation; electrodynamics and electromagnetic waves in empty space and material media.

517, 518, 519 Quantum Mechanics (*, maximum 6 each) — **Staff**
Prerequisite, 513 for 518.

520 Seminar (1-2) — **Staff**

524 Thermodynamics (*, maximum 6) — **Staff**

525 Statistical Mechanics (*, maximum 6) — **Staff**
Prerequisite, 517.

528 Current Problems in Physics (*, maximum 6) — **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 (*, maximum 6) — **Staff**
Prerequisite, 509.

552 Conduction Through Gases (*, maximum 6) — **Staff**
Prerequisite, 509.

558 Cosmic Rays (*, maximum 6) — **Staff**
Prerequisite, 510.

560 Nuclear Physics (*, maximum 6) — **Staff**
Prerequisites, 510 and 518.

562 Theory of Spectra (*, maximum 6) — **Staff**
Prerequisites, 509 and 518. (Offered alternate years; offered 1954-55.)

564 Relativity (*, maximum 6) — **Staff**
Prerequisites, 506 and 515. (Offered alternate years; offered 1953-54.)

566 Theory of Collisions (*, maximum 6) — **Staff**
Prerequisite, 518. (Offered alternate years; offered 1953-54.)

568 Theory of Solids (*, maximum 6) — **Staff**
Prerequisite, 518.

570 Radiation Theory (*, maximum 6) — **Staff**
Prerequisite, 519.

572 Foundations of Statistical Mechanics (5) — **Staff**
(Offered alternate years; offered 1954-55.)

574 Atomic and Molecular Interactions (5) — **Staff**
(Offered alternate years; offered 1954-55.)

576 Selected Topics in Experimental Physics (*, maximum 6) — **Staff**
(Offered when demand is sufficient.)

578 Selected Topics in Theoretical Physics (*, maximum 6) — **Staff**
Prerequisite, permission. (Offered when demand is sufficient.)

600 Research (*) — **Staff**

Thesis (*) — **Staff**

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 (3)
R494 Theoretical Physics (3)
R501 Nuclear Physics (3)
R517 Quantum Mechanics (5)
R518 Quantum Mechanics (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 a special regional political science in either the Far East or the U.S.S.R. for comparative government as either a field of concentration or a supporting field. Candidates may be permitted to substitute special regional political science fields in United Kingdom, Western Europe, or Middle or Near East for comparative government as a supporting field only. Candidates may also be permitted to substitute a related field in history, economics, sociology, psychology, geography, or regional studies for any one of the above fields, but only as a supporting field.

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 substitute Far Eastern or Russian political science for comparative government 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 substitute Far Eastern or Russian political science for comparative government 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) — **Cole**

411 The Western Tradition of Political Thought (5) — **Harbold**

412 American Political Thought (5) — **Harbold**

413 Contemporary Political Thought (5) — **Harbold**

414 Oriental Political Thought (5) — **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) — **Staff**
Selected topics, historical and conceptual, national, regional, and universal.

515 Methods and Research in Political Science (3-5) — **Staff**
Political science and the social sciences; methods of research; bibliography of general and special fields.

562-563-564 Public Law (3-3-3) — **Cole**
Constitutional and legal concepts governing governmental authority and institutions and the conduct of governmental activities. Prerequisite, admission to graduate curriculum in public administration or special approval.

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) **Staff**
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) **Riley**

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**

336 National Power and International Politics (5) **Martin**

420 The 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, Staff**
Regionalism in the world order and economy; the "region" as a basis of foreign policy; foreign interests and policies of the major regions of the world: the U.S.S.R., Central Europe, Western Europe, the British Empire, the Middle and Near East, the Far East, and Latin America.

FOREIGN AND COMPARATIVE GOVERNMENT

342 Comparative Governments of the Far East (5) **Staff**
(Not offered 1953-55.)

343 Modern British Government (5) **Hitchner**

344 Chinese Government (5) **Michael**

345J Japanese Government (3) **Maki**

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) — **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 (2-5) — **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**

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**
(Not offered 1953-54.)

403 Psychology of Motivation (3) — **Smith**

406 Experimental Psychology (5) — **Loucks**

407-408 History of Psychology (3-3) — **Esper**

413 Tests and Measurements (5) — **Heathers**

416 Animal Behavior (3) — **Loucks**

421 The Neural Basis of Behavior (3) — **Esper**

422 Physiological Psychology (5) — **Loucks**

423 Sensory Basis of Behavior (5) — **Horton**

425 Advanced Experimental Psychology (5) — **Staff**
(Not offered 1953-54.)

426 Animal Laboratory (5) — **Smith**

427 Conditioning (5) — **Loucks**

441 Perception (5) — **Culbert**

444 Psychology of Exceptional Children (3) — **Bijou**

446 Public Opinion Analysis (5) — **Staff**
(Not offered 1953-54.)

449 Psychology of Social Movements (3) — **Culbert**

462 Readings in Psychology (1-3, maximum 3) — **Staff**

484 Laboratory in Child Behavior (5) — **Katcher**
(Not offered 1953-54.)

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. Prerequisites, permission and registration in postgraduate dental education.

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 (3-2) — **Edwards**
Planning research problems; formulation of hypotheses; techniques of equating groups; sampling problem; factorial design and analysis of variance; interpretation of data. Prerequisite, 301 or permission.

516 Introduction to Multivariate Psychological Measurement (5) — **Horst**
Special quantitative technique 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. Prerequisite, permission.

521 Seminar in Statistics (2) — **Staff**
May be repeated. Prerequisite, permission.

522 Seminar in General Psychology (2) — **McKeever**
May be repeated. Prerequisite, permission.

523 Seminar in the History of Psychology (2) — **Esper**
May be repeated. Prerequisite, permission.

524 Seminar in Physiological Psychology (2) — **Horton, Loucks**
May be repeated. Prerequisite, permission.

525 Seminar in Genetic and Comparative Psychology (2) — **Horton**
May be repeated. Prerequisite, permission.

526 Seminar in Applied Psychology (2) — **Staff**
May be repeated. Prerequisite, permission.

527 Seminar in Social Psychology (2) — **Edwards**
May be repeated. Prerequisite, permission.

528 Seminar in Experimental Psychology (2) — **Hermans**
May be repeated. Prerequisite, permission.

529 Seminar in Clinical Psychology (2) — **Bijou**
May be repeated. Prerequisite, permission.

530 Seminar in Theory (2) — **Staff**
May be repeated. Prerequisite, permission.

531 Seminar in Learning and Motivation (2) — **Guthrie**
May be repeated. Prerequisite, permission.

544-545 Psychology of Social Attitudes (2-3) — **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.

547 Psychology of Language (3) — **Esper**
Psychological principles applied to linguistic development and organization; relation of symbolism to human behavior. Prerequisite, permission.

548 Thinking and Problem Solving (3) — **Esper**
A survey of the experimental literature of concept formation and problem solving. Prerequisite, 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. 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 581 is a required course for all degree candidates. The Department requires that every thesis be submitted at least four weeks before the end of the quarter in which the degree is to be granted.

MASTER OF ARTS. The requirements are: at least 36 credits divided between major and minor subjects, 20 of which must be in courses numbered 500 or above; a knowledge of representative literary works such as those listed in syllabi obtainable from the Department (the M. A. and B. A. syllabi for an M. A. major and the B. A. syllabus for an M. A. minor); and oral proficiency in the major language.

DOCTOR OF PHILOSOPHY. The requirements are: at least 90 credits, 45 of which must be in the major subject, 30 in the first minor, and 15 in the second minor (two-thirds of these credits must be in courses numbered 500 or above); a knowledge of the history of two Romance languages (this requirement may be fulfilled by completion of Romance Linguistics 505, 506, and 507, supplemented by French 512 and 513, Spanish 511, 512, and 513, or Italian 512 and 513); the history of three Romance literatures as outlined in at least the B. A. syllabus; a knowledge of representative literary works such as those listed in the syllabi (the Ph.D., M.A. and B.A. syllabi for the Ph.D. major, the M.A. and B.A. syllabi for the first minor, and the B.A. syllabus for the second minor); and oral proficiency in the major language.

When a Romance language is used as a minor for the doctoral degree, the requirements are at least the same as for the undergraduate major in that language and literature.

COURSES

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**

327, 328, 329 Advanced Conversation (2,2,2) **Chessex, David**

330 Conversational French (1-2) **Staff**
(Offered Summer Quarter only.)

337, 338, 339 Upper-Division Scientific French (2,2,2) **Whittlesey**

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) — **Keller, C. Wilson, Guiguet**
421: Classical Prose (Offered 1953-54.)
422: Eighteenth-Century and Romantic Prose. (Offered 1953-54.)
423: Contemporary Prose. (Offered 1954-55.)

424, 425, 426 Modern Prose Fiction (3,3,3) — **David, C. Wilson, Nostrand**
424: The Novel, 1800-1850. (Offered 1954-55.)
425: The Novel, 1850-1900. (Offered when demand is sufficient.)
426: The Novel, 1900-1950. (Offered when demand is sufficient.)

431, 432, 433 Lyric Poetry (3,3,3) — **Creore, Nostrand, David**
431: Renaissance Poetry. (Offered 1953-54.)
432: Romantic Poetry. (Offered 1954-55.)
433: Parnassians, Symbolists, and Contemporary Poetry. (Offered when demand is sufficient.)

441, 442, 443 Drama (3,3,3) — **Chessex, Nostrand, Creore**
441: Classical Tragedy. (Offered when demand is sufficient.)
442: Romantic Drama. (Offered when demand is sufficient.)
443: Modern Drama. (Offered 1953-54.)

444, 445, 446 Drama (3,3,3) — **Chessex, C. Wilson**
444: Molière. (Offered 1953-54.)
445: Eighteenth-Century Comedy. (Offered 1954-55.)
446: Modern Comedy. (Offered 1954-55.)

451, 452, 453 Moralists and Essayists (3,3,3) — **Keller, David, Guiguet**
451: Montaigne. (Offered 1954-55.)
452: From Montesquieu to Comte. (Offered 1954-55.)
453: Essayists of the Twentieth Century. (Offered when demand is sufficient.)

482 French Literary Criticism (2) — **Staff**
(Offered alternate years; offered 1953-54.)

501 Studies in Renaissance Prose (5) — **Keller**
Rabelais and Montaigne. (Offered 1954-55.)

502 Studies in Renaissance Poetry (5) — **Creore**
The Pléiade. (Offered 1953-54.)

512 Old French Reading (3) — **Peruzzi**
Reading of material illustrative of phonological and morphological principles.

513 Old French Literature (3) — **Simpson**
Literary backgrounds; reading and discussion of selected texts.

531 Literary Problems (2-5, maximum 20) — **Staff**
Work to be done through conference. Field must be indicated in registration.
A. Middle Ages.
B. Renaissance.
C. Classic Period.
D. Eighteenth Century.
E. Nineteenth Century.
F. Twentieth Century.

580 Explication de Texte (3) — **Guiguet**
Close study of short pieces of French prose and poetry. The aim of this course is to develop a method of literary analysis which relates biographical, historical, and aesthetic details and brings them all to bear upon the appreciation of a literary selection. Lectures, discussions, and student *explications*.

600 Research (2-5, maximum 20) — **Staff**

Thesis (*) — **Staff**

ITALIAN

311, 312, 313 Modern Italian Literature (2-3, 2-3, 2-3) — **Goggio**
(Offered alternate years; offered 1954-55.)

321, 322, 323 Masterpieces of Italian Literature (2,2,2) — **Goggio**
(Offered alternate years; offered 1953-54.)

384 Renaissance Literature of Italy in English (2) — **Goggio**

390 Supervised Study (2-5, maximum 20) — **Goggio**

481, 482 Dante in English (2,2) — **Goggio**

512 Old Italian Reading (3) — **Peruzzi**
Reading of material illustrative of phonological and morphological principles. Supplements Romance Linguistics 505, 506, and 507.

521, 522, 523 Italian Literature of the Twelfth to Fifteenth Centuries (2-5, 2-5, 2-5) — **Goggio**
(Offered alternate years; offered 1954-55.)

531, 532, 533 History of Old Italian Literature (2-5, 2-5, 2-5) — **Goggio**
(Offered alternate years; offered 1953-54.)

600 Research (2-5, maximum 20) — **Staff**

Thesis (*) — **Staff**

PORTUGUESE

390 Supervised Study (2-5, maximum 20) — **C. Wilson**

PROVENCAL

534 Old Provencal (3) — **Simpson**

ROMANCE LINGUISTICS AND LITERATURE

301 Romance Linguistics (3) — **Peruzzi**

360 The Literature of the Renaissance in English (5) — **A. Keller**

505, 506, 507 Romance Linguistics (2,2,2) — **Peruzzi**
Linguistics as a physical and social science. Brief history of the Romance languages and present-day problems of Romance linguistics.

581, 582, 583 Problems and Methods of Literary History (2,2,2) — **Nostrand**
The philosophies of literary history and of 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 1954-55.)

590 Research in Comparative Romance Literature (2-5, maximum 20) — **Staff**

599 Research in Romance Linguistics (2-5, maximum 20) — **Peruzzi**

Thesis (*) — **Staff**

SPANISH

301, 302, 303 Advanced Composition and Conversation (3,3,3) — **W. Wilson**

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 (1-2) — **Chang-Rodriguez**
(Offered Summer Quarter only.)

358, 359 Advanced Syntax (2,2) — **W. Wilson**

390 Supervised Study (2-5, maximum 20) — **Staff**

441, 442, 443 Drama (3,3,3) — **W. Wilson**
(Offered alternate years; offered 1954-55.)

451, 452, 453 Spanish Literature Since 1700 (3,3,3) — **W. Wilson**
(Offered alternate years; offered 1953-54.)

461, 462, 463 Spanish Literature of the Golden Era (3,3,3) — **W. Wilson**
(Offered alternate years; offered 1953-54.)

471, 472, 473 Individual Spanish Authors (3,3,3) — **Staff**
(Offered alternate years; offered 1954-55.)

481, 482, 483 Spanish-American Literature (3,3,3) — **Garcia-Prada, Vargas-Baron**
(Offered alternate years; offered 1953-54.)

484 The Romantic Movement in Spanish-American Literature (3) — **Garcia-Prada**
(Offered alternate years; offered 1953-54.)

485 The Costumbrista Movement in Spanish-American Literature (3) — **Garcia-Parda**
(Offered alternate years; offered 1954-55.)

486 The Modernista Movement in Spanish-American Literature (3) — **Garcia-Prada**
(Offered alternate years; offered 1954-55.)

487 The Contemporary Spanish-American Novel (3) — **Garcia-Prada**
(Offered alternate years; offered 1954-55.)

511 The Poema de Mio Cid (3) — **W. Wilson**
An intensive study of the *Poema de Mio Cid.*

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 1953-54.)

513 The Spanish Ballad (3) — **Staff**
The origin and evolution of the Spanish ballad. (Offered 1954-55.)

521 The Renaissance in Spain (5) — **Staff**
(Offered alternate years; offered 1953-54.)

531 Literary Problems (2-5, maximum 20) — **Staff**
Work to be done through conference. Field must be indicated in registration.
A. Middle Ages
B. Renaissance
C. Golden Age
D. Eighteenth Century
E. Nineteenth Century
F. Twentieth Century
G. Spanish Colonial Literature
H. Latin America

581 Spanish Historical Grammar (5) — **Staff**
(Offered alternate years; offered 1953-54.)

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**

Thesis (*) — **Staff**

ICELANDIC

501 Old Icelandic (*, maximum 5) — **Johnson**

Thesis (*) — **Staff**

NORWEGIAN

300, 301, 302 Modern Norwegian Literature (*, maximum 3 each) — **Arestad**

303, 304, 305 Advanced Conversational Norwegian (2,2,2) — **Staff**

306, 307, 308 Advanced Norwegian Composition (1,1,1) — **Staff**

450 History of Norwegian Literature (3) — **Arestad**

490 Supervised Reading (*, maximum 5) — **Arestad**

507 Ibsen (*, maximum 5) — **Arestad**

Thesis (*) — **Staff**

SCANDINAVIAN LITERATURE

503 Problems in Scandinavian Literature (*, maximum 5) — **Arestad, Johnson**

508 The Scandinavian Novel (*, maximum 5) — **Arestad**

Thesis (*) — **Staff**

SWEDISH

300, 301, 302 Modern Swedish Literature (2,2,2) — **Johnson**

303, 304, 305 Advanced Conversational Swedish (2,2,2) — **Staff**

306, 307, 308 Advanced Swedish Composition (1,1,1) — **Staff**

409 Recent Swedish Literature (2) — **Johnson**

450 History of Swedish Literature (3) — **Johnson**

455 History of the Swedish Language (3) — **Johnson**

490 Supervised Reading (*, maximum 5) — **Johnson**

510 Strindberg (*, maximum 5) — **Johnson**

Thesis (*) — **Staff**

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, Johnson**
381 Strindberg and His Major Plays in English (2)	**Johnson**
382 Twentieth-Century Scandinavian Drama in English (2)	**Johnson**

SOCIOLOGY

Executive Officer: GEORGE A. LUNDBERG, 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.

MASTER OF ARTS. Candidates must complete an approved program in advanced sociology courses and a minor in a related field. At least 10 of the sociology credits must be in courses numbered 500 and above. Candidates must take a final examination in two fields of sociology and a separate examination in the minor given by the department in which the minor courses are given. The master's thesis must be submitted seven weeks before the degree is to be granted.

The requirement for a minor for a master's degree is 36 graduate and 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 those two languages are the usual requirement. The language requirement must be met at least nine months before the degree is to be granted.

Candidates take a preliminary written examination covering four fields of specialization, of which one must be research methods and social statistics. A preliminary oral examination may be given at the discretion of the major or minor department. A final oral examination is given on the thesis and related subjects.

COURSES

310 General Sociology (5)	**Schrag, Staff**
324 Machine Techniques in Research (3) (Not offered 1953-54.)	**Staff**
331 Population Problems (5)	**Graalfs**
352 The Family (5)	**Bowerman, Dornbusch**
353 Social Factors in Marriage (3)	**Bowerman**
362 Race Relations (5)	**Staff**
364 Rural Community (5)	**Staff**
365 Urban Community (5)	**Cohen**

371 Criminology (5) — **Schrag**

389 Reading in Selected Fields (2-5, maximum 15) — **Staff**

410 History of Sociological Thought (5) — **Dornbusch**

411, 412, 413 Systematic Sociology (3,3,3,) — **Dodd**

414 Sociological Theory (5) — **Lundberg**

420 Methods of Sociological Research (5) — **Faris**

421 Methodology: Case Studies and Interviewing (3) — **Camilleri**

423 Advanced Social Statistics (5) — **Camilleri**

425J Graphic Techniques in the Social Sciences (5) — **Schmid**

426 Methodology: Quantitative Techniques in Sociology (3) — **Bowerman**

427 Statistical Classification, Measurement, and Prediction (3) — **Camilleri**

428 Sampling and Experimentation (5) — **Camilleri**

430 Human Ecology (5) — **Schmid, Cohen**

432 Human Migration (5) — **Staff**
(Not offered 1953-54.)

440 Primary Interaction and Personal Behavior (5) — **Faris**

442 Public Opinion (3) — **Larsen**

443 Mass Communication (3) — **Larsen**

445 Social Movements (3) — **Miyamoto**

446 Social Adjustment of the Worker (3) — **Miller**

447 Social Control (5) — **Staff**
(Not offered 1953-54.)

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) — **Staff**
(Not offered 1953-54.)

458 Institutional Forms and Processes (5) — **Faris**

460 Social Differentiation (3) — **Staff**

463 American Negro Community (3) — **Staff**

466 Industrial Sociology (5) — **Miller**

467 Industry and the Community (3) — **Staff**
(Not offered 1953-54.)

472 Juvenile Delinquency (5) — **Schrag**

473 Penology (5) — **Schrag**

N510, N511, N512 Departmental Seminar (0) — **Staff**
Monthly meetings with reports on independent research by graduate students and staff members.

521, 522 Seminar in Methods of Sociological Research (3,3) — **Lundberg**
Prerequisites, 223, 414, and 420, or equivalents.

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 1953-54.)

543 Communications Seminar (2) — **Staff**
(Not offered 1953-54.)

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) — **Staff**
(Not offered 1953-54.)

562 World Survey of Race Relations (3) — **Staff**
Prerequisites, 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.

572 Analysis of Criminal Careers (3) — **Schrag**
Personal and social factors in criminal maturation and reformation. Prerequisite, 371 or equivalent.

573 Crime Prevention (3) — **Hayner**
Prerequisite, 371 or equivalent.

599 Readings in Selected Fields (2-5, maximum 5) — **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 degree of Master of Arts.

COURSES

VOICE AND PHONETICS

411 Anatomy of the Vocal Organs and Ear (5) — **Palmer**
(Offered alternate years; offered 1954-55.)

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; 426 offered 1953-54.)

521 Studies in Greek and Roman Rhetoric (5) — **Rahskopf**
Critical analysis of writings on rhetoric by Plato, Aristotle, Cicero, Quintilian, and others.

522 Studies in Modern Rhetoric (5) — **Ponce**
Critical analysis of writings on rhetoric by Cox, Wilson, Bacon, Campbell, Blair, Whately, and others. Prerequisite, 521.

ARGUMENT AND DISCUSSION

332 Principles of Group Discussion (3) — **Crowell**

430 Advanced Argument (5) — **Ponce**

436 Methods of Public Discussion (5) — **Franzke**

ORAL INTERPRETATION OF LITERATURE

345 Choral Speaking (3) — **Goldstein**
(Offered alternate years; offered 1953-54.)

440 Advanced Oral Interpretation (5) — **Goldstein**

540 Studies in Oral Interpretation (3) — **Goldstein**
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) — **Staff**
(Offered Summer Quarter only.)

359 Speech in the Classroom (5) — **Grayum**

RADIO SPEECH

361 Advanced Radio Speech (3) — **Bird, Hogan**

462 Radio Production Methods (3) — **Bird**

463 Radio Program Building (3) — **Bird**

SPEECH CORRECTION

470, 471 Speech Correction (5,5) — **Carrell, Hanley**

473 Diagnostic Methods in Speech Correction (2) — **Holliday**

474 Clinical Training in Speech Correction (1-5, maximum 15) — **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 1953-54.) 572: aphasia. (Offered alternate years; offered 1954-55.) 573: pathologic disorders of voice. (Offered alternate years; offered 1953-54.) 574: morphogenic disorders, especially cleft palate and dental malocclusions. (Offered alternate years; offered 1954-55.) Prerequisite for each course, 471 or permission.

HEARING

480 Introduction to Hearing (5) — **Hanley**

481 Methods in Aural Rehabilitation (5) — **Palmer**

484 Clinical Practice in Aural Rehabilitation (1-5, maximum 15) — **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 Department Seminar (0) — **Staff**
Reports of research by graduate students and staff members.

501 Introduction to Graduate Study in Speech (2) — **Crowell**

600 Research (*) — **Staff**

Thesis (*) — **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

351 Human Genetics (3) — **Roman**

401 Cytology (3) — **Hsu**

401L Cytology Laboratory (2) — **Hsu**

408 Cellular Physiology (3) — **Whiteley**

408L Cellular Physiology Laboratory (2) — **Whiteley**

451 Genetics (3 or 5) — **Roman**

452 Cytogenetics (3 or 5) — **Roman**

453 Topics in Genetics (2, maximum 6) — **Roman**

454 Evolutionary Mechanisms (3) — **Kruckeberg**
(Offered alternate years; offered 1953-54.)

472 Principles of Ecology (3) — **Edmondson**

472L Ecology Laboratory (2) — **Edmondson**

473 Limnology (5) — **Edmondson**

501 Advanced Cytology (5) — **Staff**
(Offered alternate years; offered 1953-54.)

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) — **Passano**

402 History of Zoology (3) — **Hatch**

403 Comparative Vertebrate Histology (5) — **Hsu**

416 Chemical Embryology Laboratory (2) — **Whiteley**
(Offered alternate years; offered 1954-55.)

416L Chemical Embryology Laboratory (2) — **Whiteley**

417 Chemical Embryology (3) — **Whiteley**
(Offered alternate years; offered 1953-54.)

417L Chemical Embryology Laboratory (2) — **Whiteley**

423 General Protozoology (5) — **Osterud**

433, 434 Invertebrate Zoology (5,5) — **Illg, Ray**

435J Parasitology (5) — **Osterud, Gustafson**
(Offered alternate years; offered 1953-54.)

438 Comparative Invertebrate Physiology (3) — **Passano**

438L Comparative Invertebrate Physiology Laboratory (2) — **Passano**

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**

463 Natural History of Amphibia and Reptiles (5) — **Svihla**
(Offered alternate years; offered 1953-54.)

464 Natural History of Birds (Ornithology) (5) — **Staff**
(Offered alternate years; offered 1954-55.)

465 Natural History of Mammals (5) — **Svihla**

475 Vertebrate Zoogeography (3) — **Svihla**

498 Special Problems in Zoology (3-5) — **Staff**

506 Topics in Experimental Embryology (6, maximum 12) — **Staff**
Prerequisite, permission. (Offered at Friday Harbor during Summer Quarter only.)

520, 521, 522 Seminar (1,1,1) — **Staff**

528 Experimental Protozoology (4) — **Osterud**
Cultivation; identification; cytology; physiology and genetics; general literature and current research in protozoology. Prerequisite, 423 or equivalent. (Offered alternate years; offered 1954-55.)

533 Advanced Invertebrate Zoology (6) — **Staff**
The rich and varied invertebrate fauna of the San Juan Archipelago, emphasizing systematics and ecology; opportunity for developing individual research problems. Prerequisites, 10 credits in invertebrate zoology or equivalent. (Offered at Friday Harbor during Summer Quarter only.)

536 Advanced Invertebrate Embryology (6) — **Staff**
Morphological and experimental studies of development of selected types of marine invertebrates. Prerequisites, 433, 434, and 456. (Offered at Friday Harbor during Summer Quarter only.)

538 Advanced Invertebrate Physiology (6) — **Staff**
Physiological bases of ecology, evolution, and tolerance to stress, as illustrated by many diverse forms. Prerequisites, chemistry through organic and 10 credits in invertebrate zoology or equivalent. (Offered at Friday Harbor during Summer Quarter only.)

558 Comparative Vertebrate Physiology (6) **Martin**
Advanced studies with particular reference to cold-blooded vertebrates and to birds. Prerequisite, 400 or equivalent.

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 Commercial Science. Graduate training is given in business policy and business administration and in these fields of specialization: accounting; business education; finance and banking; foreign trade; insurance; marketing; personnel and industrial relations; production; research and statistical control; and transportation.

As background for candidacy for an advanced degree, students must either have a bachelor's degree from an approved school of business administration or present at least 45 quarter credits in accounting, business fluctuations, business law, business statistics, corporation finance, economics, human relations, production, and marketing. Candidates for admission to the Master of Business Administration or Doctor of Commercial Science program who are offering credits in the above subjects as background must include at least 9 credits in accounting and some credits in business statistics, corporation finance, human relations, production, and marketing.

To take graduate courses in the first quarter of graduate work, a student must have a 3.0 average in the last quarter of his senior year. If he does not maintain a 3.0 average in the first quarter of graduate work, he will not be permitted to take graduate courses in the second quarter of graduate work. A student who does not maintain a B average during the first two quarters of his graduate work will have his case reviewed by the Graduate Committee to determine whether he will be permitted to continue his work toward an advanced degree.

MASTER OF ARTS. Candidates must have a total of 36 credits with a major in one of the fields of graduate study offered by the College. Normally a minimum of 20 credits, exclusive of the thesis, is earned in the major field. A minor may be taken in the College or in another college or department. Requirements for the minor are determined by the department which offers the courses.

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 BUSINESS ADMINISTRATION. The program for the M.B.A. degree, with the minimum number of quarter credits required, is:

	CREDITS
Pol. and Ad. 560 Policy Determination and Administration	3
Pol. and Ad. 561 Policy Determination and Administration	3
Pol. and Ad. 590 Seminar in Administration	5
Acctg. 591 or 592 Seminar in Administrative Controls	3
Bus. Wrtg. 571 Business Studies (Thesis Course)	4
Electives (six in 500 or 600 series)	13
Thesis	5
	36

DOCTOR OF COMMERCIAL SCIENCE. To be considered for admission to the Doctor of Commercial Science program, an applicant must have had a 3.25 grade-point average during the senior year and the minimum background as listed above.

Students are admitted to the Graduate School only with the approval of both the Graduate School and the Graduate Committee of the College. Special appli-

cation forms for the College of Business Administration must be filed with the Graduate Committee; these forms are to be accompanied by a photograph, transcripts of grades, a sample of writing ability, and letters of recommendation.

Programs must be approved in the College before registration. For the first quarter or two, the chairman of the Graduate Committee helps the student to outline a program of study. Later, the chairman appoints an advisory committee representing the student's fields of study, to which the student submits his entire program for approval. The committee (1) administers an oral examination to evaluate the student's background knowledge and his general ability and interests; (2) confers with the student to determine whether he has the quality of mind and the attitude toward advanced work which will justify his working toward the degree; and (3) if satisfied on points 1 and 2, approves the student's program, making additions or modifications as necessary and specifying the fields. After the program is approved, the student continues his work under the direction of the advisory committee, and further revisions in the program are made only upon written request approved by the committee.

The student's program will include the fields of business policy and business administration and three other fields chosen from among accounting; banking and finance; commercial education; foreign trade; insurance; marketing; personnel; production; research and statistical control; and transportation. To insure breadth of training, the student is required to earn, in courses numbered 500 and above, 8 credits in business administration; 8 in business policy; 3 in finance; 6 in marketing; 3 in production; and 15 in social sciences, with at least 9 of the 15 in economics.

A grade-point average of 3.25 must be maintained throughout the program.

After two years of graduate study, and after approval by the Graduate School, the qualifying examination for candidacy is held. This examination consists of written and oral examinations, all taken in one quarter, including (1) four-hour written examinations in each of the three elected fields, in the sixth week of the quarter; (2) four-hour written examinations in business administration and business policy, in the seventh week of the quarter; and (3) a three-hour oral examination, with the time equitably divided among the five fields, given by the advisory committee after the written examinations have been graded and made available to the committee but before the end of the quarter. If the qualifying examination is not entirely satisfactory, the committee may recommend a second examination. At least two quarters must elapse before a second examination is permitted.

The final examination is normally taken at least two quarters after the qualifying examination. It is an oral examination primarily on the thesis and the field of the thesis. All members of the College faculty above the rank of instructor are notified of the oral examinations and are invited to attend. Other visitors can attend only with the approval of the presiding officer.

COURSES

ACCOUNTING

310	**Intermediate Accounting (5)**	**Anton, Berg**
320	**Income Tax I (3)**	**Roller**
330	**Cost Accounting (5)**	**Berg, Walker**
340	**Accounting Systems I (3)**	**Cannon, Hamack**
360	**Advanced Accounting (5)**	**Anton, Hamack**
420	**Income Tax II (3)**	**Roller**
440	**Accounting Systems II (3)**	**Cannon**
450	**Comptrollership (3)**	**Mackenzie**
470	**Auditing I (3)**	**Cox, Johnson**
471	**Auditing II (3)**	**Johnson**

480 Government Accounting I (3) — **Lorig**

481 Government Accounting II (2) — **Lorig**

485 Consolidations and Mergers (3) — **Mackenzie, Johnson**

486 Fiduciary Accounting (2) — **Hamack, Johnson**

490 C.P.A. Problems (3) — **Lorig, Mackenzie**

520, 521, 522 Seminar (3,3,3) — **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: accounting period convention realization of income; matching costs and revenues; joint accounting; 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) — **Hanson, Anton**
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; Accounting 330 is recommended. 591 is not a prerequisite for 592.

604 Research (*, maximum 10) — **Staff**

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 for the solution of problems in industrial, commercial, governmental, and nonprofit organizations. Emphasis is on the utilization of statistical methods in administrative control. Group discussion, lecture, and reading groups. Prerequisite, permission.

604 Research (*, maximum 10) — **Butterbaugh**

Thesis (*) — **Staff**

BUSINESS WRITING

410 Business Reports (3) — **Peck**

571 Business Studies (4) — **Henning**
Independent study in 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

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**

446 Investment Analysis (5) — **Kester, Mackenzie**

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 sort-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, this seminar is planned to develop the ability to analyze and appraise current money market developments. Prerequisite, permission.

522 Seminar in Corporation Finance (3) — **Kester**
Selected contemporary problems and internal and external methods used 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**

Thesis (*) — **Staff**

FOREIGN TRADE

310 Foreign Trade Practices (5) — **Dowd**

450 Far Eastern Foreign Trade Problems (5) — **Dowd**

460 Problems in Foreign Trade (5) — **Dowd**

520, 521 Seminar (3,3) — **Dowd**
Advanced research and analysis on problems and policies of exporting, importing, and related activities. Evaluations of buying; selling; physical supply; finance; risk and market-research policies of business organizations engaged in foreign trade; effects of government policies on the conduct of trade; continuing study of methods of improving the techniques of trade. Prerequisite, permission.

604 Research (*, maximum 10) — **Dowd**

Thesis (*) — **Staff**

GENERAL BUSINESS

439 Business Fluctuations (5) — **Robinson, McGuire**

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. Prerequisite, permission.

593 Seminar in Business Fluctuations (3) — **Robinson**
Business problems arising from fluctuations in prices and demand; analysis of strategic causes and effect 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.

595 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. Prerequisite, graduate standing and permission of instructor.

598 Current Problems in Business (5) — **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. Prerequisite, graduate standing and permission of instructor.

604 Research (*, maximum 10) — **Staff**

Thesis (*) — **Staff**

HUMAN RELATIONS

460 Human Relations in Business and Industry (5) — **Barnowe, Fox, Hennessey, Zoll**

INSURANCE

360 Life Insurance for the Individual (5) — **Hayne, Snider**

370 Property Insurance (5) — **Hayne, Snider**

375 Casualty Insurance (5) — **Hayne, Snider**

460 Life Insurance for Business (5) — **Hayne, Snider**

480 Insurance Programming for Business Enterprise (5) — **Hayne, Snider**

520 Seminar (5) — **Hayne**
Theoretical aspects of the insurance business, rather than the public and sales factors. Examination of the economic theory underlying insurance and a number of the management problems facing the industry. The class is conducted on a discussion basis, with the members presenting reports on the management problems discussed. Prerequisite, permission.

604 Research (*, maximum 10) — **Staff**

Thesis (*) — **Staff**

MARKETING

351 Principles of Salesmanship (2) — **Burd, Boyne**

361 Cooperative Marketing (3) — **Burd**

371 Wholesaling (5) — **Boyne, Gordon**

381 Retailing (5) — **Comish**

391 Advertising (5) — **Porterfield, Wagner**

395 Marketing Analysis (5) — **Wagner**

401 Sales Management (5) — **Stanton**

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, Miller**

471 Advertising Problems (5) — **Wagner**

520, 521, 522 Seminar (3,3,3) — **Burd, Engle, Miller**
Social, economic, and business implications of marketing operations, institutions, and policies. Each course is concerned with different aspects of the problem. Prerequisite, one marketing course and permission.

604 Research (*, maximum 10) — **Staff**

Thesis (*) — **Staff**

PERSONNEL

345, 346 Personnel Management Techniques (3,3) — **Sutermeister, Fox**

450 Industrial Relations Administrations (5) — **Bergren**

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 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) — **Sutermeister**

Thesis (*) — **Staff**

POLICY AND ADMINISTRATION

463 Administrative Practices (3) — **Barnowe**

470 Business Policy (5) — **Brown, Schrieber**

471 Problems of the Independent Businessman (3) — **Brown**

560, 561 Policy Determination and Administration (3,3) — **E. Brown**
Development of an appreciation for and skill in dealing with 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 administrative personnel to carry out the policies; control of operations; coordination of the organization; appraisal and adjustment to changes in the environment. Case study seminar. Prerequisites, M.B.A. candidacy and permission for 560; 560 for 561.

562 Responsibilities of Business Leadership (5) — **Goldberg, 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, 561 and permission.

590 Seminar in Administration (5) — **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, one major paper, and individual reports on special projects and research. Prerequisite, permission.

596 Seminar in Administrative Organization (3) **Bryan**
Principles and application of organization are considered from the executive's viewpoint. Current organization concepts and theories are examined, and working principles are developed. Case materials developing typical problems are analyzed. Prerequisite, 590 and permission.

Thesis (*) **Staff**

PRODUCTION

351 Production Planning and Control (5) **Schrieber, Bryan**

355 Industrial Procurement (5) **Schrieber, Bryan**

460 Manufacturing Administration (5) **Byran**

470 Industrial Analysis of the Pacific Northwest (5) **Schrieber**

520, 521 Seminar (3,3) **Schrieber**
Problems and policies in manufacturing management. Each requires a substantial amount of individual reading on current problems and research in the field. 520 deals with operating decisions requiring frequent review and revaluation; product research and order, controlling material, method and wages, planning and scheduling, quality control, safety problems, industrial cost analysis and control, government regulation of production. 521 covers long term decisions of factory management which are not readily changed, plant location, machinery and equipment, materjal handling, plant layout, industrial building and facilities, industrial power, automatic factory, maintenance problems. Each course is a separate unit. Prerequisite, permission.

604 Research (*, maximum 10) **Schrieber, Bryan**

Thesis (*) **Staff**

REAL ESTATE

410 Real Estate Appraisals, Brokerage, and Management (5) **Demmery**

604 Research (*, maximum 10) **Demmery**

TRANSPORTATION

311 Railroad Transportation (5) **Brewer, Knipe**

313 Air Transportation (5) **Brewer, Knipe**

315 Highway Transportation (5) **Brewer, Constantin**

317 Water Transportation (5) **Constantin**

435 Industrial Transportation Problems (5) **Brewer**

440 Industrial Traffic Management (5) **Brewer**

450 Air Law and Regulation (3) **Brewer, Knipe**

452 Transportation Insurance (5) **Hayne**

455 Airport Management (3) **Knipe**

520, 521 Seminar (3,3) **Brewer**
Advanced analysis and research in 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 the transportation businesses. Prerequisite, permission.

604 Research (*, maximum 10) **Brewer**

Thesis (*) **Staff**

SCHOOL OF DENTISTRY

Dean: ERNEST M. JONES, 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 five quarters of residence is required for a major in orthodontics or pedodontics, and a minimum of three quarters for a major in restorative dentistry. No foreign language is required.

ORTHODONTICS. Required courses are: Dentistry 500, 510, 511, 512, 513, 521, 522, 523; Orthodontics 500, 501, 502, 503, 504, 546, 547, 548, 549, 550, 551; Pediatrics 505 (Physical Growth of the Well Child); Psychology 507 (Psychological Development of the Child); and Public Health 472 (Applied Statistics in Health Sciences).

PEDODONTICS. Required courses are: Dentistry 500, 510, 511, 512, 513, 521, 522, 523; Orthodontics 500, 501, 502, 503, 504; Pediatrics 505; Pedodontics 500, 501, 502, 503, 504, 546, 547, 548, 549, 550; Psychology 507; 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 exactly the same as 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.

COURSES

DENTAL SCIENCE AND LITERATURE

400, 401, 402 Applied Dental Science (1,2,2) — **Staff of the Schools of Dentistry and Medicine**

DENTISTRY

500 Advanced Oral Histology, Embryology, and Oral Pathology (4) — **Thomas, Ogilvie**
Lectures and seminar discussions on the details of development, histology, and pathology of cranial, facial, and oral structures, with emphasis on clinical application of basic knowledge. (Dept. of Periodontology)

510 Applied Osteology and Myology of the Head and Neck (2) — **Riedel, Moore**
Detailed study as a background for the study of the growth and development of the head and for cephalometric roentgenogram interpretation. (Dept. of Orthodontics)

511 Roentgenographic Cephalometry (2) — **Moore, Riedel, Takano**
Basic principles, history, and techniques of roentgenographic cephalometry. (Dept. of Orthodontics)

512, 513 Growth and Development (2,2) **Moore**
Review of the various methods of human growth, with special emphasis upon studies of the head; growth of the head and development of the dentition from birth through maturity; analysis of the factors that produce normal occlusion and malocclusion. Each course is a prerequisite to the following course. (Dept. of 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. (Dept. of Periodontology)

522 Dental Caries Control (2) **Law, Staff**
Seminar on etiology and control of dental caries. Discussion based on assigned reading on physilogy, composition of saliva, chemical composition of the teeth, oral microbiology, degradation of carbohydrates, systemic factors in the caries process, fluorides, enzyme inhibitors, and caries susceptibility tests. (Dept. of Pedodontics)

523 Public Health Dentistry (1) **Hoffman**

580 Gnothodynamics (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. (Depts. 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. (Dept. 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. (Dept. of Fixed Partial Dentures)

583 Reproduction of Oral Tissues (4) **Young, Regli**
A seminar-laboratory-clinic in the various needs for reproduction of oral tissues in restorative dentistry. Physical requirements of various types of restoration; routines, materials, and equipment used; tissue responses to physical and functional stimuli. (Dept. of Prosthodontics)

Thesis (*) **Staff**

FIXED PARTIAL DENTURES

300, 301, 302 Fixed Partial Dentures (1,1,1) **Guthrie**

347 Clinical Crowns and Fixed Partial Dentures (4) **Stibbs, Staff**

400, 401 Advanced Fixed Partial Dentures (1,1) **Stibbs, Hagen**

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 contra-indications 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**

OPERATIVE DENTISTRY

400, 401, 402 Advanced Operative Dentistry (1,1,1) **Stibbs, Jones**

446 Advanced Clinical Operative Dentistry (6) **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. Post-operative history of teeth restored with plastic materials; relative service life of materials. Basic and variant designs of cavity preparation, considering morphology of tooth, masticatory stress, physical properties of material, and location and size of restoration. Variant 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**

ORAL DIAGNOSIS AND TREATMENT PLANNING

300, 301 Oral Diagnosis and Treatment Planning (1,1) — **Jacobson, Degering**

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**

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**

PERIODONTOLOGY

300, 301, 302 Periodontology (1,1,1) — **Staff**

304 Endodontia (1) — **Ingle**

331 Oral Pathology (4) — **Thomas, Ogilvie, Neilson, Hileman**

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 Lectures**

402 Advanced Removable Partial Denture Prosthodontics (1) — **Regli**

446 Senior Clinical Prosthodontics (5) — **Staff**

561 Immediate Dentures (4) — **Young, Regli**
A seminar-clinic in removable partial denture treatments. Discussions of diagnosis and treatment planning; variations in basic denture procedures; the surgical operations of preparing the ridges for dentures; tissue reaction and wound healing; postoperative care; patient information. Clinical operations using procedures and equipment for denture construction.

562 Removable Partial Dentures (4) **Young, Regli**
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**

COLLEGE OF EDUCATION

Dean: FRANCIS F. POWERS, 230 Education 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 successful teaching or administrative experiences 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: educational methods, college teaching, curriculum, elementary education, educational administration and supervision, educational psychology, educational sociology, guidance and counseling, history and philosophy of education, and special education.

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, educational methods, college teaching, comparative education, curriculum, educational administration, educational psychology, educational sociology, educational supervision, elementary education, guidance and counseling, history and philosophy of education, secondary education, special education, and tests and measurements. (If business education is one of the two noneducation subjects, a maximum of 10 credits in it may be offered, these credits to be in business education, materials, and distributive education.) Students must take a written final examination over the selected four fields in education.

DOCTOR OF EDUCATION. The requirements are: 60 credits in education, including Education 490 or 491, 587, 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: educational methods, college teaching, curriculum, educational administration and supervision, educational psychology, educational sociology, elementary education, guidance and counseling, history and philosophy of education, and special education.

DOCTOR OF PHILOSOPHY. The requirements are: 70 credits in education, including Education 490, 587, 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: educational methods, college teaching, curriculum, educational administration and supervision, educational psychology, elementary education, guidance and counseling, history and philosophy of education, and special education.

Doctoral candidates who are taking a minor in education must present a minimum of 35 approved credits in education courses.

COURSES

401	**Advanced Educational Psychology (3)**	**Barr**
402	**Child Study and Development (3)** (Not offered 1953-55; offered Summer Quarter for 2½ credits.)	**Staff**
403	**Psychology of Elementary School Subjects (5)** (Offered alternate years; offered 1953-54.)	**Staff**
404	**Education of Exceptional Children (5)**	**Hayden**
405	**Problems of Adolescence (5)** (Not offered 1953-55; offered Summer Quarter.)	**Staff**
406	**Character Education (3)**	**Barr**
408	**Mental Hygiene for Teachers and Administrators (3)**	**Barr**
410	**Educational Sociology (3)**	**Jessup**
415	**Principles of Safety Education (3)** (Not offered 1953-55; offered Summer Quarter for 2½ credits.)	**Corbally**
417	**Adult Education (3)**	**Jessup**
420	**Theory and Technique of Kindergarten and Primary Teaching (3)** (Not offered 1953-55; offered Summer Quarter for 2½ credits.)	**Staff**
421	**Remedial Teaching (5)** (Offered alternate years; offered 1953-54.)	**Staff**
422	**Diagnosis in Education (5)** (Offered alternate years; offered 1954-55.)	**Staff**
423	**Learning Processes of Handicapped Children (5)** (Offered alternate years; offered 1954-55.)	**Staff**
425	**Teaching Reading and Remedial Reading (5)**	**Staff**
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)** (Not offered 1953-55; offered Summer Quarter for 2½ credits.)	**Staff**
437	**School Supervision (5)** (Offered alternate years; offered 1953-54.)	**Jessup**
438	**Supervision of Elementary School Subjects (5)** (Offered alternate years; offered 1954-55.)	**Jessup**
445V	**Principles and Objectives of Vocational Education (3)**	**Baily**
447	**Principles of Guidance (3)**	**Barr, Corbally**
448	**Improvement of Guidance Techniques (3)**	**Barr**
455	**Auditory and Visual Aids in Teaching (3)**	**Hayden**
456	**Auditory and Visual Aids in Teaching (3)**	**Hayden**
457	**Audio-visual Aids Management (3)** (Offered when demand is sufficient.)	**Hayden**
461	**Elementary School Curriculum (5)** (Offered alternate years; offered 1953-54.)	**Jessup**
464	**Principles of Curriculum Improvement (3)**	**Draper**
466	**Workshop in Curriculum Improvement (2½ or 5, maximum 15)**	**Draper**
467	**Techniques of Curriculum Improvement (3)**	**Draper**
468	**Extracurricular Activities (3)**	**Draper**
470	**Historical Backgrounds of Educational Methods (3)**	**Williams**
475	**Improvement of Teaching (3)** (Offered when demand is sufficient.)	**Staff**
475F	**Sight Saving (3)** (Offered when demand is sufficient.)	**Staff**
475H	**Improvement of Teaching: Language Arts (2½)** (Offered Summer Quarter only.)	**Staff**

475M Improvement of Teaching: Social Studies (3) — **Staff**
(Not offered 1953-55; offered Summer Quarter for 2½ credits.)

475S Improvement of Teaching: Science (3) — **Staff**
(Not offered 1953-55; offered Summer Quarter for 2½ credits.)

476C Field Work in Business Education (4) — **Staff**
(Offered Summer Quarter only.)

476D Materials and Methods of Teaching Typewriting (2½) — **Tidwell**
(Offered Summer Quarter only.)

476E Materials and Methods of Teaching Office and Clerical Practice (2½) — **Staff**
(Offered Summer Quarter only.)

476F Materials and Methods of Teaching Thomas Shorthand (2½) — **Staff**
(Offered Summer Quarter only.)

476H Workshop in Current Problems of Distributive Education (2½, maximum 5) — **Staff**
(Offered Summer Quarter only.)

476I Problems of Distributive Education (2½) — **Staff**
(Offered Summer Quarter only.)

476K Coordination of Distributive Education and Diversified Occupational Programs (2½)
(Offered Summer Quarter only.)

476L Materials and Methods of Teaching Gregg Shorthand and Transcription (2½) — **Staff**
(Offered Summer Quarter only.)

476M Principles and Problems of Business Education (2½) — **Tidwell**
(Offered Summer Quarter only.)

476N Materials and Methods of Teaching Bookkeeping and General Business Subjects (2½) — **Staff**
(Offered Summer Quarter only.)

477 The Teaching of Reading (5) — **Staff**
(Offered when demand is sufficient.)

480 History of Education (5) — **Jessup**

484 Comparative Education (5) — **Jessup**

485 Advanced General Shop for Industrial Education Teachers (3) — **Baily**
(Not offered 1953-54; offered Summer Quarter for 2½ credits.)

488 Philosophy of Education (3) — **Staff**
(Offered when demand is sufficient.)

490 Educational Statistics (5) — **Dvorak**

491 Advanced Educational Measurements (3) — **Dvorak**

501 Seminar in Educational Psychology (3) — **Barr**
Psychological principles of education; summary of research results in application to school problems. Prerequisite, a background in general and educational psychology.

510 Seminar in Educational Sociology (3) — **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**
(Offered when demand is sufficient.)

525 Seminar in Elementary Education (3) — **Boroughs**
A critical examination of the elementary school, with special emphasis on curriculum and method.

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 and 431, or 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 education plans; building maintenance and school insurance; modernizing existing buildings; financing the school plant program. Prerequisite, 430 or 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. Prerequisite, 430 or permission.

541, 542, 543 Guidance and Counseling (3,3,3) **Barr**
Techniques and materials used in school guidance; organization and administration of the guidance program. Primarily for people who plan to become counselors or guidance workers in educational institutions. Prerequisite, permission.

547 Seminar in Guidance (5) **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. (Not offered 1953-55; offered Summer Quarter.)

550 Development and Organization of Higher Education (3) **Williams**
Higher education from the standpoint of the new instructor; history of administrative organization.

551 College Problems (3) **Williams**
A consideration of the pertinent problems of the college teacher and his tasks.

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.

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. (Not offered 1953-55; offered Summer Quarter for 2½ credits.)

560, 561 Seminar in Curriculum (3,3) **Draper**
Research in guidance, extracurricular activities, and curriculum. The core curriculum and general education are emphasized.

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
Secondary Education
Special 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 $21.50 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 engi-

neering. 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 engineering 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 departments. 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 nine additional hours 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, 303 Aerodynamics (3,3,3,3)	**Ganzer**
311 Airplane Design Loads (2)	**Weikel**
320, 321 Aerodynamics Laboratory (1,1)	**Staff**
330, 331 Aircraft Structural Analysis (4,4)	**Weikel**
340 Aircraft Structural Design (4)	**Weikel**
350 Aircraft Structural Testing (1)	**Weikel**
360 Aircraft Engines (3)	**Eastman**
380 Aeronautical Engineering Measurements (2)	**Staff**
385 Selected Subjects in Aeronautical Design (2)	**Staff**
390-391-392 Seminar (0-0-1)	**Eastman, Staff**
395 Special Projects (2-5)	**Staff**
404 Introduction to Theoretical Aerodynamics (3)	**Street, Ganzer**
410 Aerodynamic Design (4)	**Ganzer**
422 Aerodynamics Laboratory (3)	**Staff**
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) — **Street**

505 Aerodynamics of Incompressible Fluids (3) — **Street**
Theory of perfect incompressible fluids; Euler's equations of motion; circulation and vorticity, potential flow, conformal tranformations, 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. Prerequisite, 506 and Physics 350 or equivalent. (Offered when demand is sufficient.)

516 Stability and Control (3) — **Ganzer**
Aerodynamics of control; the general problem of dynamic stability; the influence of aerodynamic parameters on flying characteristics.

520-521-522 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. Prerequisite, 530 or Civil Engineering 572. (Offered when demand is sufficient.)

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 the Airplane (3) — **Martin, Street**
The dynamics of the rigid airplane; general theory of particle motion in space, and the application to problems of airplane flight paths; general theory of systems of elastically connected particles, and the application to the dynamics of airplane components. (Offered when demand is sufficient.)

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 107), 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 on the 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. No foreign language is required.

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

COURSES

375 Chemical Engineering Thermodynamics (2) — **Staff**

N381 Field Trip (0) — **Staff**

N382 Field Trip (0) — **Staff**

470, 471, 472, 473 Unit Operations (3,2,2,2,) — **Staff**

474, 475, 476 Unit Operations Laboratory (2,2,2) — **Staff**

477 Advanced Chemical Calculations (3) — **Staff**

481 Inorganic Chemical Processes (3) — **Moulton**

482 Organic Chemical Processes (3) — **Moulton**

483 Chemical Engineering Process Design (3) — **Moulton**

485 Industrial Electrochemistry (3) — **Moulton**
(Offered when demand is sufficient.)

491, 492, 493 Unit Process Laboratory (1,1,1) — **Staff**

498 Chemical Engineering Thesis (1-5, maximum 5) — **Staff**

520 Graduate Seminar (1-5) — **Staff**
Special lectures offered as necessary by various members of the staff and visiting professors.

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. Students who have taken the former 570 may not receive credit for the new 570 and 574. Prerequisite, 471.

571 Heat Transfer (3) — **Staff**
Measurement of temperature and heat capacity. Steady and unsteady state heat conduction. Convective heat transfer. Film coefficient correlations by use of dimensionless group functions. Overall heat transfer coefficients. Radiant energy transfer. Introductory design calculations. Prerequisite, 472.

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. Prerequisite, 473. (Offered alternate years; offered 1954-55.)

573 Absorption and Extraction (3) **Moulton**
Diffusion theory; transfer of material between phases; design of absorption equipment; Kremser method; multicomponent systems; performance of absorption equipment; simultaneous absorption and chemical reaction; solvent extraction. Prerequisite, 570. (Offered alternate years; offered 1953-54.)

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. Students who have taken the former 570 may not receive credit for the new 570 and 574. Prerequisites, 570 and 575.

575 Advanced Chemical Engineering Thermodynamics (3) **McCarthy**
General equations for phase equilibrium; applications of thermodynamics to unit operations and to prediction of chemical equilibria developed in some detail. Prerequisite, Chemistry 456 or equivalent.

580 Nuclear Engineering (3) **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. Prerequisite, 570. (Offered alternate years; offered 1953-54.)

581 Kinetics and Catalysis (3) **Johanson**
Homogeneous and heterogeneous systems, with emphasis on chemical engineering principles applied to industrial reactor design. Prerequisite, 570. (Offered alternate years; offered 1953-54.)

582 Multistage Separation Processes (3) **McCarthy**
Theoretical and practical study of special batch and continuous multistage processes for separation of various substances, including isotopes. Ion exchange, chemical exchange, gas and thermal diffusion, chromatographic, electrophoretic, and other processes are considered. Prerequisite, permission. (Offered alternate years; offered 1954-55.)

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. (Offered alternate years; offered 1954-55.)

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. (Offered alternate years; offered 1954-55.)

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 (2) **McCarthy**
Fundamentals of substances with high molecular weight, including study of valence consideration, molecular weight determination, polymerization and condensation, reactions, cracking fiber and film formation, glasses, and mechanical properties as related to chemical structure. Prerequisites, 232 and 356. (Offered when demand is sufficient.) (Offered alternate years; offered 1954-55.)

587 Chemistry of High Polymers (2) **McCarthy**
Chemistry and technology of substances with high molecular weight, including natural and synthetic hydrocarbons, vinyls, rubbers, phenolaldehyde resins, lignin, cellulose, starch, glycogen, nylons, proteins, and silicons. Prerequisites, Chemistry 232 and 356. (Offered when demand is sufficient.) (Offered alternate years; offered 1954-55.)

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 (4)

R476 Diffusional Processes (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 107) and Master of Science in Civil Engineering.

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.

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 (2) — **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), 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, S, W, or T.

Thesis (*) — **Staff**

SURVEYING

312 Route Surveying (3) — **Chittenden, Colcord, Collier**

313 Location and Earthwork (3) — **Chittenden, Colcord, Collier**

314 Intermediate Surveying (3) — **Chittenden, Colcord, Collier**

315 Photogrammetry (3) — **Chittenden, Colcord**

TRANSPORTATION ENGINEERING

321 Roads and Pavements (3) — **Meese, Ekse**

403 Principles of Urban Planning (3) — **Tyler, Horwood**

422 Railway Engineering (3) — **Ekse**

423 River and Harbor Engineering (3) — **Meese**

424 Highway Design (3) — **Ekse**

426 Airfield Design (3) — **Ekse**

428 Highway Economics and Administration (3) — **Hennes, Horwood**

429 Urban Traffic (3) — **Eske, 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 Hydraulics (5) — **Moritz, Campbell, Staff**

343 Hydraulic Engineering (5) — **Moritz, Campbell, Staff**

445 Hydraulic Machinery (3) — **Moritz**

447 Hydraulic Power (3) — **Campbell**

448 Reclamation (3) — **Van Horn, Campbell**

547 Advanced Hydraulic Power (4) — **Campbell**
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) — **Sylvester**

455 Water Supply and Treatment (3) — **Tyler, Sylvester**

458 Sewerage and Sewage Treatment (3) — **Tyler, Sylvester**

459 Sanitary Design (3) — **Tyler, Sylvester**

ENGINEERING MATERIALS

362 Materials of Construction (3) — **Mittet**

363 Materials of Construction (3) — **Smith**

466 Soil Mechanics (3) — **Hennes, Meese**

467 Earthwork Engineering (3) — **Hennes**

468 Engineering Properties of Soils (3) — **Hennes, Meese**

567 Advanced Soil Mechanics and Foundations (4) — **Hennes**
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 sub-structures. Prerequisites, 46 and senior or graduate standing.

STRUCTURAL ANALYSIS AND DESIGN

371, 372, 373 Structural Theory (3,3,3) — **Clanton, Mittet**

375, 376, 377 Structural Design (3,3,3) — **Clanton, Miller, Rhodes, Sergev**

485 Applied Structural Analysis (3) — **Miller**

491 Advanced Professional Design (2-5) — **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) — **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 vessel. 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, compatability 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**
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**
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**
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 107), 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 must be chosen from those numbered above 500 and must include Electrical Engineering 510, 520, 521, and 522.

MASTER OF ELECTRICAL ENGINEERING. This is a more advanced degree than that of Master of Science in Electrical Engineering. A total of 72 credits of course work and a more extensive thesis are required. Other requirements are similar to those for the Master of Science degree. Certain physics courses may be used in partial satisfaction of the major requirements.

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, 514, 520, 521, and 522.

COURSES

300 Direct Currents (5) — **Robbins, Staff**

301 Alternating Currents (5) — **Robbins, Staff**

320 Alternating-Current Circuits (5) — **Bergseth, Staff**

340 Alternating-Current Machinery (4) — **Rustebakke, Staff**

341 Alternating-Current Machinery Laboratory (4) — **Rustebakke, Staff**

360 Alternating-Current Machinery (4) — **Rustebakke, Staff**

361 Alternating-Current Machinery Laboratory (4) — **Rustebakke, Staff**

400 Vacuum Tubes and Electronics (5) — **Hill, Staff**

420 Vacuum Tubes and Electronics (4) — **Swarm, Staff**

425 Electric Transients (4) — **Smith, Staff**

429 Field Theory (3) — **Rogers, Staff**

430 Individual Projects (2-5, maximum 10) — **Staff**

440 Vacuum-Tube Circuits (6) — **Hill, Staff**

450 Advanced Alternating Currents (6) — **Hoard, Staff**

453 Electric Power Systems (3) — **Robbins**

457 Industrial Control (3) — **Hoard**

460, 461 Vacuum-Tube Circuits (5,5) — **Hill, Staff**

470 Communications Networks (6) — **Eastman, Staff**

473 High-Frequency Circuits and Tubes (5) — **Cochran**

479 Radio Design (2) — **Jacobsen**

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, 320 and Mathematics 421.

511 Network Analysis (4) — **Lewis**
Matric 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 system, 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 or 360.

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, sysceptance variation methods, frequency standards, and standing wave detectors. Prerequisite, 470.

520-521-522 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. Prerequisite, 425. (Offered alternate years; offered 1954-55.)

545 Power Transmission (5) — **Rustebakke**
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) — **Rustebakke**
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. Prerequisite, 420. Must be accompanied or preceded by 510. (Offered alternate years; offered 1954-55.)

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. Prerequisite, 566 or permission. Includes one three-hour laboratory per week.

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.

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. Prerequisite, 470. (Offered alternate years; offered in 1953-54.)

582 Servomechanisms in Electrical Engineering (4) **Stout**
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) **Stout**
Study of field models, analogue and digital computers, and various special-purpose computers for solving electrical problems. Includes one three-hour laboratory per week. Prerequisite, 510. (Offered alternate years; offered 1953-54.)

600 Research (2-5) **Staff**

Thesis (*) **Staff**

Electrical engineering course offered through the University of Washington at the Graduate School of Nuclear Engineering, Richland, Washington.

R590 Electric Transmission Problem (5)

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 107), and 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) — Schaller, Konecny

306 Production Techniques (1) — Schaller, Snyder

307 Production Planning (1) — Schaller, Snyder

312 Machine Tool Fundamentals (3) — Schaller, Konecny, Zylstra

320 Thermodynamics (5) — McMinn, Nordquist

322, 323 Experimental Engineering (3,3) — Crain, Krause, McIntyre

325 Thermodynamics for Nonmajors (3) — Nordquist, McMinn

340 Engineering Materials (3) — Mills, Balise, Day

341 Aircraft Materials (2) — Schaller

342 Industrial Materials and Processes (3) — Mills

361, 362 Machine Design (3,3) — Morrison, Balise, Crain, Day

366 Dynamics of Engines (2) — Morrison
(Offered Autumn, 1953, and Winter, 1954, only.)

367 Dynamics of Machines (3) — Morrison, Nordquist

368 Kinematics (3) — Morrison, Day

403 Tool Design (3) — Konecny

410 Engineering Administration (3) — Schaller, Owens

411 Engineering Economy (3) — Schaller, Konecny

415 Quality Control (3) — Owens, Zylstra

417 Methods Analysis (3) — Owens, Konecny

424 Power Plants (5) — Cooper

425 Air Conditioning (3) — Hendrickson, Crain

426 Thermodynamics for Nonmajors (5) — Nordquist, Crain, Krause

428 Refrigeration (3) — Hendrickson, McMinn

433 Marine Engineering (3) — McMinn, Rowlands

466 Machine Design (4) — Morrison, Day, Balise

468 Machine Design (3) — Morrison, Day, Balise

481 Internal Combustion Engines (3) — Guidon

482 Internal Combustion Engine Laboratory (3) — Guidon, Cooper, Krause

483 Internal Combustion Engine Design (3) — Guidon

490 Naval Architecture (3) — Rowlands

491 Naval Architecture (3) — Rowlands

492 Naval Architecture (3) — Rowlands

521 Thermodynamics (3) — Nordquist, McMinn
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) — Watson
Study of conduction, convection, and radiation, separately and in combination; steady and unsteady states; mathematical treatments; dimensional analyses; graphical solutions; change-of-phase problems. Prerequisites, 320, and graduate standing or permission.

541 Advanced Engineering Materials (3) — Mills
A second course in the nature and behavior of engineering materials. Ferrous and nonferrous 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.

543 Experimental Mechanics of Materials (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.

544 Engineering Instrumentation (3) **Balise, Day**
Analysis of general equations of instrument response; study of industrial instruments, including pressure, temperature, composition, mechanical measurements; telemetering. Application of feedback to the several modes of control; factors affecting controllability; servomechanisms. Prerequisite, graduate standing in 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.

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

R523 Heat Transfer and Fluid Flow (5)

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 107); 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 (3) **E. E. Mueller**

303 Process Ceramics: Coatings (3) **E. E. Mueller**

304 Process Ceramics: Drying and Firing (3) **J. I. Mueller**

N306 Ceramic Engineering Excursion (0) **Staff**

N307 Ceramic Engineering Excursion (0) **Staff**

311 Physical Ceramics: Structure and Reactions (3) **J. I. Mueller**

312 Physical Ceramics: Colloids and Rheology (3) **E. E. Mueller**

331 Ceramic Craftsmanship: Pottery Techniques (4-5) **Rockwell**

332 Ceramic Craftsmanship: Elementary Glazes (4-5) — **Rockwell**

333 Ceramic Craftsmanship: Decoration (4-5) — **Rockwell**

402 Dryer and Kiln Design (2) — **E. E. Mueller**

403 Ceramic Plant Design (2) — **E. E. Mueller**

411 Physical Ceramics: Ceramic Equilibria (3) — **J. I. Mueller**

420 Abrasives (2) — **Staff**
(Offered alternate years; offered 1954-55.)

421 Ceramic Bodies Laboratory (3) — **Staff**

422 Ceramic Petrography (2) — **Kelly, Staff**

430 Foundry Sands (2) — **Staff**
(Offered alternate years; offered 1954-55.)

440 Glass Technology (2) — **Staff**
(Offered alternate years; offered 1953-54.)

450 Cements, Limes, and Plasters (2) — **Staff**
(Offered alternate years; offered 1954-55.)

460 Ceramic Coatings for Metals (2) — **Staff**
(Offered alternate years; offered 1953-54.)

470 Refractories (3) — **E. E. Mueller**

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 industry.

502 Process Ceramics: Unit Process Control (3) — **J. I. 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.

511 Theoretical Physical Ceramics (3) — **E. E. 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) — **E. E. 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) — **E. E. Mueller**
Application of physical ceramic principles to the control of ceramic production; instrumentation studies. Prerequisite, 512.

520 Seminar (1, maximum 3) — **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) — **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) — **Finley**

301 Fire Assaying (3) — **Finley**

306 Metallurgy Excursion (1) — **Staff**

307 Metallurgy Excursion (1) — **Staff**

321 Nonferrous Metallurgy (3) — **Finley**

322 Metallurgical Calculations (3) — **Finley**

323 Advanced Nonferrous Metallurgy (3) — **Finley**

324 Metallurgical Laboratory (2) — **Finley**

361 Physical Metallurgy (3) — **Rowe**

362 Physical Metallurgy (3) — **Rowe**

363 Physical Metallurgy (3) — **Rowe**

431 Light Metal Alloys (2) — **Finley**

441 Engineering Physical Metallurgy (4) — **Rowe**

451 Powder Metallurgy (2) — **Finley**

455 Iron and Steel (3) — **Daniels**

461 Foundry Metallurgy (2) — **Rowe**

464 Metallurgical Analysis (2) — **Rowe, Finley**

465 Metallurgical Inspection of Metals (3) — **Rowe**

466 Ferrous Alloy Technology (2) — **Rowe**

467 Alloy Steels (2) — **Rowe**

471 Fuel Technology (3) — **Daniels**

472 Fuel Technology Laboratory (1) — **Finley**

481J Mineral Industry Economics (3) — **Pifer**

520 Seminar (1, maximum 3) — **Staff**
Review of research problems and recent articles in the literature. Required for all graduate students.

521 X-Ray Metallography (3) — **J. I. Mueller**
Theory and use of the diffraction X ray in the study of metals; physical properties; generation and diffraction of X rays; diffraction equipment; diffraction crystallography; single crystals and powders; interpretation and qualitative analysis. Prerequisite, Physics 355 or equivalent.

522 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 in 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) — **Rowe**
Modern concepts of metallurgy: atomic arrangement in metals; metallurgical periodic tables, strain vs. solid state reactions; substitution and interstitial alloys; phase transformations; physical form of alloys; crystal elasticity; plasticity of single and polycrystalline media and alloys; creep and secondary plastic effects; twinning. Prerequisite, 362.

562 Theory of Metals and Alloys (3) — **Rowe**
Internal friction; rupture and fatigue; metal diffusion; solubility of gases in metal; theory of the iron-carbon system; electron theory of solids and its metallurgical applications; band theory; cohesion of solids; electrical and magnetic properties of metals. Prerequisite, 561.

563 Theory of Metals and Alloys (3) **Rowe**
Crystal structure and phase boundaries; order-disorder transformation; nucleation and grain growth; precipitation phenomena; orientation and shape of new phases; causes of phase change by electronic and potential energy. Prerequisite, 562.

571 Fuels and Combustion (*) **Daniels**
Advanced studies in combustion technology; physics and chemistry of combustion; combustion calculations; technology of coal, oil, and gaseous fuel burning. Prerequisite, 471.

600 Research (*) **Staff**

Thesis (*) **Staff**

Metallurgical engineering course offered through the University of Washington at the Graduate School of Nuclear Engineering, Richland, Washington.

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 Mine Excursion (1) **Staff**
307 Mine Excursion (1) **Staff**
321 Drilling, Blasting, and Excavation (3) **Daniels**
322 Methods of Mining (4) **Daniels**
423 Coal-Mining Methods (3) **Daniels**
425 Barodynamics (2) **Pifer**
426 Exploration and Development of Mineral Deposits (3) **Staff**
430 Mine Surveying (2) **Staff**
431 Mine Mapping (1) **Staff**
432 Mining Engineering (4) **Pifer**
433 Mine Ventilation (3) **Daniels**
461 Mineral Dressing: Preparation (3) **Aplan**
462 Mineral Dressing: Concentration (4) **Aplan**
463 Mineral Dressing: Flotation (3) **Aplan**
464 Mineral Dressing: Leaching (3) **Aplan**
465 Mineral Dressing: Microscopy (2) **Aplan**
466 Mineral Dressing Practices (2) **Aplan**
467 Mineral Dressing Design (2) **Aplan**
476 Coal Preparation (3) **Daniels**
478 Coal Preparation Machinery (2) **Daniels**

480 Mineral Land Valuation (2) — **Pifer**

481J Mineral Industry Economics (3) — **Pifer**

482 Mineral Industry Management (3) — **Daniels**

483 Mining Laws (1) — **Pifer**

485 Industrial Minerals (3) — **Aplan**

520 Seminar (1, maximum 3) — **Staff**
Lectures and discussions; review of research problems and recent literature. Required for all graduate students.

521 Metal Mining (*) — **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 (*) — **Daniels**
Studies in coal mining, preparation, or coking with particular reference to the Pacific Northwest. Prerequisite, graduate standing.

560 Mineral Dressing (*) — **Aplan**
Special problems and research.

561 Advanced Mineral Dressing Preparation (*) — **Aplan**
Unit process studies in comminution, sizing, classifying, and auxiliary processes.

562 Advanced Mineral Dressing Laboratory (*) — **Aplan**
Experimental study of theoretical principles of preparation and concentration. Arranged concurrently with 561 and 563 or as required.

563 Advanced Mineral Dressing Theory (*) — **Aplan**
Physics and chemistry of beneficiation.

564 Advanced Mineral Dressing Design (*) — **Aplan**
Plant layout studies, economics, and equipment design.

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 is no foreign language requirement 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**

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) — **Schaeffer**

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**

465 Forest Photo Interpretation (3) — **Robertson**

466, 467, 468, 469 Senior Management Field Studies (5,5,4,2) — **Robertson**

470 Forest-Products Industries (3) — **Erickson**

471 Timber Design (3) — **Bryant**

472 Plywood, Lamination, and Glues (4) — **Bryant**

476 Wood Pulp (5) — **Grondal**

478 Advanced Wood Technology (5) — **Erickson, Bryant**

481 Milling (5) — **Thomas**

482 Manufacturing Problems (5) — **Thomas**

483 Theory and Practice of Kiln Drying (3) — **Grondal**

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 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) — **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, management, cost analysis, stumpage and logging appraisal, financial reports. Prerequisites, 446, 447, 448, and 449.

555 Forest Influences (4) — **Gessel**
A study of the effects of vegetation on climate, water, and soil, with application to the conservation of water and soil and the control of floods. Prerequisites, 321, 322, 353, 410, and permission of instructor.

560 Forest History and Policy (3) — **Marckworth**
The development of forestry policy in the United States and other countries. Prerequisites, 409 and 460.

562 Forest-Management Plans (3-5) — **Robertson**
Preparation of management plans for large areas, public and private. Prerequisite, 469.

570 Advanced Wood Preservation (3) — **Erickson**
Theory of penetrance; design of treating plants; fireproofing and fireproofing compounds. Prerequisites, 370 and 371.

590, 591, 592 Graduate Studies (2-5) — **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: GLADYS R. BOUGHTON, 112 Library

FACULTY AND STAFF

BEVIS, LEURA DOROTHY, 1947 ..... *Assistant Professor of Librarianship*
B.A., 1927, Pomona; B.S. in L.S., 1947, Southern California;
M.A., 1951, Washington

BOUGHTON, GLADYS R., 1947 (1953)..... *Associate Professor of Librarianship; Director of the School of Librarianship*
B.A., Certificate in L.S., 1932, M.S., 1939, Denver

GROVES, ELIZABETH ALICE, 1945..... *Assistant Professor of Librarianship*
B.A., 1929, British Columbia; B.S. in L.S., 1930, Certificate in Library Work with Children, 1931, Washington

PETERSON, MARION ELIZABETH, 1951 (1953)..... *Assistant Professor of Librarianship*
B.A., 1930, B.A. in Librarianship, 1941, Washington

TURNER, MABEL ALEXANDRA, 1941 (1946)..... *Assistant Professor of Librarianship*
A.B., 1926, Oregon; B.S. in L.S., 1931, Columbia

BAUER, HARRY C., 1945 (1947)..... *Professor of Librarianship; Director of Libraries*
B.A., 1927, M.S., 1929, Washington University (St. Louis); Certificate of Librarianship, 1931, St. Louis Library School

BROWN, JAMES W., 1948..... *Supervisor, Film Center*
B.A., 1937, Central Washington College of Education; M.A., 1939, Ph.D., 1946, Chicago

GALLAGHER, MARIAN GOULD, 1944 (1948)..... *Associate Professor of Law and Law Librarian*
B.A., 1935, LL.B., 1937, B.A. in L.S., 1939, Washington

SMITH, CHARLES WESLEY, 1905 (1947)..... *Librarian Emeritus; Professor Emeritus of Librarianship; Bibliographic Consultant*
B.A., 1903, B.L.S., 1905, Illinois

LAWTON, RUTH M..... *Secretary*
B.A., 1930, Washington

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 the autumn of 1933 it became a part of the Graduate School and offered a one-year curriculum in librarianship leading to the degree 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 Library Building. 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 twenty or more departmental and research libraries containing more than 750,000 volumes. Students have access to the facilities of the Pacific Northwest Bibliographic Center and to the University's Instructional Materials Center, which contains an extensive film library. 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 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 further gifts from alumni and friends and will soon be made available for librarianship students.

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 Librarianship. 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 for four consecutive quarters is Autumn Quarter.

A thesis is generally required for the Master of Librarianship degree. Occasionally a field project or some 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 non-thesis 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
Libr. 500 Libraries, Librarians & Society	2
Libr. 510 Evaluation of Materials	4
Libr. 530 Organization of Materials	4
Libr. 599 Methods of Research	2
	12

SECOND QUARTER	CREDITS
Libr. 502 Organization & Administration	3
Libr. 511 Materials	3
Libr. 531 Organization of Materials	4
Electives	2
	12

THIRD QUARTER	CREDITS
Libr. 501 Libraries, Librarians, and Society	2
Libr. 509 Field Work	4
Libr. 512 Materials	3
Electives	3
	12

FOURTH QUARTER	CREDITS
Libr. 513 Government Publications	2
Libr. 514 Audio-Visual Materials	3
Electives	5
	10

CURRICULUM FOR LIBRARY WORK WITH CHILDREN AND YOUNG PEOPLE

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
		12

SECOND QUARTER		CREDITS
Libr. 511	Materials	3
Libr. 531	Organization of Materials	4
Libr. 550	Service for Children	3
Libr. 553	Work with Children	2
		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
		12

FOURTH QUARTER		CREDITS
Libr. 462	Reading of Young People	3
Libr. 514	Audio-Visual Materials	3
Electives		4
		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
		12

SECOND QUARTER		CREDITS
Libr. 511	Materials	3
Libr. 531	Organization of Materials	4
Libr. 550	Service for Children	3
Electives		2
		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
		12

FOURTH QUARTER		CREDITS
Libr. 460	School Library Admin.	3
Libr. 514	Audio-Visual Materials	3
Electives		4
		10

MASTER OF LAW LIBRARIANSHIP

These courses are given by the faculty of the School of Librarianship and the Law School.

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
		12

SECOND QUARTER		CREDITS
Libr. 511	Materials	3
Libr. 531	Organization of Materials	4
Libr. 542	Legal Reference & Research	5
		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
		10

FOURTH QUARTER		CREDITS
Libr. 541	Law Library Materials	4
Libr. 543	Law Library Administration	5
Electives		3
		12

COURSES

451 Children's Books (3) **Peterson, Groves**
Introduction to the field of children's books, with attention to their selection for school needs and recreational 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 all upper-division students Autumn Quarter. Closed to all but 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; routines in 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 The 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.

503 Special Libraries (2) **Bauer**
The organization and establishment of public and private special libraries; handling of materials; provision for specialized services; finance; personnel and reports. Case studies of various special libraries are included.

509 Directed Field Work (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) **Brown**
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) **Boughton**
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) **Groves**
The philosophy, organization, and administration of a children's department in a public library, together with an examination of its relationship to other social agencies in the community.

553 Library Work with Children (2) **Groves**
Further study of the organization and function of a children's department in a public library, with special attention to the study of reference books, periodicals, library publicity, and cooperation with the schools. Includes actual practice in conducting library lessons and book talks. Prerequisite, 550.

554 Children's Literature (3) **Groves**
Reading and discussion of children's books of all levels; examination of tools and review media for selection, with practice in selection for various fields of interest. Prerequisite. 550.

599 Methods of Research in Librarianship (2) **Boughton**
A survey of problems and methods.

600 Research (*) **Boughton, Staff**
Systematic investigation under faculty direction of a special project approved by the Director and the instructors concerned.

Thesis (*) **Boughton, Staff**

SCHOOL OF MEDICINE

Dean: EDWARD L. TURNER, C308 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 *Bulletin of the Schools of Medicine and Dentistry* 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) **Odor**
328-329 Gross Anatomy (6-4) **Blandau, Everett**
330 Microscopic Anatomy (4) **Odor**
331 Neuroanatomy (2) **Everett**
401-402-403 Gross Anatomy (8-4-4) **Johnson**
404 Human Embryology (3) **Blandau**
405-406 Microscopic and Submicroscopic Anatomy (4-4) **Bennett**

410 Cytochemistry (4) — **Bennett**

415 Biological X-ray Structure Analysis (3) — **Jensen**

421 Seminar in Molecular and Submicroscopic Anatomy (2) — **Bennett**

425 Brain Dissection (2) — **Everett**

430 Biological Tracer Techniques (4) — **Everett**

435 Histogenesis and Organogensis (2) — **Blandau**

440 Prenatal Anatomy I (4) — **Johnson**

441 Prenatal Anatomy II (4) — **Johnson**

442 Prenatal Anatomy III (4) — **Johnson**

443 Prenatal Anatomy IV (4) — **Johnson**

450 Biological Polarization Microscopy (4) — **Bennett**

455 Mammalian Reproduction (3) — **Blandau**

600 Research (*) — **Staff**
Prerequisite, permission.

Thesis (*) — **Staff**

BIOCHEMISTRY

Executive Officer: HANS NEURATH, D417 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 (3,3) — **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. Prerequisites, 482 and Chemistry 357 or permission. (Not offered 1953-54.)

563, 564 Proteins (2,2) — **Neurath, Dandliker, 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. Prerequisite, 562 or permission, 563 for 564. (Not offered 1953-54.)

565, 566, 567 Enzymes and Enzyme Action (2,2,2) — **Huennekens, Krebs, Neurath**
Preparation and properties of enzymes and enzyme systems, including methods of measurement, kinetic analysis, and theory of enzyme catalysis; classification and properties of individual enzymes, coenzymes, and enzyme systems. Prerequisites, 482 and Chemistry 357, or permission, for 565; 565 for 566; 566 for 567. (Not offered 1953-54.)

568, 569, 570 Advanced Topics in Biochemistry (2,2,2) — **Hanahan, Huennekens, Krebs**
Sequence of topics in biochemistry treated on an advanced level. In 1953-54, the following topics will be presented: structure and metabolism of sterols, steroids, fatty acids, and the complex lipides; basic concepts in clinical biochemistry including composition and functions

of tissue fluids, abnormal metabolic pathways and interrelations of hormones and enzymes; structure and metabolism of nitrogenous compounds. Prerequisites, 402 or 482 for 568; 568 for 569; 569 for 570; 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) **Klein**

320 Media Preparation (*, maximum 5) **Duchow**

322 Applied Bacteriology (5) **Staff**

430 Industrial Microbiology (3 or 5) **Douglas**

435J Parasitology (5) **Gustafson**

441-442 Medical Bacteriology (*, maximum 6 each) **Evans, Henry, Weiser**

443 Medical Mycology (*, maximum 2) **Henry**

444 Medical Parasitology (*, maximum 4) **Gustafson**

510 Physiology of Bacteria (4) **Douglas, Groman, Klein, Ordal**
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: Nitrobacteriacae, Rhodobacteriineae, Caulobacteriineae, Actinomycetales, Myxobacteriales, Chlamydobacteriales, Caryophanaes, and Borrelomycetaceae. Prerequisite, permission. (Offered alternate years; offered 1953-54.)

540 Filterable Viruses (*, maximum 4) **Evans**
Consideration of the physical, chemical, and biological properties of viruses and methods of working with them. Prerequisites, 442 and permission; histology is recommended. (Offered alternate years; offered 1953-54.)

550 Advanced Immunology (*, maximum 4) **Weiser**
Prerequisites, 441 and permission. (Offered 1954-55.)

600 Research (*) **Staff**

Thesis (*) **Staff**

PATHOLOGY

Executive Officer: STUART W. LIPPINCOTT, D509 Health Sciences Building

COURSES

321, 322-323-324-325, 326 Medical Technology (5, 6-6-6-6, 16) **Ellerbrook, Eriksen, Staff**

441-442-443 General and Special Pathology (5-5-5) **Staff**

483 Oncology (2-5, maximum 20) **Staff**

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.

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, Reiff, Eriksen**
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**

507 Journal Seminar (*, maximum 6) **Staff**
Presentation of comprehensive reports on recent medical and scientific literature in fields of current importance. Prerequisites, 433 and permission.

508 Research Seminar (0) **Staff**
Research progress reports and reports on results of completed research. Prerequisites, 433 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, 433 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, 442, 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 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 is a 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.

Many graduate students in physiology and biophysics have a medical degree, and their curriculum is adjusted in accordance with their training.

COURSES

401-402 Advanced Human Physiology (7-7) — **Ruch, Staff**

416 Biophysics (5) — **Young, Woodbury**

421 Instrumental Analysis of Cardiac Function (2) — **Rushmer**

481 Seminar: Pathological Physiology of Pain (2) — **Amassian, Ruch**

482 Cardiopulmonary Interrelations (2) — **Carlson, Rushmer**

483 Neurology of Emotional Behavior (2) — **Patton, Ruch**

484 Endocrinological Reaction to Stress (2) — **Carlson, Patton**

520 Seminar (2-5) — **Staff**

521 Biophysics Seminar (2-5) — **Young**
Quantitative aspects of physiology.

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) — **Young, Woodbury**
Pulse generator; A.C. and D.C. high-gain amplifier circuits; oscilloscopes and oscillographs; recording of pressure, volume, and flow in liquids and gases; calorimetry and pyrometry; continuous gas analysis. Prerequisite, permission.

533 Applied Physiological Instrumentation (2-5) — **Amassian, Carlson, Rushmer, Scher**
Study and use of research instruments applicable to the nervous system (stimulators, amplifiers, and oscilloscopes), the cardiovascular system (cinefluorograph, electro- and stethocardiograph, oximeter, strain gauge manometers, etc.), and respiratory and metabolic activity (flow meters, minute volume integrator, infrared and paramagnetic gas analyzers, cardiotachometer, 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: LELAND POWERS, E301 Health Sciences Building

COURSES

301 Causes and Control of Communicable Diseases (3) — **Lazarus**

330 Introduction to Environmental Sanitation (3) — **Green**

402 Communicable Disease Control (3) — **Lazarus**

409 Public Health Economics (1) — **Jared, Powers**

410 Introduction to Medical Statistics and Medical Social Problems (1) — **Bennett, Powers**

412 Public Health Organizations and Services (3)

425 Biostatistics (2) — **Bennett**

432 Food Sanitation (3) — **Hatlen**

434 Milk Sanitation (3) — **Hatlen**

435 Vector Control (3) — **Hatlen**

438 Sanitation Facility Design (3) — **Green**

439 Environmental Utilities (2) — **Green**

444 Sanitation and Industrial Hygiene Laboratory (3) — **Green**

451 Industrial Hygiene (3) — **McGill**

460J Field Training in Health Education (5) — **Vavra**

461 School and Community Health Programs (5) — **Reeves, 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 (*) — **Powers, Wilkey**

476 Advanced Public Health Statistics (5) — **Bennett**
(Offered alternate years; offered 1953-54.)

477 Statistical Methods in Biological Assay (3) — **Bennett**
(Offered alternate years; offered 1954-55.)

480 Public Health Problems (2-6) — **Staff**

482 Field Practice in Public Health (2-6) — **Staff**

483 Field Practice in Public Health (6) — **Staff**

484 Field Practice in Public Health (3) — **Staff**

492J Problems in International Health (2) — **Powers, Leahy**

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**
Offered by the Departments of Anatomy and Physiology.

407 Basis of Neurology (9) — **Everett, Patton, Ruch**
Offered by the Departments of Anatomy and Physiology.

408 Endocrinology (2) — **Blandau, Patton, Hanahan**
Offered by the Departments of Anatomy, Biochemistry, and Physiology.

445-446-447 Laboratory Procedures (*-*-*) — **Ellerbrook, Scribner, Staff**
Offered by the Departments of Pathology and Medicine.

481, 482, 483, 484 Regional Surgical Anatomy (3,3,3,3) — **R. Johnson**
Offered by the Departments of Surgery and Anatomy.

488 Pharmacotherapeutic Conference (*) — **Staff**
Offered by the Departments of Pharmacology and Medicine. (Offered when demand is sufficient.)

496 Concept of the Child (3) — **Deisher, Baldwin, Staff**
Offered by the Departments of Pediatrics and Public Health and Preventive Medicine.

PEDIATRICS

Executive Officer: WALTER B. SEELYE, C520 Health Sciences Building

COURSES

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 of 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) — **Weiland**

452 Survey of Psychodynamics and Psychopathology (3) — **Heilbrunn, Staff**

457 Fundamentals of Clinical Psychiatry (5) — **Staff**

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 450 or permission.

554 Psychodynamics and Psychopathology (2) — **Heilbrunn**
Continuation of Psychiatry 553. Prerequisite, 553.

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 450 or permission.

558 Seminar: Interviewing (2) — **Kaufman**
Case studies are presented by individual students for discussion of the psychodynamics and methods of dealing with personality problems. For graduate students carrying cases in counseling. Prerequisite, permission of instructor.

559 Child Psychiatry (2) — **Kaufman**
Series of discussions and lectures dealing with psychopathology of children. Prerequisite, 267 or 450 or permission.

SURGERY

Executive Officer: HENRY N. HARKINS, B504 Health Sciences Building

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.

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, and 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 (*) — **Harkins, Merendino, Ward, Ray, McDonald, Staff**

Thesis (*) — **Staff**

SCHOOL OF NURSING

Dean: LILLIAN B. PATTERSON, C303 Health Sciences Building

The School of Nursing offers courses leading to the degrees of Master of Arts in Nursing, Master of Science in Nursing, and Master of Nursing. For all of these degrees, specialization is available in the following fields: administration in schools of nursing; mental hygiene and nursing; nursing service administration; psychiatric nursing; public health nursing; public health nursing administration and supervision; teaching in the clinical specialties; and teaching nursing arts.

For entrance to any one of the degree programs, the student must be a graduate of an approved school of nursing. It is assumed that she will have some prior understanding, through either experience or education, of the field of nursing in which she wishes to specialize.

The patterns outlined below are the usual ones for the three master's degrees. It is possible to select supporting courses instead of a minor for the Master of Arts or Master of Science in Nursing, and to take a minor instead of supporting courses for the Master of Nursing. Candidates for the Master of Arts or Master of Science in Nursing are encouraged, however, to take a minor which will serve as the basis for a doctoral degree.

MASTER OF ARTS IN NURSING

The requirements for the Master of Arts in Nursing are:

	CREDITS
Course work in major field	18
Education 591	3
Nursing 521	2
Thesis	10
Course work in minor field	12
	45

The minor may be chosen from fields such as sociology, education, social work, business administration, psychology, psychiatry, history, foreign language, or creative writing.

MASTER OF SCIENCE IN NURSING

The requirements for the Master of Science in Nursing are:

	CREDITS
Course work in major field	18
Education 591	3
Nursing 521	2
Thesis	10
Course work in minor field	12
	45

The minor may be chosen in a biological or physical science such as physiology, anatomy, microbiology, chemistry, or physics.

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
Education 591	3
Nursing 521	2
Thesis	10
Supporting courses from allied fields	12
	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

454 Administration in Nursing (2) — **Smith**

455 Administration of Schools of Nursing (3) — **Gray, Olcott, Svelander**

456 Nursing Service Administration (3) — **Smith**

462 Teaching of Nursing Arts and Science (3) — **Hoffman, Tschudin**

463 Personnel Guidance Programs in Nursing (3) — **Morgan**

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) — **Leahy, Powers**

493 Public Health Nursing Aspects of Adult Hygiene (3) — **Kinney**

498 Methods of Supervision in Public Health Nursing (3) — **Leahy**

501 Development of Nursing Procedures (2) — **Wasson**
Nursing procedures as basis for nursing service planning and as a teaching tool. Procedures analyzed against selected criteria. Development of procedures according to clinical needs.

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) — **Heitman, Smith**
Includes overall planning for the nursing department with study of administrative problems; policy making, budget planning, and control and other administrative practices.

507 Seminar in Nursing Problems in Mental Hygiene (2) — **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.

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) — **Morgan**
Three hours conference and nine hours clinical laboratory experience weekly. Attention will be focused on the solution of nursing problems in the care of patients whose problems are primarily psychophysiologic in nature. Prerequisites, basic course in psychiatric nursing and permission.

512 Advanced Fields in Psychiatric Nursing (3) — **Morgan**
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, cerebral palsy, etc. Emphasis varies with interest and needs of the students. Prerequisite, permission.

521 Methods of Research in Nursing (2) — **Patterson**
Methods of research applied to the solution of problems in all fields of nursing.

600 Research (*) — **Patterson, Staff**

Thesis (*) — **Patterson, 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. 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, allocated as follows: not less than 27 credits of course work exclusive of nonthesis research; not more than 9 credits of nonthesis research; and a maximum of 9 credits for the thesis.

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, allocated as follows: courses in the major field, nonthesis research, and supporting courses to constitute not less than 90 credits, the thesis to constitute 45 credits. The credits earned for the Master of Science degree may be applied, and up to 25 credits may be obtained in nonthesis research.

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.

604 Research (*, maximum 9 for M.S., 25 for Ph.D.) — **Plein, Rising**

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.

604 Research (*, maximum 9 for M.S., 25 for Ph.D.) — **Goodrich, Youngken**

Thesis (*) — **Staff**

PHARMACEUTICAL CHEMISTRY

497 Pharmaceutical Chemistry and Toxicology (5) — **Fischer**
(Offered every third year; offered 1955-56.)

511-512-513 Advanced Pharmaceutical Chemistry (3-3-3) — **Staff**
(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**
Synthesis, isolation, relation between structure and physiological activity for the important classes of medicinal agents. (Offered every third year; offered 1954-55.)

526, 527, 528 Advanced Organic Medicinal Products Laboratory (2,2,2) **Staff**
Synthesis of important medicinal products and isolation of active principles from natural sources. (Offered every third year; offered 1954-55.)

531 Plant Chemistry (3) **Staff**
Alkaloids, including methods of isolation, degradation studies, proof of srtucture, and synthesis of alkaloids, with emphasis on pharmaceutical compounds.

532 Plant Chemistry (3) **Staff**
Production, isolation, and chemistry of the volatile oils and of sterols, with emphasis on pharmaceutical compounds.

533 Plant Chemistry (3) **McCarthy**
Glycosides and related compounds, including methods of isolation, proof of structure, synthesis, and activity, with emphasis on pharmaceutical compounds.

604 Research (*, maximum 9 for M.S., 25 for Ph.D.) **Fischer, Hall, Krupski, McCarthy**

Thesis (*) **Staff**

GRADUATE SCHOOL OF SOCIAL WORK

Director: VICTOR I. HOWERY, 500 Thomson Hall

FACULTY

BREUL, FRANK R., 1951 ..... *Assistant Professor of Social Work*
B.A., 1938, Amherst; M.A., 1941, Chicago; Ph.D., 1951, McGill

FERGUSON, GRACE B., 1941 ..... *Professor of Social Work*
B.A., 1917, Minnesota; M.A., 1930, Indiana

HOWERY, VICTOR I., 1952 ..... *Professor of Social Work; Director of the School of Social Work*
B.S., 1936, Ph.M., 1946, M.S., 1947, Ph.D., 1949, Wisconsin

HUNT, MARGUERITE, 1949 ..... *Associate Professor of Social Work*
B.A., 1929, Brown; M.S., 1946, Western Reserve

MACDONALD, CATHERINE J., 1945 ..... *Supervisor of Field Work*
B.A., 1936, Washington

MCCULLOUGH, WILLIAM H., 1943 ..... *Associate Professor of Social Work*
B.A., 1932, DePauw; M.A., 1940, Chicago

REISS, GRACE D., 1945 ..... *Supervisor of Field Work*
B.A., 1932, Iowa; M.A., 1940, Minnesota

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; Catholic Children's Bureau; Children's Orthopedic; Family Society of Seattle; Firlands Sanatorium; Florence Crittenton Home; Health and Welfare Council; Jewish Family and Child Service; Juvenile Court; King County Welfare Department; Medina Children's Service; Ryther Child Center; Travelers' Aid Society; Tuberculosis Clinic, Seattle-King County Department of Public Health; University of Washington Child Health Center, Counseling Center, Institute of Child Development, Office of Student Affairs, Psychiatric Clinic for Children, Psychiatric Clinic for Students; Veterans Administration Medical and Psychiatric Clinics; Washington Children's Home Society; and Young Women's Christian Association.

ADMISSION

Admission is by approved application only. The student must be eligible for admission to the Graduate School and must have completed a well-rounded undergraduate program in the social sciences, including some work in each of the following: anthropology, economics, political science, psychology, and sociology. It is recommended that a course in statistical method and one in physiology be included in 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.

Admissions are limited to the number of field work placements available. For this reason application 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, including medical or psychiatric case work; community organization; or social research. Among the types of positions to which this training may lead are case work in family and children's agencies, in psychiatric clinics, and in courts; research positions in social agencies; and work in community organization and agency administration.

The 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. The first-year field work placements are in social case work in family- and child-welfare agencies.

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 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) **Macdonald, Lecturers**
Principles and practices in the field of social work, with a comprehensive picture of available services and future needs. Prerequisite, permission.

301 Social Security and Social Work (3) **Staff**
Changing concepts as reflected in reports on and legislation for the care and treatment of dependent persons; development and present responsibility of welfare agencies, with special reference to the state of Washington. Prerequisite, permission.

302 Problems of Child Welfare (3) **Staff**
Social welfare programs relating to the well-being of children, including standards and objectives of foster home care, adoptions, and institutional placements, as well as measures affecting children in their own homes. Prerequisite, permission.

303 Introduction to Case Work in Public Assistance (3) **Staff**
Application of principles and policies in effective public assistance practice. Prerequisite, permission.

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, permission.

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, permission.

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**
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) **Staff**
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) **Staff**
Continuation of generic case-work theory, with emphasis on diagnosis and case-work treatment. Prerequisite, 510.

512 Social Case Work (2) **Staff**
Elaboration and intensification of basic case-work concepts and their application in practice in various types of agencies. Prerequisite, 511.

515 Field Work: Family Social Case Work (4, maximum 16) **Staff**
Prerequisite, permission.

520 Seminar (*, maximum 6) **Staff**
Prerequisite, permission.

521 Social Group Work (3) **Staff**
Professional group work as a method and process within the whole field of social work; objectives, techniques, skills, and media of group work, and criteria for evaluation of results. Prerequisite, permission.

530 Advanced Case Work (2) **Hunt**
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**
Continuation of intensive study of case material, with emphasis on sound direction in case-work treatment. Prerequisite, 530.

532 Advanced Case Work (2) **Hunt**
Intensive drill in case analysis, seeing the case as a whole, achieving a balanced perspective on the relationship between inner and outer forces, and planning appropriate treatment. Prerequisite, 531.

535 Field Work: Advanced Case Work (4, maximum 12) **Hunt, Staff**
Prerequisite, permission.

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.

540 Psychiatric Social Work (3) **Hunt**
General introduction and orientation to the field of psychiatric social work; the relationship of psychiatric social work to generic case work, with emphasis on the relationship of the

psychiatric social worker to the psychiatrist, and the role of the psychiatric social worker in the clinical child guidance team; the social worker's practice of psychiatric case-work treatment within the area of his professional competence in hospital or clinic. Case material from students' field-work placements is used, in addition to that selected by the instructor. Prerequisite, permission.

541 Psychiatric Social Work (3)
(Not offered 1953-55.)

545 Field Work: Psychiatric Social Work (4, maximum 16) **Hunt, Staff**
Prerequisite, permission.

546 Emotional Disturbances in Children (2) **Kaufman**
Psychiatric problems of children; a discussion of the therapeutic process; the role of the social work therapist; the child's participation in treatment; types of play material used; interpretations and evaluations of progress. Prerequisite, permission.

550 Medical Social Work (3) **Ferguson**
Generic aspects of case work in the medical setting; integration of dynamic psychiatric theory of human behavior with medicine and case work; the role of the case worker in relation to that of the physician and other professional persons in the study and treatment of the social, emotional, and physical aspects of the ill person. Case material is used extensively. Prerequisite, 512.

551 Medical Social Work (3) **Ferguson**
Continuation of 550, with emphasis on analysis of student's own case material and correlation with original papers based on integration of data from current professional literature in case work and related fields; participation in clinical demonstration emphasizing the integration of case work, medicine, dentistry, nursing, and dietetics, as presented in the hospital setting and in the clinics. Prerequisite, 550.

555 Field Work: Medical Social Work (4, maximum 12) **Ferguson, Staff**
Prerequisite, 550.

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.

560 Case Work with Children in Foster Care (2) **Staff**
Prerequisite, permission.

561 Seminar: Social Work with Children (3) **Staff**
Prerequisite, permission.

565 Field Work: Social Work with Children (4, maximum 12) **Staff**
Prerequisite, permission.

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 (3) **Staff**
Problems of adjusting social welfare needs and resources; understanding the social forces of the community; methods used by public and private agencies to organize to meet social welfare needs; interpretation of agency programs to the community; the place of boards and committees. Prerequisite, permission.

575 Field Work: Social Agency Administration (4, maximum 12) **Howery, Staff**
Prerequisite, permission.

580 Introduction to Public Welfare (3) **Staff**
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 satistical 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) **Bruel**
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, Assistant Professor of City Planning, School of Architecture; Bayard O. Wheeler, Associate Professor of Business Administration; Richard G. Tyler, Professor of Civil Engineering; Edgar M. Horwood, Assistant Professor of Civil Engineering; John C. Sherman, Assistant Professor of Geography; Calvin F. Schmid, Professor of Sociology.

Advisers: Myer R. Wolfe, Edgar M. Horwood.

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.

PREREQUISITE:

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)

Political Science 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 Design (7 each)

Civil Engineering 491 Advanced Professional Design (2-5)

Civil Engineering 595 Advanced Professional Design and/or Analysis (2-5)

Geography 477 Urban Geography (3-5)

Political Science 581 Seminar in Public Policy in Planning (5)

Real Estate 301 Principles of Urban Real Estate (5)

Sociology 331 Population Problems (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)

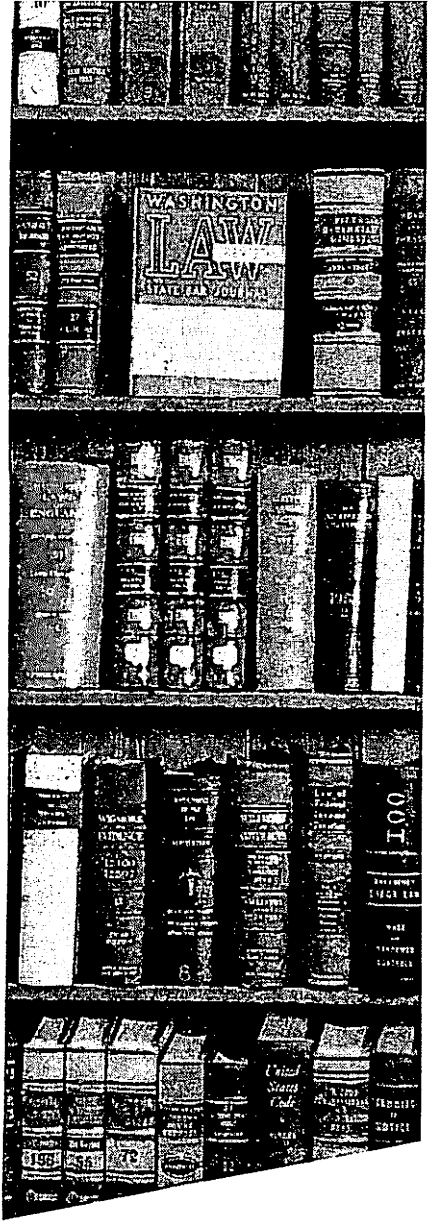
Sociology 430 Human Ecology (5)

Sociology 530 Advanced Human Ecology (3)

Sociology 531 Demography (3)

Transportation 301 Principles of Transportation (5)

BULLETIN
UNIVERSITY
OF
WASHINGTON



SCHOOL OF
LAW
1953-1954

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 home 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

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

DIVISION OF HEALTH SCIENCES

- SCHOOL OF DENTISTRY
- SCHOOL OF MEDICINE
- SCHOOL OF NURSING
- COLLEGE OF PHARMACY

SCHOOL OF LAW

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT

SUMMER QUARTER ANNOUNCEMENT

HOME STUDY

EXTENSION CLASSES

CONTENTS

CALENDAR

All fees must be paid at the time of registration.

AUTUMN QUARTER, 1953

REGISTRATION PERIOD

SEPT. 21-SEPT. 25	Registration for Autumn Quarter
SEPT. 28-SEPT. 29	Orientation program for first-year students

ACADEMIC PERIOD

SEPT. 30—WEDNESDAY	Instruction begins
OCT. 2—FRIDAY	President's Convocation
NOV. 11—WEDNESDAY	Armistice and Admission Day holiday
NOV. 26-NOV. 29	Thanksgiving recess
DEC. 18—FRIDAY	Instruction ends

WINTER QUARTER, 1954

REGISTRATION PERIOD

DEC. 1-4	Registration for Winter Quarter

ACADEMIC PERIOD

JAN. 4—MONDAY	Instruction begins
FEB. 22—MONDAY	Washington's Birthday and Founder's Day holiday
MAR. 19—FRIDAY	Instruction ends

SPRING QUARTER, 1954

REGISTRATION PERIOD

MAR. 2-MAR. 5	Registration for Spring Quarter

ACADEMIC PERIOD

MAR. 29—MONDAY	Instruction begins
MAY 21—FRIDAY	Governor's Day
MAY 31—MONDAY	Memorial Day holiday
JUNE 6—SUNDAY	Baccalaureate Sunday
JUNE 11—FRIDAY	Instruction ends
JUNE 12—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.

ADMINISTRATION

BOARD OF REGENTS

GRANT ARMSTRONG, *President*	Chehalis
CHARLES F. FRANKLAND, *Vice-President*	Seattle
THOMAS BALMER	Seattle
DONALD G. CORBETT	Spokane
MRS. J. HERBERT GARDNER	La Conner
JOHN L. KING	Seattle
WINLOCK W. MILLER	Seattle

John Spiller, *Secretary*

OFFICERS OF ADMINISTRATION

HENRY SCHMITZ, Ph.D.	*President of the University*
HAROLD P. EVEREST, M.A.	*Vice-President of the University*
ETHELYN TONER, B.A.	*Registrar*
NELSON A. WAHLSTROM, B.B.A.	*Comptroller and Business Manager*
GEORGE NEFF STEVENS, S.J.D.	*Dean of the School of Law*
A. JOHN NICHOLSON, LL.B.	*Assistant to the Dean*

SCHOOL OF LAW FACULTY

CROSS, HARRY M., 1943 (1949) ..... *Professor of Law*
(Real Property, Personal Property, Land Transactions, Future Interests)
B.A., 1936, Washington State College; LL.B., 1940, Washington

GALLAGHER, MARIAN GOULD, 1944 (1948) ..... *Associate Professor of Law;*
(Legal Bibliography, Legal Research and Writing) *Law Librarian*
B.A., 1935, B.A. (L.S.), 1939, LL.B., 1937, Washington

GOSE, J. GORDON, 1944 (1946) ..... *Professor of Law*
(Business Association, Corporation Finance, Practice Court, Probate Practice)
A.B., 1926, Whitman College; LL.B., 1929, Washington

GREEN, MILTON D., 1945 ..... *Professor of Law*
(Criminal Law, Trial and Appellate Practice, Code Pleading, Practice Court)
A.B., 1926, J.D., 1928, Michigan; LL.M., 1938, Jur. Sc.D., 1944, Columbia

HARSCH, ALFRED, 1930 (1940) ..... *Professor of Law*
(Gratuitous Transfers, Taxation, Estate Planning, Legislation, State and Local Taxes, Statutory Construction)
A.B., 1926, LL.B., 1928, Washington; LL.M., 1940, Columbia

HAWLEY, JOSEPH W., 1949 (1951) ..... *Associate Professor of Law*
(Personal Property, Real Property, Landlord and Tenant, Estate Planning, Community Property, Gratuitous Transfers)
B.A., 1940, LL.B., 1942, Colorado

LEVY, ERNST, 1937 (1952) ..... *Professor Emeritus of History,*
LL.D., 1906, Berlin *Political Science, and Law*

NOTTELMANN, RUDOLPH H., 1927 ..... *Professor of Law*
(Equity, Trusts and Fiduciary Administration, Comparative Law, Advanced Trusts and Administration)
B.A., 1912, Monmouth College; M.A., 1913, Illinois; LL.B., 1922, Yale

RICHARDS, JOHN W., 1931 (1937) ..... *Professor of Law*
(Torts, Evidence, Admiralty, Practice Court)
B.A., 1923, Wisconsin; LL.B., 1926, LL.M., 1930, S.J.D., 1931, Harvard

RIEKE, LUVERN V., 1949 (leave of absence, 1953-54)—*Assistant Professor of Law*
B.S., 1948, LL.B., 1949, Washington

RUTLEDGE, IVAN C., 1947 (1951)—*Associate Professor of Law*
(Legal Research and Writing, Administrative Law, World Law, Criminal Law, Trade Regulation)
A.B., 1934, Carson-Newman College; M.A., 1940, LL.B., 1946, Duke; LL.M., 1952, Columbia

SHATTUCK, WARREN L., 1935 (1941)—*Professor of Law*
(Contracts, Credit Transactions, Advanced Security)
B.A., 1934, LL.B., 1934, Washington; J.S.D., 1936, Yale

SHEFELMAN, HAROLD S., 1930—*Lecturer in Law*
(Local Government Law)
Ph.B., 1920, Brown; LL.B., 1925, Yale

SHOLLEY, JOHN B., 1933 (1939)—*Professor of Law*
(Constitutional Law, Conflict of Laws, Administrative Law, Social Legislation)
B.A., 1932, LL.B., 1932, Washington; J.S.D., 1937, Chicago

STEVENS, GEORGE NEFF, 1952—*Professor of Law; Dean of the School of Law*
(Legal Administration, Office Management and Professional Responsibility)
A.B., 1931, Dartmouth; LL.B., 1935, Cornell; M.A., 1941, Louisville; S.J.D., 1951, Michigan

TAYLOR, ROBERT L., 1941 (1945)—*Professor of Law*
(Commercial Transactions, Agency, Insurance, Advanced Commercial Transactions, Damages)
B.A., 1927, Yale; J.D., 1930, Northwestern

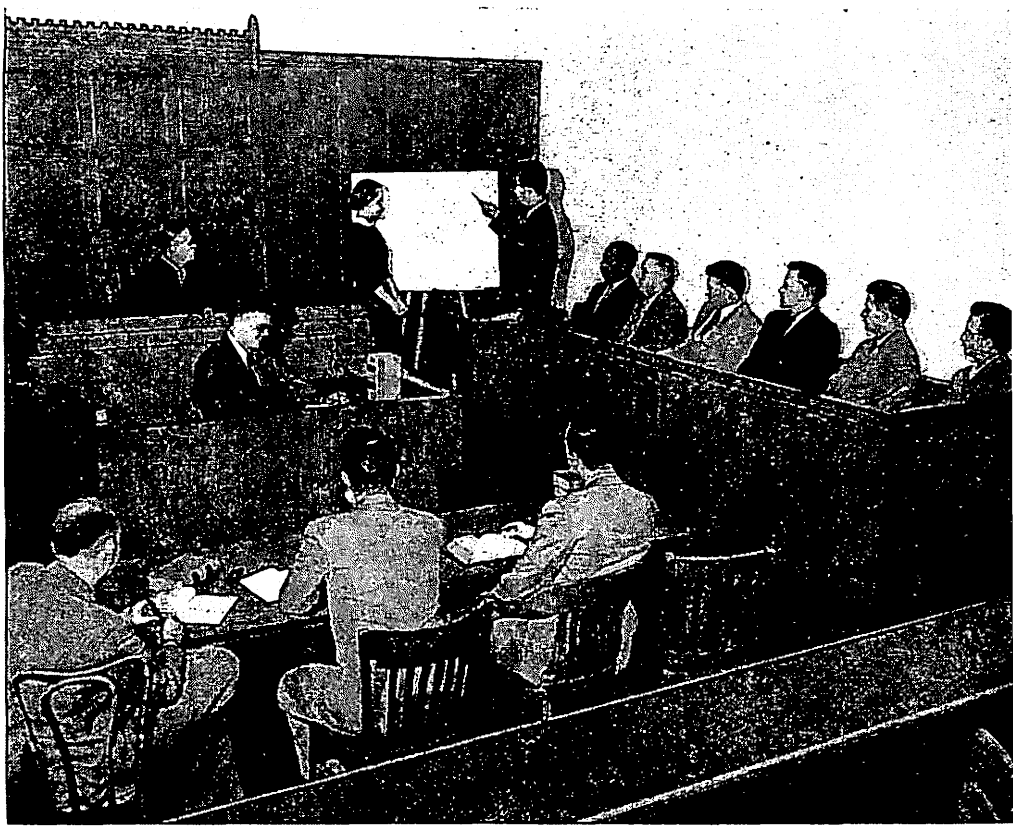
WOLLETT, DONALD H., 1946 (1947)—*Assistant Professor of Law*
(Labor Law, Labor Relations, Social Legislation, Torts)
B.A., 1941, Chicago; LL.B., 1942, Indiana

ASSOCIATE JUDGES OF THE PRACTICE COURT

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
Roney, Ward W.—Judge, King County Superior Court, Seattle
Shorett, Lloyd W.—Judge, King County Superior Court, Seattle
Wilkins, William J.—Judge, King County Superior Court, Seattle

ASSOCIATE LECTURERS IN ESTATE PLANNING

Allison Lawrence L.—Trust Officer, Bank of California
Bernbaum, Sanford M.—Penn Mutual Life Insurance Company
Cooper, John M.—Attorney, National Bank of Commerce of Seattle
Crosby, Gordon E., Jr.—General Agent, New England Mutual Life Insurance, Seattle
Judson, Henry Hammond—Vice-President and Trust Officer, Seattle Trust and Savings Bank
Osborn, Charles F.—Attorney (Bogle, Bogle, and Gates), Seattle
Palmer, Harvard E.—Asst. Vice-President, Seattle-First National Bank
Ransom, Reno Paul—Vice-President, Seattle-First National Bank
Sprague, Robert Wyatt—Chairman of Trust Committee, National Bank of Commerce
Stone, Charles I.—Attorney (Holman, Mickelwait, Marion, Black, and Perkins), Seattle



GENERAL INFORMATION

GENERAL INFORMATION

THE SCHOOL OF LAW was established at the University of Washington in 1899. It 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

The School of Law is housed in Condon Hall, a building designed for the particular needs of a law school.

LAW LIBRARY

The Law Library contains 116,000 volumes, including the decisions of all English and American courts of last resort and the reported decisions of all lower courts. Extensive runs of the English, American, and colonial statutes are available, as are copies of all legal periodicals published in English. The Law Library is the tenth-largest law school library in the United States and the largest 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

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 com-

mittees and boards, students assume major responsibility in the government of student life. The ASUW helps to finance the programs of athletics, debates, concerts, lectures, and many other activities and facilities, including the University of Washington *Daily* and the Student Union Building.

STUDENT 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.

Every student enrolled in the Law School is a member of this association. The elective officers, president, vice-president, and secretary-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 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.

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 the top 10 per cent of each graduating class.

WASHINGTON LAW REVIEW

The *Washington Law Review* (which has been combined with the *Washington State Bar Journal*) is a legal publication issued quarterly under the direction of the law faculty with the assistance of a student board of fifteen to twenty members chosen from the ablest students in the Law School. 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 and lawyers and discussions, based on thorough research, by Law School students of recent important court decisions. A place on the student editorial board, one of the goals of law students, is an invaluable experience for professional life.

ALUMNI ASSOCIATION

All graduates of the University of Washington, as well as all persons who have completed one year of college work at the University, are eligible for membership in the Alumni Association. Members receive a subscription to the *Washington Alumnus* and have library, football, swimming, voting, and other privileges. The membership fee is $5 for one year; dual membership for man and wife, which includes one subscription to the *Alumnus*, is $6 for one year.

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 for-

mally 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-five 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 academic year 1952-53 are: John Riese, Seattle, president; Roberta Kaiser, Yakima, secretary; James Gay, Seattle, treasurer; and Luvern V. Rieke, Seattle, executive secretary. Members of the Board of Trustees are: Russell Hokanson, Seattle, Earl Hanson, Omak, Donald Simpson, Vancouver, Warren Shattuck, Seattle, Robert B. Sherwood, Bellingham, Hardyn Soule, Tacoma, and E. Frederick Velikanje, Yakima.

HOUSING

The University provides housing facilities for single men and women on the campus. For further information women may write to the Business Manager of the Women's Residence Halls. Men and married persons may write to the Office of Student Residences. The Student Cooperative Association, 1114 East Forty-fifth Street, also provides housing for students on a cooperative basis. Students interested in living in fraternity or sorority houses may obtain information from the Interfraternity or Panhellenic Councils, on the campus.

HEALTH CENTER

The University maintains a health center which helps to guard against infectious diseases and incipient ill health. A dispensary is available to students during class hours, and an infirmary receives bed patients at any hour.

The infirmary cares for all cases of illness for a period of one week each quarter free of charge; this includes nursing care, medicines, and the attendance of a staff doctor. 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.

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.

Students at the University of Washington who plan to enter the 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 quarter credits, plus the required quarters of physical education activity and military training) with a 2.5

grade average; or (3) taking a three-year preprofessional course, which must include 138 credits with a 2.5 grade-point average and the required quarters of physical education activity and military training, in a combined-degree program, under which the undergraduate degree is awarded by the college when the first year in the School of Law is successfully completed. 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. These preprofessional programs are described in the college bulletins, which may be obtained from the University Registrar.

Students at other institutions may qualify under (1) or (2) above. They should consult their prelegal advisers concerning combined-degree programs.

The importance of advance application for admission cannot be overstressed. 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 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 2.5 on a 4.0 basis.

The prospective student must submit an application for admission on a form obtained from the University of Washington School of Law, 205 Condon Hall. Two official transcripts of all college work must be sent by the student's college or university directly to the School of Law.

Applications must be submitted no later than September 15. First-year students are admitted only at the beginning of Autumn Quarter.

ADMISSION WITH ADVANCED STANDING

To qualify for admission with advanced standing, an applicant must:

1. Meet all the requirements for admission to the first-year class;

2. Have successfully completed the first year of study and have been advanced into the second year in a law school which is a member of the Association of American Law Schools;

3. Have his law school send directly two official transcripts of work completed;

4. Obtain a letter from the dean of the law school last attended stating that the applicant is in good standing.

Advanced standing beyond the second year will be permitted only in exceptional cases and after special action by the faculty.

Before the new out-of-state student will be given a notice of admission, he must submit a medical report on a Medical Questionnaire form supplied by the Registrar and completed by a physician at the time of the application for admission. This form will be mailed to prospective law students during the processing of their applications.

ADMISSION OF SPECIAL STUDENTS

A person who is not working for a degree and 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. Admission is granted only upon vote of the faculty, and the number of those who can be granted this privilege is restricted. Special students make application for admission in the same manner as first-year students.

ACCEPTANCE

All applicants whose application papers are complete will be notified by letter of the action taken on their applications. If accepted, they will be given an appointment date for their registration.

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.

TUITION AND FEES

All tuition and fees are payable at the time of registration.

Veterans who are accepted for entrance to the School of Law 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 two months before registration begins. Those who do not have certificates 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 consult a Veterans Administration regional office at least one month before the beginning of the quarter. 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, tuition, fees, and supplies for at least two months, because allowances are not made until after monthly attendance is established.

The University reserves the right to change any of its fees without notice. Principal fees for each quarter (Autumn, Winter, and Spring) are:

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 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 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.

Incidental Fee, per quarter — 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.

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 to $5 is charged for late registration; $2 for each change of registration; $5 for a late medical examination; and $1 for a late X ray. The fee for a special examination is $1; for an advanced-credit examination, $2 per credit; and for removal of an Incomplete, $2.

REFUND OF FEES

All major fees for Autumn, Winter, and Spring Quarters 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.

ESTIMATE OF MINIMUM YEARLY EXPENSES

Tuition, Incidental, and ASUW Membership Fees

Resident students	$165.00
Nonresident students	315.00
Law Library Fees	30.00
Athletic Admission Ticket (optional)	5.00
Accident Insurance (optional)	4.95
Books and Supplies	115.00

Board and Room

Double room in campus temporary dormitory, with meals in University Commons and Student Union Cafeteria, or double room and meals in Men's Residence Hall	500-585.00
Room and meals in Women's Residence Halls	525-600.00
Room and meals in student cooperative house	435.00
Room and meals in fraternity or sorority house	600.00

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 which is open to all members of the Law School student body. It is designed to encourage forensic ability. The winners of the first round argue a second case in the semifinal round. The four top men in the latter are matched against each other in a final round, the winner receiving a prize.

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 prize of $100 for the best paper by a graduating student on a subject within the field of copyright law.

THE CARKEEK PRIZE. The Vivian M. Carkeek prize of $50 is awarded annually "for the best student contribution to the *Washington Law Review* on a point of Washington law, or any point of peculiar interest to Washington attorneys."

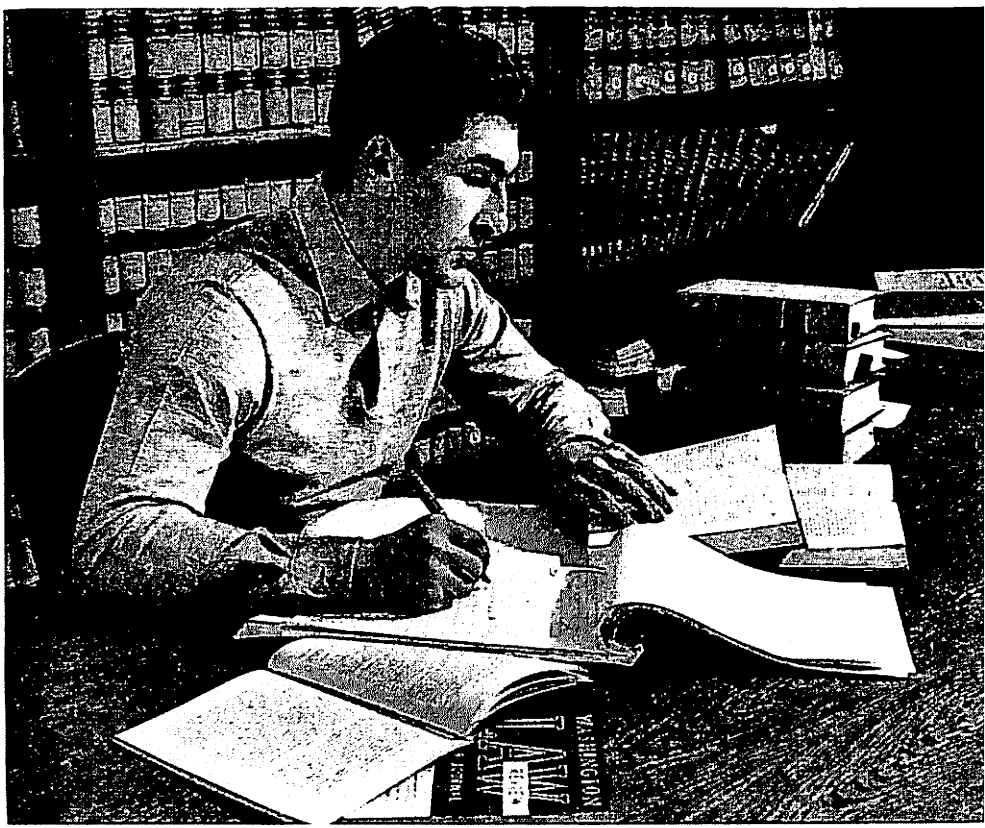
THE W. G. MCLAREN PRIZE. An award of $50 is made annually to the first-year student submitting the best solution to a problem in legal draftsmanship.

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, $100, and $50.

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, 1953, on forms obtained from the Dean's Office.

CLASS OF 1939 LOAN. The members of the class of 1939 have contributed a loan scholarship to be awarded to a third-year student. The class requests that the recipient, though without legal obligation, express a willingness to replenish the fund when in the future his financial position makes it possible for him to do so.

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 and loan funds 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. Exceptions to this requirement are: (1) all members of the present third-year class (1952-53) must successfully complete 140 quarter credits regardless of the date of graduation; (2) the class to graduate in June, 1954, must successfully complete 127 quarter credits; and (3) the class to graduate in June, 1955, must successfully complete 129 quarter credits.

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.

During the third year the emphasis is on the techniques of problem solving, of counseling, and of 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 concentraton in a field of primary interest. These objectives are reached by (1) requiring each student to take a minimum of 7 credits in each of the following fields: property, commerce, public or government law, and a miscellaneous group including adjective law and jurisprudence; and (2) offering sufficient additional credits in each group to provide free election in the field of primary interest.

CURRICULUM

The first and second years of law study are composed of a program of required courses. The third-year program is primarily elective.

First Year (First, Second, Third Quarters)

100	Contracts (3-3-3; A-W-S)	*Shattuck, Rieke*
110	Legal Administration (3; A)	*Stevens*
120	Personal Property (3; A)	*Cross, Hawley*
121	Real Property (3-3; W-S)	*Cross, Hawley*
122	Gratuitous Transfers (2-2; A-W)	*Harsch, Hawley*
132	Criminal Law and Procedure (3-2; W-S)	*Green, Rutledge*
140	Torts (3-3-3; A-W-S)	*Richards, Wollett*
141	Agency (3; S)	*Gose, Taylor*
160	Legal Research and Writing (1-1-1; A-W-S)	*Rutledge, Staff*

Second Year (First, Second, Third Quarters)

200	Commercial Transactions (4-3; A-W)	*Taylor*
201	Business Associations (3-3; A-W)	*Gose*
210	Evidence (2-2-2; A-W-S)	*Richards*
212	Equity (2-2-2; A-W-S)	*Nottelmann*
213	Jurisdiction, Venue and Code Pleading (4; S)	*Green*
230	Constitutional Law (4-3; A-W)	*Sholley*
231	Taxation (2-3; W-S)	*Harsch*
234	Administrative Law (4; S)	*Rutledge*
*280	Legal Accounting	

*Not offered 1953-54.

Third Year (First, Second, Third Quarters)

PROPERTY

320	Trusts and Fiduciary Administration (3-3; A-W)	*Nottelmann*
321	Land Transactions (4; S)	*Cross*
°322	Future Interests	
323	Community Property (2; W)	*Rieke*
324	Landlord and Tenant (3; A)	*Cross*
325	Estate Planning (2-2; W-S)	*Harsch, Hawley*
°326	Trusts Administration	

COMMERCE

300	Credit Transactions (2-2-2; A-W-S)	*Shattuck*
301	Corporation Finance and Related Tax Problems (2-2; W-S)	*Gose, Taylor*
302	Creditors' Rights (3; A)	*Shattuck*
°303	Advanced Security	
°304	Advanced Commercial Law	
307	Insurance (3; A)	*Taylor*

PUBLIC

†330	Administrative Law (4; S)	*Wollett*
331	Legislation (2-2; A-W)	*Harsch, Sholley*
°332	State and Local Taxes	
333	Civil Rights (3; S)	*Sholley*
334	Labor Law (3; A)	*Wollett*
335	Local Government Law (3; W)	*Shefelman*
336	Government Regulation of Business (2-2; A-W)	*Rutledge, Rieke*
°337	Public Utilities	
339	Labor Relations (3; W)	*Wollett*
340	World Law (3; A)	*Rutledge*
°350	Social Legislation	

MISCELLANEOUS

310	Trial and Appellate Practice (3-2; A-W)	*Green*
311	Probate Practice (2; A)	*Gose*
312	Damages (2; S)	*Taylor*
°313	Restitution	
341	Office Management (2; S)	*Stevens*
342	Admiralty (3; W)	*Richards*
343	Conflict of Laws (4; S)	*Sholley*
344	Domestic Relations (2; S)	*Rieke*
352	Comparative Law (3; A)	*Nottelmann*
398	Research Problems in Law (1-3 per quarter; AWS)	*Staff*

GROUP REQUIREMENT:

Property	7
Commerce	7
Public	7
Miscellaneous	7

°Not offered 1953-54.
†Offered 1953-54 only.

LL.B. DEGREE CONFERRED 1951-52

Aaron, Joseph Hugh
Albert, Douglas F.
Boddington, Rodney A.
Bodtker, Willard Ivan
Bowden, Allen Arthur
Briggs, Robert Ray
Brink, Daniel Peter
Britt, Dennis Judson
Brown, Lawrence Edward
Brown, Ramon Ernest
Buchanan, Richard W.
Buol, Melvin Francis
Burrows, Kenneth G.
Callow, Gordon McLean
Callow, Keith McLean
Chadwick, Stephen Fowler
Crollard, Homer A.
Culp, Calvin Carter
Dolliver, James Morgan
Dolvin, Phyllis Louise
Eaton, Kingsley Boardman
Focht, Richard C.
Gagliardi, Thomas J.
Gibbons, John Jarrard
Gibbs, Paul Claude
Goodwin, Daniel Gaard
Gordon, David Neil
Gore, Charles Millard
Grim, George Keith
Guterson, Murray Bernard
Haglund, Victor Evald
Hamilton, Jay W., Jr.
Hamilton, William Dooley
Hansler, John F.
Heath, John E.
Hoffman, Paul, Jr.
Hoffmann, Oswald Julius
Holdaway, Jerry Stuart
Holman, Donald Lester
Hunsaker, Harold Jeff
Hurwitz, Elihu
Huston, John Charles
Ingram, William F.
Ireland, Donald Wayne
Jones, Hubert M.
Kelleher, Richard Lee
Kvangnes, Myrtle Ruby
Lechner, Robert Lester
Litchman, Mark Leonard
Livengood, Gordon Allard
Love, Melvin Valess
Lycette, Jack Philip, Jr.
McClure, Hugh Allen
McDonald, Alan Angus
Martin, James Mitchell
Martin, John Caney
Mijich, Joseph T.
Mikkelborg, Jacob A.
Milligan, Robert John
Milligan, Robert LeRoy
Mueller, Grant Austin
Moats, Newton Paul
Mucklestone, John P.
Nicholson, Arthur John
Nielsen, Andrew Toft
O'Gorman, Robert A.
Oswald, Richard Matthews
Parker, Wayne Robert
Patterson, Harold Edwin
Petersen, Raymond James
Pitts, Walter Fenton
Quast, Warren Henry
Riley, John W.
Saldin, Theodore Roy
Schimanski, Robert G.
Shannon, Larry C.
Skidmore, Robert DeGrief
Slater, John Thune
Smith, Dean C.
Smith, Irving Davenport, Jr.
Soriano, Max Durban
Stickles, Milton John
Swanson, Raymond C.
Taber, Duane E.
Taylor, James Milton
Therriault, Lawrence
Webb, William O.
Wetherholt, Robert Curtis
Wetzel, Thomas Jerome
White, Barrett J.
White, Elmer Lawrence
Zelasko, Ted Francis

HONORS AND PRIZES

With Honors in Law
Raymond C. Swanson

Honor Graduate in Law
Raymond C. Swanson

Order of the Coif
Melvin F. Buol
Robert A. O'Gorman
Raymond C. Swanson
Elmer L. White

Seattle Life Insurance and Trust Council Will Contest
Dennis J. Britt, First
Daniel P. Brink, Second
Melvin F. Buol, Third

Carkeek Prize
John F. Hansler

United States Law Week Award (One year's subscription to Law Week)
Max D. Soriano

ENROLLMENT STATISTICS, AUTUMN QUARTER, 1952

			Veterans	
	Men	*Women*	*Men*	*Women*
First-Year	99	12	43	1
Second-Year	91	5	39	1
Third-Year	91	4	63	1
	281	21	145	3
	302		148	

Entering Students Who Have Degrees from University of Washington or Other Schools 67

Entering Students Who Have Three or More Years of Prelaw College Work at University of Washington or Other Schools 44

Candidates for B.A. Degree at End of First Year in Law School. (Students from University of Washington Preprofessional Program.) 19

Schools at Which Entering Students Took Their Prelaw:

School	*Number of Students*
University of Washington	67
American Institute for Foreign Trade	1
Amherst College	1
Boston University	1
Central Washington College of Education	1
College of Puget Sound	1
Eastern Washington College of Education	1
Harvard University	1
Loyola University (Los Angeles)	1
Montana State College	1
Northwestern University	1
Pacific Lutheran College	1
Purdue University	1
Reed College	2
San Diego State College	1
Seattle University	11
Temple University	1
University of British Columbia	1
University of California	1
University of Denver	1
University of Georgia	1
University of Minnesota	2

School	*Number of Students*
University of Notre Dame	1
University of Oregon	1
University of Richmond	1
University of Southern California	1
Washington State College	3
Wesleyan University	1
Western Washington College of Education	1
Whitman College	3

BULLETIN
UNIVERSITY
OF
WASHINGTON

SCHOOLS OF MEDICINE AND DENTISTRY

1953-1954

Announcements of the Schools of Medicine and Dentistry, issued in 1953 in the present University of Washington MEDICAL-DENTAL BULLETIN, will be published in 1954 in combination with those of the School of Nursing and the College of Pharmacy. The new publication, to be called the HEALTH SCIENCES BULLETIN, will be issued biennially thereafter as one of the school, college, and general bulletins composing the official University bulletin series.

Information concerning the programs in nursing and pharmacy may be obtained by writing to the University Registrar or to the dean of the appropriate school or college.

BULLETIN
UNIVERSITY OF WASHINGTON
General Series No. 869
March, 1953

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CALENDAR

All fees must be paid at the time of registration.

SUMMER QUARTER, 1953

JUNE-SEPTEMBER	Senior Elective Term, Medicine IV
JUNE 22-AUG. 28	Summer Session for Graduate Dentists

AUTUMN QUARTER, 1953

SEPT. 21—MONDAY	Instruction begins, Medicine III and IV, Term 1 (8 a.m.)
SEPT. 30—WEDNESDAY	Instruction begins, Medicine I and II and Dentistry (8 a.m.)
OCT. 2—FRIDAY	President's Convocation (11 a.m.)
NOV. 11—WEDNESDAY	Armistice and Admission Day holiday
NOV. 21—SATURDAY	Instruction ends, Medicine III and IV (1 p.m.)
NOV. 23—MONDAY	Instruction begins, Medicine III and IV, Term 2 (8 a.m.)
NOV. 26-NOV. 29	Thanksgiving recess, Medicine I and II and Dentistry
NOV. 26—THURSDAY	Thanksgiving Day holiday, Medicine III and IV
DEC. 18.—FRIDAY	Instruction ends, Medicine I and II and Dentistry (6 p.m.)
DEC. 23—WEDNESDAY	Christmas recess begins, Medicine III and IV (5 p.m.)

WINTER QUARTER, 1954

JAN. 4—MONDAY	Christmas recess ends, Medicine III and IV Instruction begins, Medicine I and II and Dentistry
JAN. 30—SATURDAY	Instruction ends, Medicine III and IV
FEB. 1—MONDAY	Instruction begins, Medicine III and IV, Term 3
FEB. 22—MONDAY	Washington's Birthday and Founder's Day holiday
MAR. 19—FRIDAY	Instruction ends, Medicine I and II and Dentistry

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MAR. 29—MONDAY	Instruction begins, Medicine I and II and Dentistry
APR. 3—SATURDAY	Instruction ends, Medicine III and IV
APR. 5—MONDAY	Instruction begins, Medicine III and IV, Term 4
MAY 31—MONDAY	Memorial Day holiday
JUNE 5—SATURDAY	Instruction ends, Medicine I and II and Dentistry
JUNE 11—FRIDAY	Instruction ends, Medicine III and IV
JUNE 12—SATURDAY	Commencement

REGISTRATION DATES FOR SCHOOL OF MEDICINE

FIRST AND SECOND YEARS

SEPT. 28-SEPT. 29	Autumn Quarter, 1953
NOV. 18-NOV. 19	Winter Quarter, 1954
FEB. 18-FEB. 19	Spring Quarter, 1954

THIRD AND FOURTH YEARS

SEPT. 17-SEPT. 18	Term 1, 1953
NOV. 9-NOV. 10	Term 2, 1953-54
JAN. 19-JAN. 20	Term 3, 1954
MAR. 30-MAR. 31	Term 4, 1954

ADMINISTRATION

BOARD OF REGENTS

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LEROY S. RAMBECK, B.A. ..... Assistant Business Manager, Division of Health Sciences

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JAMES W. HAVILAND, M.D. ..... Assistant Dean of the School of Medicine

SCHOOL OF DENTISTRY

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BERTON E. ANDERSON, D.M.D. ..... Director of Postgraduate Dental Education
ALTON W. MOORE, D.D.S., M.S. ..... Director of Graduate Dental Education

OTHER ADMINISTRATIVE OFFICERS

JOHN M. FLETT ..... Manager of Dental Supplies
ALDERSON FRY, M.A., B.S. in L.S. ..... Librarian, Division of Health Sciences
DONALD HISCOX, B.F.A. ..... Administrative Assistant
RICHARD JOHNSON ..... Manager of Medical Supplies
DOROTHY D. KIPPLE ..... Administrative Assistant, School of Dentistry
T. W. PENFOLD, D.V.M. ..... Veterinarian
JESSIE PHILLIPS, B.F.A. ..... Director of the Division of Medical Arts
L. S. RAMBECK, B.A. ..... Assistant Business Manager
MARY ADAMS ..... Assistant to the Dean, School of Medicine

FACULTY

BASIC MEDICAL SCIENCES

AMASSIAN, Vahe E.
Assistant Professor of Physiology and Biophysics
B. A., 1945, M.B., B.Ch., 1948, Trinity College, Cambridge

ANDERSON, Kirk J.
Clinical Associate in Anatomy
B.A., 1942, College of Idaho; M.D., 1944, Oregon

BAIER, George F., III
Medical Professor of Military Science and Tactics
M.D., 1934, Emory; Colonel, USAF (MC)

BENNETT, Blair M.
Instructor in Public Health and Preventive Medicine
A.B., 1938, Georgetown; M.A., 1941, Columbia; Ph.D., 1950, California

BENNETT, Henry Stanley
Professor of Anatomy; Executive Officer of the Department of Anatomy
A.B., 1932, Oberlin College; M.D., 1936, Harvard

BENNETT, James G.
Clinical Instructor in Pathology
B.A., 1935, Central College; M.D., 1939, Harvard

BILL, Alexander H., Jr.
Clinical Associate in Anatomy
M.D., 1939, Harvard

BITAR, Emmanuel
Clinical Instructor in Pathology
B.S., 1935, M.D., 1939, Oregon

BLANDAU, Richard J.
Professor of Anatomy
A.B., 1935, Linfield College; Ph.D., 1939, Brown; M.D., 1948, Rochester

BONICA, John J.
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BRYSON, Sylvia
Clinical Affiliate in Public Health and Preventive Medicine
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CARLSON, Loren D.
Associate Professor of Physiology and Biophysics
B.S., 1937, St. Ambrose; Ph.D., 1941, Iowa

CREIGHTON, Allison S.
Coordinator and Instructor in Pathology
B.S., 1930. New Brunswick; M.D., C.M., 1935, McGill; LMCC, 1935, Canadian Medical Association

CRYSTAL, Dean K.
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B.S., 1936, Washington; B.A., 1938, Oxford; M.D., 1941, Johns Hopkins

DANDLIKER, W. B.
Assistant Professor of Biochemistry
B.S., 1940, Rollins College; Ph.D., 1945, California Institute of Technology

DAVIS, Stanley K.
Clinical Instructor in Pathology
B.S., 1942, Washington; M.D., 1945, Oregon

DE MARSH, Quin B.
Assistant Professor of Anatomy
B.S., 1935, Washington; M.S., 1937, M.B., 1939, M.D., 1940, Northwestern

DENKO, John V.
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B.S., 1946, Denison University; M.D., 1947, Chicago

DEWEY, Leonard
Clinical Instructor in Public Health and Preventive Medicine
B.S., 1928, M.D., 1928, Nebraska; C.P.H., 1935, D.P.H., 1939, Johns Hopkins

DILLE, James Madison
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

DOUGLAS, Howard Clark
Associate Professor of Microbiology
A.B., 1936, Ph.D., 1949, California

DRAKE, John B.
Clinical Instructor in Public Health and Preventive Medicine
B.S., 1921, Missouri; M.S., 1924, Washington State

DUCHOW, Esther
Associate in Microbiology
B.S., 1934, M.S., 1952, Washington

ELLERBROOK, Lester D.
Associate Professor of Pathology
A.B., 1932, Hope College (Michigan); Ph.D., 1936, New York University

EMMEL, Harry Elwin
Clinical Associate in Anatomy
B.A., 1936, Willamette; M.D., 1940, Oregon

ERIKSEN, Nils
Assistant Professor of Pathology
B.S., 1939, Ph.D., 1944, Washington

ERWIN, John Robert
Clinical Instructor in Public Health and Preventive Medicine
B.M., 1938, M.D., 1940, Illinois

EVANS, Charles A.
Professor of Microbiology; Executive Officer of the Department of Microbiology
B.S., 1935, B.M., 1936, M.D., 1937, Ph.D., 1942, Minnesota

EVERETT, Newton B.
Associate Professor of Anatomy
B.S., 1937, M.S., 1938, North Texas State College; Ph.D., 1942, Michigan

FARNER, Lloyd M.
Clinical Assistant Professor of Public Health and Preventive Medicine
A.B., 1930, M.D., 1936, C.P.H., 1937, California

FINK, Lewis D.
Assistant Professor of Pharmacology
B.S., 1937, M.S., 1939, Nebraska; Ph.D., 1944, Minnesota; M.D., 1949, Marquette

FINLAYSON, Bliss L.
Clinical Associate in Anatomy
B.A., 1928, Brigham Young; M.D., 1933, Jefferson Medical College

FITZMAURICE, Bertrand T.
Clinical Associate in Anatomy
B.S., 1930, Washington; M.D., 1934, Northwestern

FONG, Conrad T. O.
Research Associaate in Pathology
B.S., 1939, Hawaii; Ph.D., 1946, California Institute of Technology

FOUNTAIN, John H.
Clinical Instructor in Public Health and Preventive Medicine
B.S., 1927, M.D., 1929, Georgetown; M.P.H., 1942, Harvard

FRANCO, Robert
Clinical Associate in Anatomy
B.S., 1936, Washington; M.D., 1940, Oregon

GIEDT, Walvin R.
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

GREEN, Alvin W.
Assistant Professor of Public Health and Preventive Medicine; University Sanitary Engineer
B.S., 1940, Iowa

GREEN, N. Michael
Junior Research Biochemist
B.A., 1947, Magdalen College, Oxford; Ph.D., London, England

GROMAN, Neal B.
Instructor in Microbiology
B.S., 1947, Ph.D., 1950, Chicago

GUSTAFSON, Paul V.
Assistant Professor of Microbiology
B.S., 1936, Whitworth; M.S., 1937, Ph.D., 1942, Illinois; M.D., 1947, Chicago

HAFFLY, Gilbert N.
Clinical Associate in Anatomy
B.M., 1932, M.D., 1936, Northwestern

HAIN, Raymond
Assistant Professor of Pathology
M.D., 1944, Jefferson Medical School

HALL, Nora Page
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B.S., 1937, Washington State; M.P.H., 1950, California

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B.S., 1941, Ph.D., 1944, Illinois

HANKS, Thrift G.
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B.S., M.S., M.D., 1939, Illinois

HATLEN, Jack B., Jr.
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B.S., 1949, Washington

HEATH, Alice M.
Clinical Affiliate in Public Health and Preventive Medicine
A.B., 1941, Milwaukee Downer College; M.P.H., 1942, M.I.T.

HENRY, Bernard S.
Professor of Microbiology
B.S., 1925, M.A., 1926, Ph.D., 1931, California

HENRY, Frank C.
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HOUGHTON, Benjamin C.
Associate Professor of Public Health and Preventive Medicine; Director of the Health Center; Assistant Health Officer of the University
M.D., 1934, Iowa

HUENNEKENS, Frank M., Jr.
Assistant Professor of Biochemistry
B.S., 1943, Ph.D., 1948, California

INOUE, Shinya
Instructor in Anatomy
Rigakushi, 1944, Tokyo; Ph.D., 1951, Princeton

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Clinical Assistant Professor of Pathology
A.B., 1922, Dartmouth; M.D., 1925, Rush Medical College

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Clinical Instructor in Public Health and Preventive Medicine
B.S. in C.E., 1936, Washington; M.S., 1938, Harvard

JENSEN, Lyle H.
Assistant Professor of Anatomy
B.A., 1939, Walla Walla College; Ph.D., 1944, Washington

JOHNSON, Robert J.
Associate Professor of Anatomy
B.S., 1937, Iowa State Teachers; M.D., 1943, Iowa

JOHNSTON, Elizabeth Anne
Acting Instructor in Public Health and Preventive Medicine
B.S., 1945, Washington; M.S., 1947, Michigan

JONES, Hugh Warren
Clinical Instructor in Pathology
B.S., 1936, M.D., 1938, Arkansas

JUNGE, Josephine
Research Associate in Biochemistry
B.A., 1927, Utah; Ph.D., 1933, Chicago

KAHL, John A.
Clinical Assistant Professor of Public Health and Preventive Medicine
B.S., 1933, M.D., 1935, Nebraska; M.P.H., 1940, Johns Hopkins

KAHN, Barbara LeCompte
Clinical Associate in Public Health and Preventive Medicine
B.S., 1938, Dickinson College (Pennsylvania); M.P.H., 1944, Michigan

KANWIT, Bert
Clinical Associate in Anatomy
B.A., 1937, Michigan; M.D., 1941, Harvard

KELLOGG, Howard B.
Clinical Associate Professor of Anatomy
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B.S., 1940, Washington; M.D., 1943, Oregon

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Clinical Associate in Surgery
B.S., 1923, Minnesota; M.D., 1937, Harvard

SARRO, Louis R.
Clinical Associate in Surgery
B.S., 1937, Washington; M.B., 1941, M.D., 1942, Northwestern

SAYER, Robert J.
Clinical Assistant in Psychiatry
A.B., 1944, Pennsylvania; M.D., 1948, Columbia

SCHAILL, Clayton M.
Affiliate in General Practice
B.S., 1925, Washington; M.D., 1929, George Washington University

SCHEYER, Carl J.
Affiliate in General Practice
B.S., 1931, College of Puget Sound; M.D., 1935, Louisville

SCHEYER, Frederick L.
Senior Consultant in General Practice
M.D., 1928, Temple

SCHMITZ, Everett J.
Junior Researcher in Surgery
B.S., 1938, M.B., 1940, M.D., 1941, Minnesota

SCHROEDER, Herman J.
Clinical Instructor in Obstetrics and Gynecology
Ph.C., B.S., 1931, Washington; M.D., 1940, Oregon

SCRIBNER, B. H.
Instructor in Medicine
B.A., 1941, California; M.D., 1945, Stanford; M.S., 1951, Minnesota

SCUDDER, Sidney T.
Clinical Instructor in Medicine
M.D., 1943, Columbia

SEELYE, Walter B.
Professor of Pediatrics; Executive Officer of the Department of Pediatrics
B.S., 1922, Washington; M.D., 1926, Harvard

SHAW, Joseph W.
Clinical Professor of Medicine
B.S., 1925, M.D., 1926, M.S., 1930, Michigan

SHAW, Merrill
Affiliate in General Practice
B.S., 1924, Washington; M.D., 1931, Minnesota

SHEEHY, Thomas F., Jr.
Clinical Associate in Medicine
B.S., 1942, Villanova; M.D., 1945, Temple

SHERIDAN, Alfred
Clinical Associate in Surgery
B.S., 1938, Washington; M.D., 1943, Northwestern

SHERWOOD, Kenneth K.
Clinical Assistant Professor of Medicine
B.S., 1923, B.M., 1925, M.D., 1926, Minnesota

SHIACH, John M.
Clinical Associate in Surgery
B.A., 1930, M.D., 1933, Oregon

SHOVLAIN, Francis E.
Clinical Affiliate in Psychiatry
A.B., 1921, M.D., 1923, Creighton

SIMPSON, Robert W.
Clinical Instructor in Medicine
A.B., 1936, M.D., 1942, Stanford

SKINNER, H. Harlow, Jr.
Jr. Researcher Grade II in Surgery
B.S., 1942, Amherst College; M.D., 1945, Western Reserve

SKUBI, Kazimer B.
Clinical Instructor in Medicine
B.S., 1932, Washington; M.D., 1940, Rush Medical College

SMART, Thomas B.
Assistant in Medicine
B.S., 1947, M.D., 1951, Washington

SMITH, Elizabeth Knapp
Assistant Professor of Obstetrics and Gynecologic Endocrinology
B.S., 1938, Florida State College for Women; M.S., 1939, Michigan; Ph.D., 1943, Iowa

SMITH, Franklin R.
Clinical Associate in Surgery
B.S., 1936, Wisconsin; M.D., 1942, Marquette

SMITH, R. Philip
Clinical Instructor in Obstetrics and Gynecology
A.B., 1930, B.S., 1932, M.D., 1934, Kansas

SODERSTROM, Kenneth M.
Clinical Assistant Professor of Medicine
M.D., 1931, Nebraska; M.S., in P.H., 1940, Johns Hopkins

SOUTHCOMBE, Robert H.
Affiliate in Psychiatry
M.D., 1927, Michigan

SPARKMAN, Donal Ross
Clinical Assistant Professor of Medicine
B.S., 1930, Washington; M.D., 1934, Pennsylvania

SPAULDING, W. L.
Consultant in Surgery
B.S., 1927, Pacific Union College; M.D., 1931, College of Medical Evangelists

SPEER, Evans
Clinical Instructor in Medicine
A.B., 1940, Harvard; M.D., 1944, Northwestern

SPEIR, Edward B.
Consultant in Surgery
B.A., 1929, M.D., 1933, Kansas

SPICKARD, Vernon W.
Consultant in Pediatrics
B.S., 1917, Drake; M.D., 1918, Pennsylvania

SPICKARD, Warren B.
Clinical Instructor in Medicine
B.A., 1940, M.D., 1944, Stanford

SPRECHER, Edwin
Clinical Associate in Orthopedic Surgery
B.S., 1936, Walla Walla College; M.D., 1940, College of Medical Evangelists

STAFFORD, Donald E.
Clinical Instructor in Neurosurgery
B.A., 1932, Park College (Missouri); M.D., 1935, Harvard; M.S., 1941, Minnesota

STEDMAN, Dorothy H.
Jr. Research Chemist in Surgery
Ph.D., 1943, Louvain

STEISEL, Ira
Instructor in Psychology
Ph.D., 1949, Iowa

STELLWAGEN, William J.
Consultant in Surgery
A.B., 1927, M.D., 1934, M.S., 1940, Michigan

STERNER, John A.
Clinical Instructor in Pediatrics
B.S., 1940, Washington; M.D., 1944, Pennsylvania

STEVENS, Alexander
Instructor in Medicine
B.A., 1943, Yale; M.D., 1946, Cornell

STEWART, Ann H.
Associate Research Psychiatrist
A.B., 1924, Vassar; M.D., 1928, Columbia; M.P.H., 1934, Harvard School of Public Health

STEWART, John E.
Clinical Associate in Orthopedic Surgery
B.S., 1936, Washington; M.D., 1941, Harvard

STEWART, Robert H.
Clinical Instructor in Obstetrics and Gynecology
M.D., 1927, Oregon

STIMPSON, Edward K.
Affiliate in General Practice
B.A., 1927, Stanford; M.D., 1932, Harvard

STOLZHEISE, Ralph M.
Clinical Instructor in Psychiatry
A.B., 1926, Willamette; M.D., 1934, Oregon

STONE, Caleb S., Jr.
Consultant in Surgery
B.S., 1922, Washington; M.D., 1926, Washington University; M.S., 1934, Virginia

STRACHAN, Willis L.
Clinical Instructor in Psychiatry
A.B., 1929, Colorado College; M.D., 1942, Colorado

STRAND, Glenn T., Jr.
Clinical Assistant in Psychiatry
B.S., 1948, M.D., 1952, Washington

STROH, James E. S.
Clinical Assistant Professor of Medicine
B.S., 1928, South Dakota; M.D., 1931, Illinois

STORER, Edward
Jr. Researcher Grade I in Surgery

STROTHER, Charles R.
Professor of Clinical Psychology in Medicine
B.A., 1929, M.A., 1932, Washington; Ph.D., 1935, Iowa

SUGARS, Thomas W
Clinical Instructor in Psychiatry
S.B., 1936, Washington State; M.D., 1939, Rush Medical College

SULKOSKY, Leo J.
Affiliate in General Practice
M.D., 1944, Oregon

SWEET, Ralph L.
Affiliate in General Practice
M.D., 1941, Marquette

TAYLOR, J. Earl
Affiliate in General Practice
M.D., 1940, Illinois

TAYLOR, Murray E.
Jr. Assistant Research Chemist in Surgery
B.S., 1948, M.S., 1952, Washington

TEMPLETON, Frederic E.
Professor of Radiology; Executive Officer of the Department of Radiology
B.S., 1927, Washington; M.D., 1931, Oregon

TEMPLETON, Helene M.
Affiliate in General Practice
B.S., 1940, Washington; M.D., 1944, Minnesota

THICKSTUN, James T.
Clinical Instructor in Psychiatry
B.A., 1939, U.C.L.A.; M.D., 1943, Southern California

THOMAS, Louis B.
Assistant Professor of Surgery
M.B., B.S., M.R.S.C., L.R.C.P., 1943, London; D.P.M., 1948, Bristol (England)

THOMPSON, Gordon G.
Clinical Professor and Senior Consultant of Obstetrics and Gynecology
B.S., 1906, Macalester College (Minnesota); M.D., 1910, Illinois

THOMPSON, Ivan
Clinical Instructor in Medicine
B.M., 1934, M.D., 1935, Northwestern

THORP, Donald J.
Consultant in Obstetrics and Gynecology
A.B., 1921, B.S., 1923, M.D., 1927, Michigan

TIDWELL, Robert A.
Clinical Assistant Professor of Pediatrics
B.S.M., 1935, M.D., 1937, Oklahoma

TOLAN, John Francis
Consultant in Surgery
B.S., 1931, M.D., 1933, Michigan

TOMIZAWA, Henry H.
Jr. Researcher Grade III in Medicine
B.S., 1949, Iowa State College; Ph.D., 1952, Illinois

TUCKER, F. A.
Affiliate in General Practice
B.S., 1927, Washington State; M.D., 1931, Louisville

TUCKER, James L.
Instructor in Pediatrics
B.A., 1941, Amherst; M.D., 1944, Cornell

TUELL, Joseph Irving
Consultant in Orthopedic Surgery
B.S., 1929, M.D., 1932, Oregon

TURNER, Edward L.
Professor of Medicine; Dean of the School of Medicine
B.S., 1922, M.S., 1923, Chicago; M.D., 1928, Pennsylvania

TURNER, Mary
Affiliate in General Practice
M.D., 1935, Oregon

TYVAND, Raymond
Clinical Instructor in Urology
B.A., 1923, B.S., 1926, North Dakota; M.D., 1928, Rush Medical College

ULRICH, Delmont M.
Clinical Associate in Medicine
B.S., 1940; M.D., 1943, Minnesota

VANDEMAN, Philip R.
Clinical Associate in Pediatrics
A.B., 1939, M.D., 1942, Ohio

VICTOR, Ralph G.
Clinical Associate in Medicine
B.A., 1939, Columbia; M.D., 1943, Rochester

VOEGTLIN, Walter L.
Clinical Assistant Professor of Medicine
B.S., 1932, M.S., 1933, B.M., 1934, M.D., 1935, Northwestern

VOLWILER, Wade
Assistant Professor of Medicine
A.B., 1939, Oberlin; M.D., 1943, Harvard

WADDINGTON, Wayne S.
Assistant in Medicine
M.D., 1950, Washington

WADMAN, Hamilton G.
Research Associate in Obstetrics and Gynecology
M.D., C.M., 1950, McGill

WAGNER, Clyde L.
Clinical Associate in Surgery
B.S., 1935, Wasington; M.D., 1939, Oregon

WALKER, John H.
Clinical Instructor in Radiology
B.S., 1936, Washington; M.D., 1940, Michigan

WALKER, P. E.
Consultant in Surgery
M.D., 1931, Tennessee

WALLACE, Stanley
Clinical Assistant in Psychiatry
M.D., 1951, New York

WANAMAKER, Frank Herman
Consultant in Surgery
D.D.S., 1922, M.D., 1929, Northwestern

WANGEMAN, Clayton P.
Consultant in Surgery
B.A., 1929, Ohio Wesleyan; M.D., 1933 Western Reserve

WARD, Arthur A.
Associate Professor of Surgery; Director of Division of Neurosurgery
B.A., 1938, M.D., 1942, Yale

WARD, Byron H.
Clinical Instructor in Radiology
B.S., 1935, Washington; M.D., 1939, Oregon

WATSON, Wilbur E.
Clinical Associate in Surgery
B.S., 1930, Washington; M.D., 1935, McGill

WATTS, Charles E.
Clinical Professor of Medicine
B.S., 1913, Idaho; M.D., 1918, Rush Medical College

WATTS, William E.
Clinical Instructor in Medicine
B.S., 1938, Washington; M.D., 1942, Harvard

WEBER, Julius A.
Consultant in Surgery
B.S., 1923, M.D., 1925, Nebraska

WEBSTER, Bruce J.
Affiliate in General Practice
M.D., 1940, Oregon

WEILAND, IRVIN H.
Instructor in Psychiatry
B.S., 1944, M.D., 1946, Cincinnati

WEINSTEIN, Sydney
Clinical Instructor in Medicine
B.S., 1926, Washington; M.D., 1930, Jefferson

WELTI, Walter B.
Instructor in Psychiatry
B.A., 1943, M.D., 1946, Utah

WHITING, Adolph M.
Clinical Instructor in Psychiatry
B.S., 1943, M.B., 1945, M.D., 1946, Minnesota

WILLIAMS, Paul L.
Clinical Instructor in Medicine
B.S., 1934, M.D., 1937, Oregon

WILLIAMS, Robert Hardin
Professor of Medicine; Executive Officer of the Department of Medicine
A.B., 1929, Washington and Lee; M.D., 1934, Johns Hopkins

WILSON, Gale E.
Lecturer in Forensic and Legal Medicine
B.S., 1926, Washington; M.D., 1930, Harvard

WOLFE, William A.
Clinical Associate in Medicine
B.S., 1943, M.D., 1946, Northwestern; M.S., 1950, Washington

WOODRUFF, J. S.
Clinical Assistant in Obstetrics and Gynecology
M.D., 1948, Ohio

WORGAN, David K.
Clinical Associate in Urology
B.S., 1940, M.D., 1943, Maryland

WORTHINGTON, Robert L.
Clinical Instructor in Psychiatry
M.D., C.M., 1933, McGill

WYRENS, Rollin C.
Clinical Instructor in Urology
B.S., 1934, M.B., 1937, M.D., 1939, Northwestern; M.S., 1942, Minnesota

YUNCK, William P.
Clinical Instructor in Urology
B.S., 1930, B.M., 1934, M.D., 1935, Minnesota

ZAHN, Daniel W.
Clinical Assistant Professor of Medicine
B.S., 1934, M.D., 1938, Glasgow (Scotland)

ZECH, Raymond L.
Senior Consultant in Surgery; Director of Medical Student Surgical Teaching at Providence Hospital
B.S., 1919, M.D., 1920, Northwestern

ZIMMERMAN, Bruce M.
Clinical Assistant Professor of Medicine
B.S., 1935, North Dakota; M.D., 1937, Northwestern

CLINICAL DENTAL SCIENCES

ANDERSON, A. Robert, 1950
Clinical Assistant in Fixed Partial Dentures
B.S., 1945, D.D.S., 1946, California

ANDERSON, Berton Emmett, 1948
Associate Professor of Dental Science and Literature; Director of Admissions; Director of Postgraduate Dental Education
D.M.D., 1925, Oregon

ANDERSON, Carl Orlando, 1947
Clinical Associate in Prosthodontics
D.D.S., 1924, Northwestern

AYLEN, Robert Johnson, 1950
Clinical Assistant in Operative Dentistry
D.D.S., 1950, Washington

BALLARD, Charles S., 1950
Clinical Associate in Prosthodontics
D.M.D., 1921, Oregon

BARNHART, Fred Palen, 1949
Clinical Associate in Prosthodontics
B.S.D., 1934, D.D.S., 1934, Northwestern

BEASLEY, Neil E., 1952
Clinical Assistant in Prosthodontics
D.D.S., 1951, Washington

BEDER, Oscar Edward, 1952
Associate Professor of Prosthodontics
B.S., 1936, Rutgers, D.D.S., 1941, Columbia

BELL, John Allen, 1952
Clinical Assistant in Periodontology
D.D.S., 1952, Washington

BISHOP, Everhard Allen, 1949
Clinical Associate in Orthodontics
D.D.S., 1919, Northwestern

BOURASSA, Edward A., 1951
Senior Consultant in Oral Roentgenology
D.M.D., 1925, Oregon

BOWLER,* Frank Tait, 1947
Clinical Assistant in Pedodontics
D.M.D., 1945, Oregon

BURGESS, Herbert E., 1951
Clinical Assistant in Prosthodontics
B.A., 1942, Eastern Washington College of Education, Cheney, Washington; D.D.S., 1950, Washington

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

COLEMAN,* Clarence Iles, 1949
Clinical Assistant in Pedodontics
Ph.C., 1932, Oregon; D.M.D., 1946, Oregon

CONVIS, Ransom C., 1952
Clinical Assistant in Prosthodontics
B.A., Western Washington College of Education, Bellingham, Washington; D.M.D., 1944, Oregon

COOLEY, De Orr, 1951
Assistant Professor of Oral Surgery
B.S., D.D.S., 1944, California; M.S., 1951, Michigan

CRAIG, Charles Everett, 1950
Clinical Assistant in Orthodontics
D.D.S., 1943, Toronto; M.S., 1950, Illinois

DEGERING, Charles Irvin, 1950
Instructor in Oral Diagnosis and Treatment Planning
B.A., 1942, Walla Walla; D.D.S., 1950, Washington

DORE, George David, Jr., 1949
Clinical Associate in Oral Surgery
D.D.S., 1941, Northwestern

DOW, Pierre R., 1952
Clinical Assistant in Periodontology
B.S., 1948, Washington, D.D.S., 1952, Washington

EMPENGER, Daniel H., 1951
Clinical Assistant in Orthodontics
D.M.D., 1943, Oregon

ENDZELL, Frank E., 1952
Clinical Assistant in Operative Dentistry
D.D.S., 1952, Washington

FEASEL, Cecil Herbert, 1951
Clinical Associate in Oral Diagnosis and Treatment Planning
B.S.D., D.D.S., 1939, Northwestern

FLEEGE, Herbert William, 1948 (1949)
Clinical Assistant in Pedodontics
D.D.S., 1948, Iowa

FRANCIS, Frederick Henderson, 1949
Clinical Associate in Oral Surgery
D.D.S., 1936, Northwestern

FRASER, Emery James, 1949
Clinical Associate 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; Executive Officer of the Department of Dental Materials
B.S., M.S., 1949, Washington

GEHRING,* Richard William, 1950
Clinical Assistant in Fixed Partial Dentures
B.S., 1944, Michigan State Normal; D.D.S., 1948, M.S., 1949, Michigan

GERMAN, William Myndert, 1946 (1949)
Clinical Associate in Fixed Partial Dentures
B.S., D.D.S., 1943, Southern California

GILBERT, Howard C., 1952
Clinical Assistant in Periodontology
D.D.S., 1952, Washington

GILBERT, Howard I., 1949
Clinical Associate in Dental Materials
D.M.D., 1917, Oregon

GISWOLD, William Robert, 1949
Clinical Associate in Fixed Partial Dentures
D.D.S., 1939, Minnesota

GORES, Kenneth W., 1952
Clinical Assistant in Prosthodontics
D.D.S., 1951, Marquette

GUTHRIE, John De Mott, 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
Assistant Professor of Operative Dentistry
D.D.S., 1936, Toronto

HAMSTROM, Floyd E., 1952
Clinical Associate in Operative Dentistry
D.M.D., 1935, Oregon

* On military leave.

HARRISON, Richard P., 1952
Clinical Assistant in Operative Dentistry
D.D.S., 1952, Washington

HAYDEN, Frank E., 1952
Clinical Assistant in Operative Dentistry
D.D.S., 1951, Washington

HEWITT, Earl Christian, 1951
Clinical Associate in Oral Diagnosis and Treatment Planning
D.D.S., 1941, Maryland

HILEMAN, Alvin C., 1952
Clinical Assistant in Periodontology
B.S., D.M.D., 1943, Oregon

HOAR, Roland F., 1951
Clinical Assistant in Prosthodontics
D.D.S., 1951, Washington

HODSON, Jean E., 1952
Instructor in Fixed Partial Dentures (Ceramics)
B.S., 1952, Washington

HOFFMAN, Olin E., 1951
Clinical Associate in Pedodontics
M.P.H., 1943, Michigan; D.D.S., 1921, Iowa

INGLE, John Ide, 1948
Associate Professor of Periodontology and Endodontia
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

JANKELSON, Bernard, 1951
Clinical Associate in Prosthodontics
D.M.D., 1924, Oregon

JENSEN,* Norman K., 1951
Clinical Assistant in Prosthodontics and Operative Dentistry
B.A., 1946, Whitman College, Washington; D.D.S., 1951, Washington

JINKS, Gordon MacMillan, 1950
Clinical Assistant in Pedodontics
D.D.S., 1946, Toronto

JOHNSON, Marvin A., 1952
Clinical Assistant in Prosthodontics
D.D.S., 1952, Washington

JOHNSON, Robert Edward, 1949
Associate Professor of Oral Surgery; Executive Officer of the Department of Oral Surgery
D.D.S., 1944, M.S., 1948, Michigan

JONES, Ernest Morgan, 1945
Professor of Dentistry; Dean of the School of Dentistry
D.D.S., 1916, Northwestern

JONES, George Everette, 1949
Clinical Assistant in Oral Surgery
D.D.S., 1932, Iowa

KAHN, Kenneth S., 1950
Clinical Assistant in Orthodontics
B.S., 1940, Washington; B.S., D.D.S., 1943, California; M.S., 1950, Washington

KYDD,* William L., 1950
Clinical Assistant in Prosthodontics
D.M.D., 1947, Oregon

LAW, David Barclay, 1947 (1948)
Associate Professor of Pedodontics; Executive Officer of the Department of Pedodontics
B.S.D., D.D.S., 1938, M.S., 1941, Northwestern

LEWIS, M. Leonard, 1946 (1952)
Clinical Assistant 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, Robert D., 1952
Clinical Assistant in Pedodontics
D.D.S., 1952, Washington

LOSH,* John Harvey, 1950
Clinical Assistant in Periodontology
D.M.D., 1942, Oregon

McAULEY, Frank Charles, 1952
Associate in Pedodontics
D.D.S., 1952, Washington

McCLAIN, Patrick Paul, 1951
Clinical Assistant in Prosthodontics
D.D.S., 1950, Washington

McCULLOUGH, Patricia A., 1953
Instructor in Dental Hygiene
D.H., B.S., 1952, Washington

McGOVERN, William Palmer, 1949
Clinical Associate in Orthodontics
D.D.S., 1921, California

McLAUGHLIN, Robert G., 1950
Clinical Assistant in Periodontology
D.D.S., 1950, Washington

MACKEY, William J., 1951
Clinical Assistant in Fixed Partial Dentures
D.D.S., 1951, Washington

MAHAN, Thomas G., 1952
Instructor in Operative Dentistry
B.A., 1943, Valley City State College (North Dakota); D.D.S., 1950, Loyola

MATTES, Joseph Julius, 1949
Clinical Associate in Oral Surgery
B.S., 1928, College of Pacific; M.D., 1934, Hahnemann Medical College (Pennsylvania)

MEHUS, Paul Edward, 1950
Clinical Associate in Dental Science and Literature

MOLT, Frederick Felix, 1949
Senior Consultant in Oral Surgery
D.D.S., 1901, Chicago College of Dental Surgery

MOORE, Alton Wallace, 1948
Professor of Orthodontics; Executive Officer of the Department of Orthodontics; Director of Graduate Dental Education
D.D.S., 1941, California; M.S., 1948, Illinois

* On military leave.

MORRISON, Kenneth Nelson, 1948
Assistant Professor of Operative Dentistry
D.D.S., 1943, Toronto; M.S., 1952, Washington

NEILSON, John Warrington, 1952
Associate Professor of Periodontology
B.A., 1939, Saskatchewan; D.D.S., 1941, Alberta; M.S., 1946, Michigan

NELSON, Alton M., 1950
Clinical Assistant in Operative Dentistry
D.D.S., 1950, Washington

NEWELL, Helen Marietta, 1951
Instructor in Dental Hygiene
D.H., 1937, Minnesota

NORDENG, Harold A., 1951
Clinical Assistant in Operative Dentistry
B.S., Pacific Lutheran; D.D.S., 1951, Washington

OGILVIE, Alfred L., 1948
Assistant Professor of Periodontology and Endodontia
D.D.S., 1944, Toronto; M.S., 1948, California

OSTLUND,* Lyle E., 1950
Clinical Assistant in Operative Dentistry
B.S., D.M.D., 1947, Oregon

PLUMMER, Ralph E., 1948
Clinical Associate in Dental Materials
D.M.D., 1914, Oregon

PRATT, Frank Hawley, 1946 (1947)
Clinical Associate in Operative Dentistry
D.M.D., 1916, Oregon

REGLI, Carl P., 1950
Associate Professor of Prosthodontics
D.D.S., 1939, California

RICE, Harry I., 1952
Clinical Assistant in Operative Dentistry
D.D.S., 1951, Washington

RICE, Jack B., 1952
Clinical Assistant in Prosthodontics
Ph.B., 1942, Milwaukee; D.D.S., 1950, Milwaukee

RIEDEL, Richard Anthony, 1949
Assistant Professor of Orthodontics
D.D.S., 1945, Marquette; M.S.D., 1948, Northwestern

RIGGS, F. Eugene, 1952
Clinical Assistant in Fixed Partial Dentures
D.D.S., 1952, Washington

RILEY, Thomas James, Jr., 1949
Clinical Associate in Prosthodontics
A.B., 1932, D.D.S., 1936, Columbia

ROGERS, John R., 1952
Clinical Assistant in Pedodontics
B.S., Coast Guard Academy; D.D.S., 1951, Northwestern

SAITO, Fumiko I., 1952
Instructor in Dental Hygiene
D.H., 1945, Forsyth

SCHNEPPER, Harold E., 1950
Clinical Assistant in Operative Dentistry
D.M.D., 1946, Oregon

SCHROETER, Charles, 1950
Instructor in Oral Anatomy; Director of Photography

SEIMS, William G., 1952
Clinical Assistant in Pedodontics
D.D.S., 1946, Southern California; M.S., 1952, Washington

SMITH, Bruce Brownfield, 1946 (1949)
Clinical Associate in Fixed Partial Dentures and Operative Dentistry
B.S., 1941, D.M.D., 1942, Oregon

SMITH, Clifton Howard, 1949
Clinical Assistant in Prosthodontics
D.M.D., 1943, Oregon

SMITH, Neil Starrett, 1952
Associate in Pedodontics
D.D.S., 1952, Washington

SMITH,* Walter Harold, 1949
Clinical Assistant in Pedodontics
D.D.S., 1947, Pennsylvania

SPROULE, Walter John, 1948
Assistant Professor of Fixed Partial Dentures
B.A., 1941, British Columbia; D.D.S., 1944, Toronto; M.S., 1952, Washington

STARKS, Milan Victor, 1948
Clinical Associate in Endodontia
B.S., 1940, D.D.S., 1940, Nebraska

STIBBS, Gerald Denike, 1948
Professor of Operative Dentistry; Executive Officer of the Departments of Operative Dentistry and Fixed Partial Dentures; Director of Operatory
B.S., D.M.D., 1931, Oregon

SYKES, Walter A., 1949
Clinical Associate in Prosthodontics
D.M.D., 1923, Oregon

TAKANO, William S., 1950
Instructor in Orthodontics
D.D.S., 1949, Marquette; M.S., 1950, Washington

TEFFT, Wesley N., 1951
Clinical Assistant in Prosthodontics
D.D.S., 1951, Washington

THOMAS, Bernerd Owen Amos, 1946 (1947)
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
Associate in Operative Dentistry
D.D.S., 1952, Washington

VAUGHN, John F., 1951
Clinical Assistant in Periodontology
D.D.S., 1951, Washington

VENABLES, Leslie A., 1952
Clinical Assistant in Prosthodontics
D.D.S., 1945, Minnesota

WALL, Thomas P., 1952
Clinical Associate in Oral Diagnosis and Treatment Planning
D.M.D., 1934, Oregon

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* On military leave.

WANAMAKER, Frank Herman, 1947 (1948)
Professor of Major Oral Surgery
D.D.S., 1922, M.D., 1929, Northwestern

WEST, Roy F., 1950
Clinical Associate in Prosthodontics
D.M.D., 1913, Oregon

WILKINS, Esther M., 1950
Assistant Professor of Dental Hygiene; Director of Dental Hygiene
B.S., 1938, Simmons; D. H. 1939, Forsyth; D.M.D., 1949, Tufts

WILSON, Gale E., 1950
Lecturer in Jurisprudence
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 Assistant in Oral Surgery
D.M.D., 1947, Oregon; M.S.D., 1950, Northwestern

ZECH, Lando W., 1951
Senior Consultant in Oral Roentgenology
D.M.D., 1923, Oregon

COMMITTEES, 1953-54

DIVISION OF HEALTH SCIENCES

LIBRARY COMMITTEE: T. C. Ruch, *Chairman;* A. Fry, *Secretary;* H. H. Smith, R. R. de Alvarez, N. B. Everett, T. Holmes, W. Kirby, A. S. Lazarus, T. A. Loomis, F. C. Moll, J. W. Neilson, H. Neurath, W. A. Ricker, A. A. Ward, R. S. Weiser, H. W. Youngken.

COMMITTEE ON COORDINATION OF PURCHASING: Derwin de Mers, C. A. Finch, J. M. Flett, J. I. Ingle, B. S. Henry, R. L. Johnson.

SCHOOL OF MEDICINE

ADMISSIONS: J. W. Haviland, *Chairman;* C. Witter, *Secretary;* R. L. Blandau, R. A. Bruce, P. V. Gustafson, E. G. Krebs, H. D. Patton, H. S. Ripley, W. B. Seelye, E. L. Turner.

APPOINTMENTS AND PROMOTIONS: H. S. Bennett, *Chairman;* H. Neurath, H. S. Ripley, W. B. Seelye.

CURRICULUM: Subcommittees appointed for each year of curriculum and coordinated by Executive Committee.

DEAN'S COMMITTEE ON COOPERATION WITH VETERANS ADMINISTRATION: E. L. Turner, *Chairman;* W. Y. Baker, D. G. Corbett, R. R. de Alvarez, B. F. Francis, H. N. Harkins, J. W. Haviland, E. M. Jones, S. W. Lippincott, L. E. Powers, J. F. Ramsay, H. S. Ripley, W. B. Seelye, J. W. Shaw, E. B. Speir, C. S. Stone, F. E. Templeton, C. E. Watts, R. H. Williams.

EXECUTIVE COMMITTEE: E. L. Turner, *Chairman;* M. Adams, *Secretary;* H. S. Bennett, R. R. de Alvarez, J. M. Dille, C. A. Evans, H. N. Harkins, J. W. Haviland, H. Neurath, S. W. Lippincott, L. E. Powers, H. S. Ripley, T. C. Ruch, W. B. Seelye, F. E. Templeton, R. H. Williams.

EXTERNSHIP: F. L. Scheyer, *Chairman;* Merrill Shaw, E. L. Turner.

HOSPITAL PLANNING: Clinical Coordination Committee with architects, nursing representatives, and basic medical science consultants.

LABORATORY MATERIALS: K. A. Merendino, *Chairman;* T. W. Penfold, *Secretary;* R. J. Johnson, T. A. Loomis, E. J. Ordal, H. D. Patton, A. A. Ward.

MEDICAL ART AND PHOTOGRAPHY: R. L. Blandau, *Chairman;* Jessie Phillips, *Secretary;* A. W. Moore, R. F. Rushmer, M. S. Tschudin, L. D. Ellerbrook.

MICROSCOPE COMMITTEE: B. S. Henry, *Chairman;* R. L. Johnson.

POSTGRADUATE MEDICAL EDUCATION: W. B. Seelye, *Chairman;* M. Donovan, *Secretary;* R. A. Bruce, R. R. de Alvarez, R. S. Evans, J. W. Haviland, T. H. Holmes, S. W. Lippincott, D. F. McDonald, D. M. McIntyre, K. A. Merendino, F. C. Moll, L. E. Powers, H. S. Ripley, F. E. Templeton, E. L. Turner.

THESIS COMMITTEE: C. A. Finch, *Chairman;* J. M. Dille, N. B. Everett, D. Hanahan, S. Fleck, A. S. Lazarus, D. F. McDonald, F. C. Moll, E. J. Ordal, H. D. Patton, E. K. Smith, F. E. Templeton, J. Thiersch.

SCHOOL OF DENTISTRY

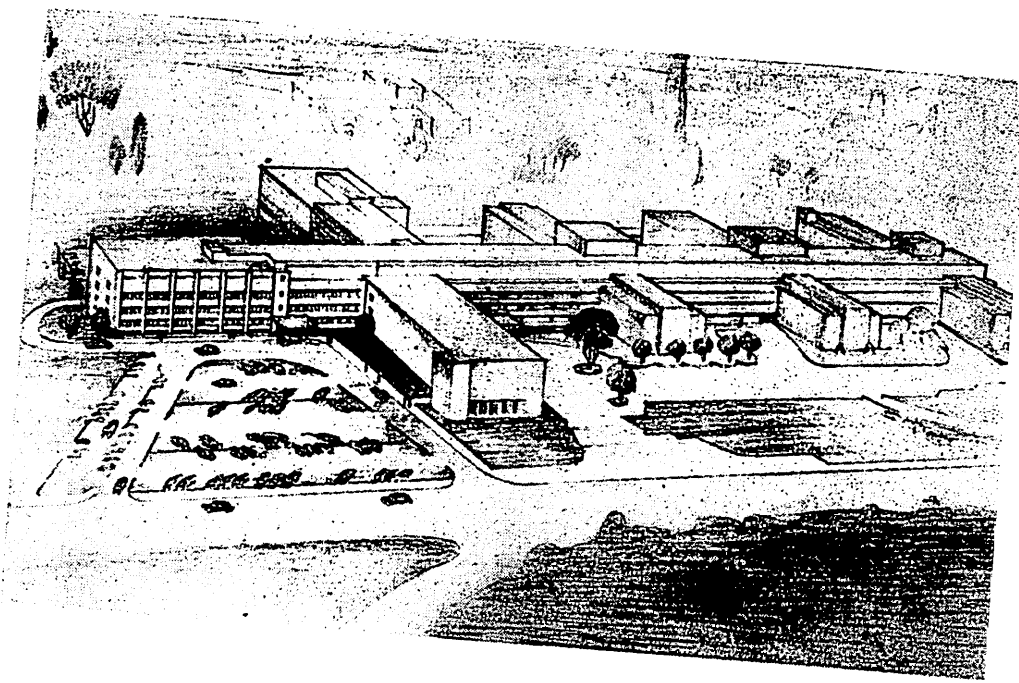
EXECUTIVE COMMITTEE: E. M. Jones, *Chairman;* J. M. Dille, C. A. Evans, A. W. Moore, G. D. Stibbs, B. O. A. Thomas, H. A. Young.

COMMITTEE ON ADMISSIONS: B. E. Anderson, *Chairman;* N. B. Everett, E. M. Jones, V. E. Amassian, G. D. Stibbs, B. O. A. Thomas.

COMMITTEE ON GRADUATE DENTAL ADMISSIONS: A. W. Moore, *Chairman;* E. M. Jones, D. B. Law, B. O. A. Thomas.

COMMITTEE ON DENTAL HYGIENIST ADMISSIONS: E. M. Jones, *Chairman;* B. E. Anderson, E. M. Wilkins.

COMMITTEE ON APTITUDE TESTING: B. O. A. Thomas, *Chairman;* B. E. Anderson, A. I. Hamilton.



THE DIVISION OF HEALTH SCIENCES

THE DIVISION OF HEALTH SCIENCES

THE DIVISION OF HEALTH SCIENCES of the University of Washington includes the Schools of Dentistry, Medicine, and Nursing, the College of Pharmacy, and the Student Health Service. It was established in the fall of 1945. 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, and the Division coordinates development, research, and teaching activities to strengthen and reinforce the work of each unit. For example, the Basic Medical Science departments in the School of Medicine 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 new 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, Chemistry, Physics, and Psychology; 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; laboratories

and offices of the School of Medicine's clinical departments; and the Basic Medical Science departments. The first units, including administrative areas, library, auditorium, medical research laboratories, and dental clinics, 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 achieve 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 developmental program involves an investment of approximately $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. A legislative appropriation for it has not yet been made, but the Board of Regents has stated that "it is the settled policy of the University of Washington to erect a teaching and research hospital as soon as a sound financial operation can be devised." On June 30, 1952, ground was broken for the first section of the University Hospital. Funds for this structure were made available by the Board of Regents from University building funds. It will house a small bed area for special studies, an outpatient clinic, administrative offices and utilities for the entire hospital, and laboratory and office areas for the clinical departments of the School of Medicine. Future plans also include a west wing to house the College of Pharmacy. When these units are completed, the professional schools of 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 forty-four thousand carefully selected volumes (with stack space for forty thousand more) and subscribes to more than eight hundred 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 is also useful to 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 560 in the Harborview Division and 270 in the geriatrics division at Georgetown. 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. Children's Orthopedic Hospital, the United States Public Health Service Hospital, and Firland Sanatorium are also affiliated with the Division. Children's Orthopedic Hospital has a bed capacity of 145, with excellent facilities in pediatrics and orthopedics, and is now erecting a new hospital in Laurelhurst, about a mile and a half from the campus. The U. S. P. H. S. Hospital has a capacity of 513; 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 1,268, occupies the former Seattle Naval Hospital just north of the city. Its facilities offer unusually fine opportunities for study and treatment of tuberculosis.

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, has 2,361; and Northern State Hospital, at Sedro Woolley, has 2,273.

The new United States Veterans Administration Hospital, in Seattle, which has a bed capacity of 300, 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.

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 41-42, those in the School of Dentistry on pages 75-76.

VETERANS EXEMPTIONS

Veterans of World War II who are admitted to the School of Medicine or Dentistry 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 two months before registration begins. Those who do not have certificates 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 consult a Veterans Administration regional office at least one month before the beginning of the quarter. 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, because allowances are not made until after monthly University attendance is established.

Under certain conditions veterans of World Wars I and II who are not eligible for Veterans Administration benefits are fully or partly exempt from tuition charges (see pages 41-42).

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

Men students may obtain rooms in the Men's Residence Hall, which is scheduled for completion in the fall of 1953, or in University-operated temporary dormitories, 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.

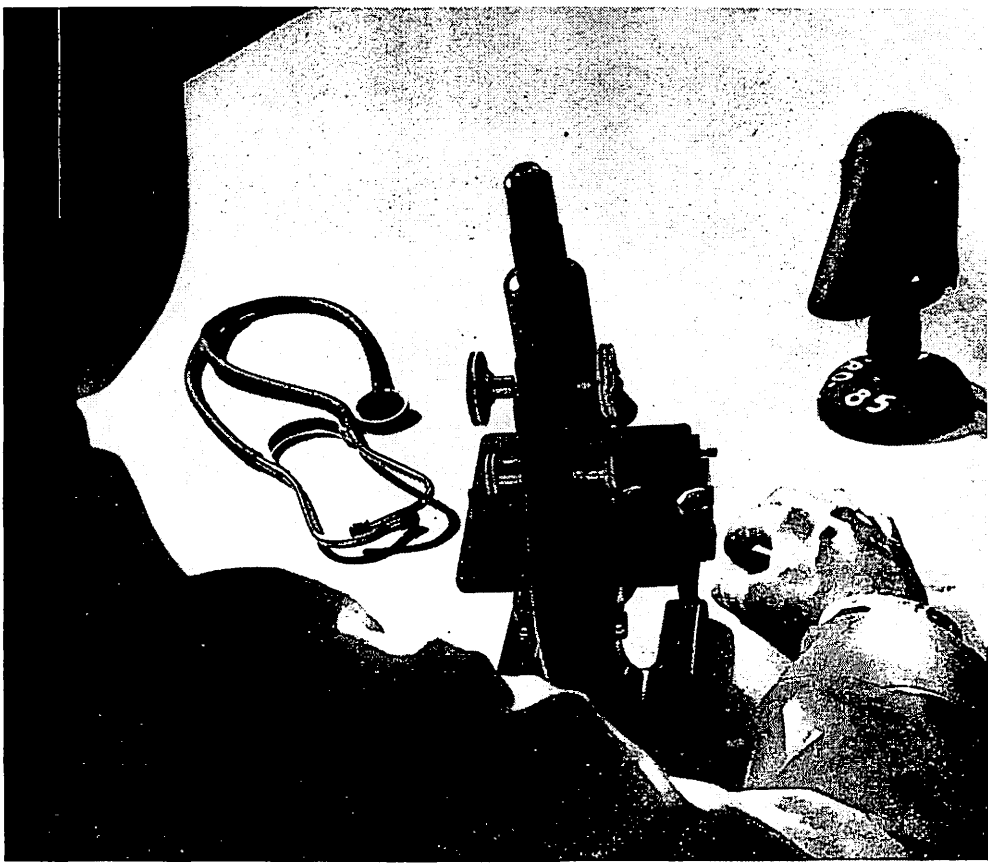
ASSOCIATED STUDENTS

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.

ALUMNI ASSOCIATION

All graduates of the University of Washington, as well as all persons who have completed one year of college work at the University, are eligible for membership in the Alumni Association. Members receive a subscription to the Washington *Alumnus* and have library, football, swimming, voting, and other privileges. The membership fee is $5 for one year; the dual membership fee for man and wife, which includes one subscription to the *Alumnus,* is $6 for one year.



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 objectives of the School of Medicine are to prepare a selected group of medical students for the practice of medicine through the use of the best educational techniques in this field; to develop a continuing education program of the highest caliber for graduate and postgraduate physicians; and to conduct an active program of research and investigation.

The School of Medicine is approved by the Council on Medical Education and Hospitals of the American Medical Association and by the Association of American Medical Colleges.

ADMISSION

While 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) with a grade-point average of 2.5 or above. Before admission all applicants must complete these minimum premedical requirements:

	QUARTER CREDITS
English (Composition)	9
Biology	12
Chemistry (Inorganic)	12
Chemistry (Organic)	6
Physics	12

The grade-point average for these courses must also be 2.5 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.

To insure a broad background, the Committee on Admissions recommends that premedical students take elective courses in the humanities (including literature, modern languages, music, and art); the social sciences (including economics, history, philosophy, political science, psychology, and sociology); and the sciences (including physical chemistry, mathematics, cellular physiology, and genetics).

Students taking their premedical undergraduate work at the University of Washington customarily enroll in the College of Arts and Sciences and consult Professor Victorian Sivertz, Premedical Adviser, 121 Education 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. Two unmounted recent photographs (2 by 3 inches).
4. Names and addresses of three science and three 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 will be given in May and November 1953. When the student takes the test, he should request that his scores be sent directly to the Committee on Admissions.
6. A short autobiography in the student's own handwriting.
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. A certain number of out-of-state applicants are accepted each year, with preference to qualified applicants from neighboring states, territories, and provinces where no medical school exists. Applicants from states outside the Pacific Northwest are accepted only under most unusual circumstances.

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 in the student's own handwriting.

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, he must deposit $50 with the Comptroller of the University. 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 1 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, with registration at the beginning of each of the three quarters. The third and fourth years are divided into terms, four terms in each year, with registration at the beginning of each term.

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	75.00

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	165.00
Per term	123.75

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 not entitled to educational benefits under Public Law 16 or Public Law 346, 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.

Incidental Fee

Per quarter	21.50
Per term	16.15

ASUW Fees

Membership	
Per quarter	8.50
Per term	6.40
Athletic admission ticket (optional), per year	5.00

Good for all athletic events in the school year, but must be validated each quarter or term when fees are paid.

Transcript Fee .50

One transcript is furnished without charge; the fee is charged for each additional copy.

Graduation Fee 10.00

SPECIAL FEES. From $2 to $5 is charged for late registration, $2 for changed registration, and $6 for late medical examination and X-ray. Fees for special examinations and removal of Incompletes range from $1 to $5.

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 fees will be refunded if withdrawal is made during the first thirty calendar days. Fee refunds are not made to students withdrawing under discipline.

ESTIMATE OF YEARLY EXPENSES

Tuition, Incidental, and ASUW Fees

Resident students	$390.00
Nonresident students	585.00
Athletic Admission Ticket (optional)	5.00
Accident Insurance (optional)	4.05
Microscope Purchase	250.00

All first-year medical students must buy microscopes so they may be used in the first week of Autumn Quarter. A scientific supply house in Seattle furnishes the kind of microscope students should use. Students who plan to buy second-hand, foreign-made, or other nonrecommended instruments should make sure they meet the standards of the Medical School Committee on Microscopes.

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

Board and Room

Room and meals in new Men's Residence Hall, or room in temporary dormitory and meals in University Commons and Student Union cafeteria	500-585.00
Room and meals in Women's Residence Halls	525-600.00
Room and meals in student cooperative house	435.00
Room and meals in fraternity or sorority house	600.00

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

Personal Expenses 200.00

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 reexamination, if permission is granted by the instructor in the course, the Dean, and the Executive Committee. If the additional work and reexamination 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. 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

Schedules of all classes are distributed to medical students at the beginning of each academic year.

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, psychiatry, and first aid. 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.

During the third and fourth years of the course, the school year is divided into four terms of nine weeks each. The third year consists of nine weeks each of medicine and surgery; five and a half weeks of obstetrics and gynecology; four and a half weeks of pediatrics; four weeks of psychiatry; and two weeks each of neurology and pulmonary disease. The fourth year consists of nine weeks each of medicine and surgery; four and a half weeks each of obstetrics and gynecology and pediatrics; and nine weeks of externship.

During the medicine, surgery, pediatrics, and obstetrics and gynecology terms, medical students are in residence in Seattle. They are expected to carry out their clinical assignments and to attend the scheduled conferences and noon clinics. Specialty instruction in such fields as ophthalmology, otolaryngology, psychiatry, radiology, forensic and legal medicine, medical ethics, medical economics, orthopedics, urology, etc., is conducted in regularly assigned conference hours.

The Saturday morning schedule of the fourth year includes clinical conferences which are divided among the Departments of Medicine, Obstetrics and Gynecology, Pediatrics, Psychiatry, Public Health and Preventive Medicine, and Surgery. These two-hour sessions have proved very valuable, because each department develops some

clinical problem that enlists the active participation not only of its own departmental staff but of members of the Basic Medical Sciences departments and of other Clinical Sciences departments. These sessions are open to all interested medical students, staff, and physicians.

The three summer months between the third and fourth years form a term of elective work. During this time the student may do investigative work, take review or other formal courses, prepare his thesis, work as an extern in a hospital or with a physician, or do whatever medical work he chooses.

The nine-week externship period in the senior year is divided into three approximately equal parts. Three weeks are spent at one of the state mental hospitals, three weeks in public health work, and three weeks observing and assisting a selected general practitioner, to gain firsthand knowledge of some practical aspects of the field of general practice.

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 on June 8, 1950. The School of Medicine's *Annual Report* carries detailed information concerning the faculty, fourth-year class, and third-year class members elected and initiated near the close of each academic year.

AWARDS AND LOANS

JOHN BYRNE MEMORIAL FUND. An annual award of $375 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 Chairman of the Committee on Scholarships of the School of Medicine by April 15.

CHI OMEGA SCHOLARSHIP. An annual award of approximately $200 is made by the Chi Omega Sorority to a woman medical student on the basis of scholarship and need. Application should be made to the Chairman of the Committee on Scholarships of the School of Medicine by April 15.

STUDENT LOAN FUNDS. Several loan funds have been established primarily to aid medical students, notably the Burdon-Irwin-Johnson and the Stotlar Funds. Application should be made to the Dean of the School of Medicine.

Other scholarships and fellowships for University students are listed in the *Handbook of Scholarships and Loan Funds,* published by the Office of the Dean of Students, 333 Student Union Building.

RESERVE OFFICERS TRAINING PROGRAM

The Medical ROTC (military medicine) program is open to all physically qualified male medical students who are United States citizens. Its purpose is medical preparedness in the event of national emergency. This course is described in detail on page 59.

RESEARCH GRANTS

Grants-in-aid for research and special investigative projects in the School of Medicine totaling more than $1,000,000 were received during the past year. About $825,000 was received from government agencies and private sources, and some $185,000 was received from the state of Washington under Initiative 171. Since the opening of the School in 1946, more than $3,000,000 has been awarded to enable investigators to carry on their work in the School of Medicine. A detailed listing of grants with their amounts, sources, and investigators is available in the School of Medicine's *Annual Report.*

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, including the completion of a thesis; and (5) discharged all indebtedness to the University.

The completion of a satisfactory thesis is a special requirement for graduation from the School of Medicine. The thesis may be written in any department of the School under the supervision of an adviser in that department. It must be completed by January 1 of the fourth year of the medical course, but may be undertaken any time before this after the Thesis Committee has approved the selected topic.

Work leading to the following degrees is also offered in the School of Medicine.

BACHELOR OF SCIENCE. A curriculum leading to a bachelor's degree with a major in public health is offered for students in the College of Arts and Sciences. Professional courses in the curriculum are given by the Department 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 public 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, physics, 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 2.5 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. Victorian Sivertz, Premedical Adviser, 121 Education Hall.

MASTER OF SCIENCE AND DOCTOR OF PHILOSOPHY. Work leading to these advanced degrees is offered, in accordance with the requirements of the Graduate School, in the Departments of Anatomy, Biochemistry, Microbiology, Pharmacology, and Physiology and Biophysics.

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. The basic science examination must be taken by all candidates, but 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.

Further information about licensure requirements may be obtained from the State Board of Medical Examiners, in 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.

APPLIED ANATOMY OF THE ABDOMEN. This is an evening course for internists and general practitioners as well as for surgeons. Each session consists of a lecture followed by laboratory demonstrations and dissection. Registration may be arranged for the lectures only, or for both the lectures and laboratory sections.

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.

RECENT ADVANCES IN CARDIOLOGY. This course is planned for general practitioners, surgeons, pediatricians, internists, and public health officers. It consists of illustrated lectures, clinical conferences, and panel discussions. Emphasis is placed upon recent advances in several areas of cardiovascular diseases from both clinical and experimental points of view, with the aim of pointing up current trends in diagnosis and treatment that are of practical value.

GASTRO-INTESTINAL DISEASES. Recent medical, surgical, and radiologic advances in the diagnosis and management of specific portions of this broad field are offered in panel discussions, formal lectures, and case presentations. Basic biochemical, physiologic, and psychologic approaches to therapy are emphasized.

PRACTICAL PSYCHIATRY. The purpose of this course is to present some of the practical aspects of current concepts in psychiatry. One-hour lectures are given each morning and afternoon, followed by visits to clinics, where a study is made of patients who illustrate psychoneurotic and psychosomatic problems encountered in everyday office practice. Discussion of the development of such illnesses, the means of prevention, and the treatment are emphasized. The class is divided into small groups, so that there is an opportunity for informal discussion.

OBSTETRICS. 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 with the assistance of Dr. W. S. Lippincott, of the Department of Pathology.

COURSE-NUMBERING SYSTEM

First-year courses for medical students are numbered from 400 to 424, second-year courses from 425 to 449, third-year courses from 450 to 474, and fourth-year courses from 475 to 499. Courses numbered below 400 are given for students in other University curricula, and those numbered 500 and above are open only to students in the Graduate School.

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; S) — **Odor**
Elementary work in human anatomy with lectures, correlated laboratories, and demonstrations. For health education, anthropology, physical education, and speech students and medical technicians; others by permission of instructor. Not open to premedical, predental, or nursing students.

Conjoint 317-318 Elementary Anatomy and Physiology (see Conjoint Courses)

328-329 Gross Anatomy (6-4; A-W) — **Blandau, Everett**
Lectures and dissection. The first quarter is devoted to a study of the entire human body except the head and neck areas, with emphasis on the thoracic and abdominal regions, and the second quarter to an intensive study of the head and neck areas. For dental students; others by permission.

330 Microscopic Anatomy (4; A) — **Odor**
Lecture and laboratory work in microscopic anatomy. For dental students; others by permission.

331 Neuroanatomy (2; W) — **Everett**
Lecture and laboratory work in neuroanatomy. For dental students; others by permission.

Conjoint 350-351 Human Function and Structure (see Conjoint Courses)

365 Orthopedic Anatomy for Nurses (4; S) — **Staff**
Surface and functional anatomy. For graduate nurses.

401-402-403 Gross Anatomy (8-4-4; A-W-S) — **Johnson**
Intensive lectures and dissection accompanied by roentgenographic demonstrations. Study of the entire human body except the brain and spinal cord. Required for first-year medical students. Prerequisite for nonmedical students, permission.

404 Human Embryology (3; A) — **Blandau**
Lectures and laboratory demonstrations covering the development of the human embryo and fetus, with emphasis on abnormal development; special attention to problems of maturation, fertilization, and physiology of the gametes. Required for first-year medical students. Prerequisite for nonmedical students, permission.

405-406 Microscopic and Submicroscopic Anatomy (4-4; A-W) — **Bennett**
Essentials of microscopic, submicroscopic, and chemcal anatomy. Required for first-year medical students. Prerequisite for nonmedical students, permission.

Conjoint 407 Basis of Neurology (see Conjoint Courses)

Conjoint 408 Endocrinology (see Conjoint Courses)

410 Cytochemistry (4; terms 1,2,4—AS) — **Bennett**
The finer distribution of chemical substances in cells and tissues; methods of cytochemistry and their theoretical basis and validity. Prerequisite, permission of instructor.

415 Biological X-ray Structure Analysis (3; terms 1,2—A) — **Jensen**
Theory of X-ray diffraction, with emphasis on applications to biological systems. Prerequisite, permission of instructor.

421 Seminar in Molecular and Submicroscopic Anatomy (2; term 3—W) — **Bennett**
The molecular and micellar basis of bodily structure. Prerequisite, permission of instructor.

425 Brain Dissection (2; term 4—S) — **Everett**
Laboratory work in dissection of the human brain, supplemented by lectures emphasizing developmental and functional aspects of neurology. Prerequisite, permission of instructor.

430 Biological Tracer Techniques (4; term 3—W) — **Everett**
Techniques of using radioactive isotopes as tracers in biological research. Prerequisite, permission of instructor.

435 Histogenesis and Organogenesis (2; term 4—S) — **Blandau**
Laboratory study and conferences dealing with the ontogenetic maturation of tissues and organs during fetal life. Prerequisite, permission of instructor.

440 Prenatal Anatomy I (4; all terms) **Johnson**
The study and dissection of the fetus and the newborn, emphasizing the thoracic cavity. Primarily designed for pediatricians and surgeons. Prerequisite, permission of instructor.

441 Prenatal Anatomy II (4; all terms) **Johnson**
The study and dissection of the fetus and the newborn, emphasizing the spine and extremities. Primarily designed for orthopedists. Prerequisite, permission of instructor.

442 Prenatal Anatomy III (4; all terms) **Johnson**
The study and dissection of the fetus and the newborn, emphasizing head and neck. Primarily designed for students and practitioners of otorhinolaryngology, ophthalmology, neurology, and pediatrics. Prerequisite, permission of instructor.

450 Biological Polarization Microscopy (4; terms 1,2—A) **Bennett**
Theory, technique, and application of polarization microscopy in biological studies. Prerequisite, permission of instructor.

455 Mammalian Reproduction (3; term 4—S) **Blandau**
Fundamental processes of reproductive anatomy and physiology of laboratory animals. Prerequisite, permission of instructor.

Conjoint 481, 482, 483, 484 Regional Surgical Anatomy (see Conjoint Courses)

497 Senior Medical Students' Elective (*; all terms) **Staff**
Work in any of the following fields: biological polarization microscopy, cytochemistry, biological X-ray structure analysis, prenatal anatomy, mammalian reproduction, biological tracer techniques, connective tissue reaction, molecular and submicroscopic anatomy, cytology, tissue fine structure, embryology, endocrinology, neuroanatomy, gross anatomy, X-ray diffraction hematology, brain dissection, histogenesis, and organogenesis. Prerequisite, permission.

498 Undergraduate Thesis (*; all terms) **Staff**
For medical students. Prerequisite, permission.

499 Undergraduate Research (*; all terms) **Staff**
For medical students. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

600 Research (*; AWS and Summer) **Staff**
Prerequisite, permission.

Thesis (*; AWS) **Staff**

BIOCHEMISTRY

Executive Officer: HANS NEURATH, D417 Health Sciences Building

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; S) **Staff**
Lectures covering the basic principles of biochemistry, including the structure and metabolism of biologically important compounds. For dental students; recommended for home economics, forestry, and fisheries students. Prerequisite, Chemistry 230 or 232.

362 Biochemistry Laboratory (3; S) **Staff**
Laboratory exercises and conferences. Certain experimental aspects of biochemistry of special interest to dental students are considered. For dental students.

363 Biochemistry Laboratory (2; S) **Staff**
Laboratory exercises in general biochemistry for home economics students and others. Prerequisite, 361 (which may be taken concurrently).

401, 402 Biochemistry (6,6; A,W) **Staff**
Lectures in the first quarter cover an introduction to physical biochemistry, a review of the properties of biologically important compounds, and metabolism at a cellular level; those of the second quarter emphasize metabolism in the intact mammal, including man. Laboratory exercises and conferences. 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 Endocrinology (see Conjoint Courses)

481, 482 Biochemistry (3,3; A,W) **Staff**
Structure, metabolism, and function of substances pertinent to animal and plant life. A basic course for graduate or advanced undergraduate students of chemistry, biochemistry, and various biological sciences; recommended also as a preparation for those intending to take advanced biochemistry courses. 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; A) **Staff**
Laboratory exercises and conferences. For students of biochemistry, chemistry, and various biological sciences. Prerequisite, 481 (which may be taken concurrently).

498 Undergraduate Thesis (*; all terms) **Staff**
For medical students. Prerequisite, permission.

499 Undergraduate Research (*; all terms) **Staff**
Investigative work on enzymes, proteins, lipides, intermediary metabolism, physical biochemistry, and related fields. For medical students. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

520 Seminar (1-3, maximum 9; AWS) **Staff**
Prerequisite, permission.

562 Physical Biochemistry (2; A, not offered 1953-54) **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. Prerequisites, 482 and Chemistry 357 or permission.

563, 564 Proteins (2,2; W,S, not offered 1953-54) **Neurath, Dandliker, Wilcox**
The chemistry and biological activity of proteins and naturally occurring protein structures is considered from the viewpoints of the properties of protein solutions, molecular structure, and biological function. Proteins found in a wide variety of tissues, both plant and animal, are discussed. Prerequisites, 562 or permission for 563; 563 for 564.

565, 566, 567 Enzymes and Enzyme Action (2,2,2; A,W,S, not offered 1953-54)
Huennekens, Krebs, Neurath
Preparation and properties of enzymes and enzyme systems, including methods of measurement, kinetic analysis, and theory of enzyme catalysis; classification and properties of individual enzymes, coenzymes, and enzyme systems. Prerequisites, 482 and Chemistry 357, or permission, for 565; 565 for 566; 566 for 567.

568, 569, 570 Advanced Topics in Biochemistry (2,2,2; A,W,S) **Hanahan, Huennekens, Krebs**
Sequence of topics in biochemistry treated on an advanced level. In 1953-54, the following topics will be presented: structure and metabolism of sterols, steroids, fatty acids, and the complex lipides; basic concepts in clinical biochemistry including composition and functions of tissue fluids, abnormal metabolic pathways and interrelations of hormones and enzymes; structure and metabolism of nitrogenous compounds. Prerequisites, 402 or 482 for 568; 568 for 569; 569 for 570; or permission.

583 Advanced Biochemistry Laboratory (3; W) **Staff**
Biochemical preparations and investigations of physical and chemical properties by special techniques, including spectrophotometry, polarimetry, manometric method, electrophoresis, isotope tracer applications, etc. Prerequisites, 483 and permission.

600 Research (*; AWS) **Staff**
Prerequisite, permission.

Thesis (*; AWS) **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 45). 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; S) **Gustafson**
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 Microbiology for Students of Dentistry (6; A) **Groman**
Lecture and laboratory work introducing the student to the principles of microbiology. Major emphasis is on taxonomy, morphology, physiology, immunology, and infectious properties of the bacteria, but other microbiological groups are considered. Prerequisites, Chemistry 232; Biochemistry 361 or its equivalent; 10 credits in botany or zoology; and, for nondental students, permission of instructor.

236 Applied Dental Microbiology (1; W) **Groman**
Specific applications of microbiology to dental problems. Prerequisite, 235.

300 Fundamentals of Bacteriology (*, maximum 6; A) **Ordal**
Basic bacteriology; comparative morphology, taxonomy, and physiology of bacteria. For students majoring in microbiology and others interested chiefly in the biological and chemical aspects of microbiology. Recommended for graduate students majoring in chemistry or biology. Prerequisites, Chemistry 232, 10 credits in botany or zoology, and permission.

301 General Microbiology (5; WS) **Klein**
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 (5; AWS) **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; AWS) **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; A) **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 Microbiology for Students of Medicine (*, maximum 6-*, maximum 6; A-W) **Evans**
441 includes a survey of microorganisms and a general consideration of the morphology and physiology of bacteria; an introduction to immunology, formation and properties of antibodies, nature of antigen-antibody reactions, blood groups, allergies, and an analysis of factors of innate and acquired immunity. During the last part of 441 and throughout 442, specific pathogenic bacteria and viruses are studied in detail. Students who have had previous work in bacteriology may by special permission be allowed to take 441 or 442 for less than the full 6 credits. Required for second-year medical students. Open to nonmedical students.

443 Medical Mycology (*, maximum 2; S) **Henry**
Consideration of morphology, physiology, immunology, and epidemiology of the medically important fungi. Offered first three weeks of quarter. Required for second-year medical students. Prerequisites, 441-442 or equivalent, and permission.

444 Medical Parasitology (*, maximum 4; S) **Gustafson**
Consideration of medically important parasites with emphasis on pathology, immunology, life cycles, and epidemiological and public health aspects. Offered last eight weeks of quarter. Required for second-year medical students. Open to nonmedical students. Prerequisites, 441-442 or equivalent, and permission.

497 Senior Medical Students' Elective (*; all terms) **Staff**
Prerequisite, permission.

498 Undergraduate Thesis (*; all terms) **Staff**
For medical students. Prerequisite, permission.

499 Undergraduate Research (*; AWS) **Staff**
Specific problems in industrial, medical, and general microbiology.

COURSES FOR GRADUATES ONLY

510 Physiology of Bacteria (4; S) **Douglas, Groman, Klein, Ordal**
Fundamental physiological and metabolic processes of bacteria. Prerequisite, permission of instructor.

520 Seminar (1; AWS) **Staff**

530 Comparative Morphology and Physiology of the Higher Bacteria (4; offered alternate years, offered 1953-54) **Ordal**
Enrichment, isolation, and comparative morphology and physiology of selected representatives of the following groups of bacteria; Nitrobacteriacae, Rhodobacteriineae, Caulobacteriineae, Actinomycetales, Myxobacteriales, Chlamydobacteriales, Caryophanaes, and Borrelomycetaceae. Prerequisite, permission.

540 Filterable Viruses (*, maximum 4; offered alternate years, offered 1953-54) **Evans**
Consideration of the physical, chemical, and biological properties of viruses and methods of working with them. Prerequisites, 442 and permission; histology is recommended.

550 Advanced Immunology (*, maximum 4; offered alternate years, not offered 1953-54) Weiser
Prerequisites, 441 and permission.

600 Research (*; AWS) **Staff**

Thesis (*; AWS) **Staff**

PATHOLOGY

Executive Officer: STUART W. LIPPINCOTT, D509 Health Sciences Building

In addition to courses for medical students, the Department of Pathology offers courses for a curriculum leading to the degree of Bachelor of Science in Medical Technology. This curriculum is given through the College of Arts and Sciences (see page 45).

COURSES

231 General Pathology (5; W) **Stefan, Staff**
This course is open to dental students and to selected graduate students in the basic sciences. The objective is to cover in a more brief form the basic work covered in detail in 441, 442, and 443. The method of presentation is therefore the same as in those courses. A reasonable knowledge of histology, anatomy, and physiology is essential to understanding the principles underlying the fundamental alterations in tissues and organs in disease processes and the results of these changes. While the general tissue and systemic manifestations are considered by processes, the applications of these diseases to the mouth, teeth, and neck are particularly stressed. For dental students; graduate students by permission.

301 General and Clinical Pathology for Nurses (2; AS) **Ellerbrook, Staff**
The first part of the course is a series of lectures and demonstrations concerned with the practical aspects of clinical pathology as they involve the nurse in her hospital duties. The principles and uses of certain tests are discussed, as well as the function of the nurse in collection of specimens, handling of materials, and liaison with the clinicians and laboratory personnel. A few of the more common tests are demonstrated. In the second part of the course, each class includes a didactic lecture, a laboratory demonstration, and a laboratory discussion. The material presented shows the causes, processes, and effects of a number of important diseases and demonstrates the basic underlying principles involved in the most important diseases. Congenital lesions and inflammatory, circulatory, neoplastic, and degenerative diseases are considered. One or more autopsies are demonstrated to show the relationship of pathology to the practice of medicine. For nursing students; others by permission.

302 General Pathology for Dental Hygiene Students (2; A) **Staff**
This course covers the same material in pathologic anatomy given in 301 but includes no clinical pathology.

321, 322-323-324-325, 326 Medical Technology (5, 6-6-6-6, 16; all courses AWS and Summer) **Ellerbrook, Erickson, Staff**
During this eighteen-month period, medical technology students become familiar with the common clinical laboratory procedures and with the interpretation of the results obtained. They perform the tests used in the laboratories of physiological chemistry, urinalysis, hematology, serology, microbiology, and pathology. Practical experience is obtained in the laboratories of the School of Medicine and of one or more hospitals. For medical technology students. Prerequisites, completion of three-year prescribed curriculum in the College of Arts and Sciences and permission. 321 only may be taken by microbiology students; permission is required.

441-442-443 General and Special Pathology (5-5-5; A-W-S) **Staff**
Didactic lecture followed by tutorials in the laboratory. Pathogenesis, pathological physiology, experimental background, and laboratory tests where indicated, are stressed. Comprehensive lantern slide presentations, demonstrations of gross pathology to small groups, and Scopicon microprojection of pertinent material are used in the presentation of subject matter. Time is available for the study of the histopathology of diseases and discussion of problems with staff members. Each day's activities are ended by a review of the material. Participation by students at autopsies is included at scheduled intervals throughout the course. The technique of the dissection and protocol writing are demonstrated, as well as 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 445-446-447 Laboratory Procedures (see Conjoint Courses)

460 Autopsy Technique (*; all terms—AWS) **Staff**
Participation in at least six autopsies, particularly in cases the student has studied in his ward work and in cases of special interest to him. The primary aim is to teach the student how he can obtain the most information at autopsy concerning the development of disease processes in his patients. Required for third-year medical students; graduate students by permission.

470 Surgical Pathology (*; all terms—AWS) **Thiersch**
Students participate in this course during the period in which they are taking the regular course work in surgery. The objective is to demonstrate as much fresh gross surgical material as is available together with a review of microscopic sections from the more interesting material. Students describe and classify the lesions and sometimes demonstrate the specimens. Specimens are obtained from hospitals contributing to the Washington State Tumor Registry and comprise not only the common important lesions but frequently those that are rare and of unusual interest. Required for third-year medical students; graduate students by permission.

476 Clinical Pathological Conference (*; all terms—AWS) **Staff**
Interesting, unusual, or provocative diagnostic cases are taken from the files of King County hospitals each week for clinical review, discussion, differential diagnosis, and correlation with the pathological findings. Required for fourth-year medical students; graduate students by permission.

483 Oncology (2-5, maximum 20; all terms—AWS) **Staff**
Interesting, rare, and controversial tumors selected from the files of the Washington State Tumor Registry are given to students for preliminary study and diagnosis. This is followed by discussion and correlation of diagnosis by members of the pathology staff. For fourth-year medical students; graduate students by permission.

498 Undergraduate Thesis (*; all terms) **Staff**
For medical students. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

520 Seminar (2, maximum 10; AWS) **Staff**
Review of current problems of both research and practical nature by various members of the Department of Pathology with discussion of presentations by senior members of the Department. Prerequisite, permission of executive officer.

521 Seminar in Contemporary Professional Literature (1; AWS) **Staff**
A review of current literature as applied to the field of pathology. Discussion of presentations by senior members of the Department. Prerequisite, permission of executive officer.

551 Experimental Pathology (*; AWS) **Staff**
Assignments depend upon the background and interest of the individual. The objective is to teach the individual 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; AWS) **Ellerbrook, Reiff, Erikson**
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; AWS and Summer) **Creighton, Staff**
Assignments according to need and background. By arrangement, for fellows and graduate students.

600 Research (*; AWS) **Staff**
Selected problems arranged in accordance with the student's needs. Prerequisite, permission of executive officer.

Thesis (*; AWS) **Staff**

PHARMACOLOGY

Executive Officer: JAMES M. DILLE, F421 Health Sciences Building

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 of the Department before registration.

COURSES

234 General Pharmacology (4; S) **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; A,W,S) **Staff**
The action of drugs on physiological function, with special reference to the use of drugs in the therapeutic treatment of disease. Toxicological manifestations of excessive doses of drugs; management and treatment of these poisonous effects. For pharmacy students.

304, 305 General Pharmacology Laboratory (1,1; W,S) **Staff**
To be taken concurrently with 302 and 303. Prerequisite, 301.

442-443 General Pharmacology (5-4; A-W) **Staff**
The action of drugs, with emphasis on their basic mechanisms and their application to the relief and treatment of disease. Toxicological manifestations of excessive doses of drugs; management and treatment of these poisonous effects. Laboratory experiments and demonstrations. Required for second-year medical students. Prerequisite for graduate students, a major or a minor in pharmacology.

Conjoint 488 Pharmacotherapeutic Conference (see Conjoint Courses)

497 Senior Medical Students' Elective (*, maximum 15; all terms) **Staff**
The fields of basic pharmacology. Mechanisms of drug action and rational therapeutic applications of drugs.

498 Undergraduate Thesis (*; all terms) **Staff**
For medical students. Prerequisite, permission.

499 Undergraduate Research (*; all terms) **Staff**
Participation in departmental research projects. For medical students. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

507 Journal Seminar (*, maximum 6; AWS) **Staff**
Presentation of comprehensive reports on recent medical and scientific literature in fields of current importance. Prerequisites, 443 and permission.

508 Research Seminar (0; AWS) **Staff**
Research progress reports and reports on results of completed research. Prerequisites, 443 and permission.

509 Pharmacology Laboratory Methods (*; AWS) **Staff**
Advanced and special techniques of pharmacological investigation. Material is changed from quarter to quarter to fit students' needs, and the course may be repeated for credit provided the subject matter is not duplicated. Prerequisites, 443 and permission.

600 Research (*; AWS) **Staff**
Participation in research projects already set in progress by members of the department staff. Directed experience in research investigation. Prerequisites, 443 and permission.

Thesis (*; AWS) **Staff**

PHYSIOLOGY AND BIOPHYSICS

Executive Officer: T. C. RUCH, G405 Health Sciences Building

Physiology deals with the processes, activities, and phenomena incidental to and characteristic of life or of living organisms. Courses in this field are given for medical and dental students, and for graduate students in other areas of study.

Students who intend to work toward 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

126 Human Physiology (6; W) **Scher, Woodbury**
Elementary work in human physiology stressing applications to dentistry. For dental students.

Conjoint 317-318 Elementary Anatomy and Physiology (see Conjoint Courses)

Conjoint 350-351 Human Function and Structure (see Conjoint Courses)

401-402 Advanced Human Physiology (7-7; W-S) **Ruch, Staff**
Advanced work in physiology approached from the biophysical, mammalian, and clinical points of view. Small-group teaching and special laboratory problems. Required for first-year medical students; graduate students by permission.

Conjoint 407 Basis of Neurology (see Conjoint Courses)

Conjoint 408 Endocrinology (see Conjoint Courses)

416 Biophysics (5; S) **Young, Woodbury**
Study of bioelectric phenomena in mathematical and physical terms: volume conductors, simple circuit theory, membrane and electrode potentials, and elementary servomechanism theory. Prerequisite, permission.

421 Instrumental Analysis of Cardiac Function (2; Summer) **Rushmer**
Objective records of size, shape, electrical activity, and sounds of the heart obtained on patients with heart disease for correlation with the routine physical examination.

481 Seminar: Pathological Physiology of Pain (2; Summer) **Amassian, Ruch**
Systematic seminar discussion of pain components of clinical syndromes based upon the experimental and clinical literature. Prerequisite for graduate students, permission.

482 Cardiopulmonary Interrelations (2; Summer) **Carlson, Rushmer**
Seminar discussion of interrelationships between mutually dependent circulatory and respiratory systems in terms of normal control and response to stress. Prerequisite for graduate students, permission.

483 Neurology of Emotional Behavior (2; Summer) **Patton, Ruch**
Seminar survey of the experimental literature on the hypothalamus, orbitofrontal lobes, and rhinencephalon, with special reference to abnormal behavior. Prerequisite for graduate students, permission.

484 Endocrinological Reaction to Stress (2; Summer) **Carlson, Patton**
Seminar survey of the literature concerned with the response of endocrine glands to physiological stresses and strains, such as exercise and extreme temperatures, in normal and diseased individuals. Prerequisite for graduate students, permission.

497 Senior Medical Students' Elective (*; all terms) **Staff**
Topics in physiology and biophysics chosen according to the interests of the group.

498 Undergraduate Thesis (*; all terms) **Staff**
For medical students. Prerequisite, permission.

499 Undergraduate Research (*; all terms) **Staff**
Research problems in physiology and biophysics. Normally full-time but other electives may be taken by arrangement. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

520 Seminar (2-5; AWS) **Staff**

521 Biophysics Seminar (2-5; AWS) **Young**
Quantitative aspects of physiology.

525, 526, 527 Advanced Mammalian and Clinical Physiology (*,*,*; AWS and Summer) **Staff**
Guided study of the experimental literature of physiology and biophysics. Essays are written and discussed with the staff. Emphasis is placed on critical analysis, accuracy of expression, bibliographical technique, and other factors of good scholarship. Prerequisite, permission.

532 Basic Principles of Physiological Instrumentation (2-5; A) **Young, Woodbury**
Pulse generator; A.C. and D.C. high-gain amplifier circuits; oscilloscopes and oscillographs; recording of pressure, volume, and flow in liquids and gases; calorimetry and pyrometry; continuous gas analysis. Prerequisite, permission.

533 Applied Physiological Instrumentation (2-5; W) **Amassian, Carlson, Rushmer, Scher**
Study and use of research instruments applicable to the nervous system (stimulators, amplifiers, and oscilloscopes), the cardiovascular system (cinefluorograph, electro- and stethocardiograph, oximeter, strain gauge manometers, etc.), and respiratory and metabolic activity (flow meters, minute volume integrator, infrared and paramagnetic gas analyzers, cardiotachometer, thermocouples, gradient calorimeter). Prerequisites, 532 and permission.

535 Operative Techniques in Neurophysiology (2-5; AWS and Summer) **Patton, Ruch**
Deafferentation, decerebration, and Sherrington reflex preparation; osteoplastic bone flap, Horsley-Clarke apparatus, and reconstruction of lesions; primate colony and operating room management. Prerequisite, permission.

600 Research (*; AWS and Summer) **Staff**
Prerequisite, permission.

Thesis (* AWS) **Staff**

PUBLIC HEALTH AND PREVENTIVE MEDICINE

Executive Officer: LELAND POWERS, E301 Health Sciences Building

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 with a major in public health. This curriculum is given through the College of Arts and Sciences (see page 45).

COURSES

Conjoint 295 Introduction to Normal Growth and Development (see Conjoint Courses)

301 Causes and Control of Communicable Diseases (3; W) — **Lazarus**
Introductory course for students without laboratory training. Prerequisite for nonmedical students, permission.

330 Introduction to Environmental Sanitation (3; A) — **Green**
Environmental control of disease transmission. Prerequisite, permission.

402 Communicable Disease Control (3; AS) — **Lazarus**
Public health methods for the control of common communicable diseases. For science majors. Prerequisite, Microbiology 301 or equivalent.

409 Public Health Economics (1; W) — **Jared, Powers**
Public medical services and the problems involved in providing adequate medical care. Required for first-year medical students; others by permission.

410 Introduction to Medical Statistics and Medical Social Problems (1; S) — **Bennett, Powers**
Required for first-year medical students; others by permission.

412 Public Health Organizations and Services (3; AS) — **Powers**
Study of local, national, and international public health services. For nonmedical students. Prerequisite, 301 or 402, or permission.

425 Biostatistics (2; A) — **Bennett**
Statistical methods used in compilation, interpretation, and presentation of medical data. Required for second-year medical students; others by permission.

432 Food Sanitation (3; A) — **Hatlen**
Public health methods of preventing transmission of disease through food. For nonmedical students. Prerequisite, 412.

434 Milk Sanitation (3; W) — **Hatlen**
Methods of preventing transmission of disease through dairy products. For nonmedical students. Prerequisite, 412.

435 Vector Control (3; S) — **Hatlen**
Current practical techniques of controlling rodent and insect factors in disease transmission. For nonmedical students. Prerequisite, 412.

438 Sanitation Facility Design (4; A) — **Green**
Mechanical design of public health facilities and equipment for sanitation. For nonmedical students. Prerequisite, 412 or permission.

439 Environmental Utilities (2; W) — **Green**
Plumbing, water, sewage, heating, ventilating, and lighting utilities in buildings; their design and operation for health and comfort. For nonmedical students. Prerequisite, 438.

444 Sanitation and Industrial Hygiene Laboratory (3; S) — **Green**
Field and laboratory testing procedures employed by sanitarians and industrial hygienists. For nonmedical students. Prerequisite, permission.

451 Industrial Hygiene (3; S) — **McGill**
Methods of preventing industrial and occupational diseases and accidents. For nonmedical students. Prerequisite, permission.

452 Introduction to Public Health and Preventive Medicine (*; all terms—AWS) — **Powers, Staff**
Public health organizations and services. Required for third-year medical students; others by permission.

460J Field Training in Health Education (5; Summer) — **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. For nonmedical students. Prerequisite, permission.

461 School and Community Health Programs (5; AW and Summer) — **Reeves, Vavra**
Organizational structure, function, and services of official and nonofficial community and school health agencies, with particular attention to the interrelated roles of teachers, physicians, nurses, and sanitarians. For nonmedical students. Prerequisite, junior standing.

463 Community Organization for Health Education (3; W) **Vavra**
Trends and problems in community health education, including community organization. For nonmedical students. Prerequisite, 412 or permission.

464 Community Health Education Techniques (3; W) **Vavra**
Practice in the techniques of working with groups; preparation and use of visual education materials. For nonmedical students. Prerequisite, 412 or permission.

470 Introduction to Public Health Statistics (2; AS) **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 (4; A) **Bennett**
Application of statistical techniques to biological and medical research; design and interpretaton of experiments. For nonmedical students. Prerequisite, permission.

475 Clerkships and Seminar (*; all terms) **Powers, Wilkey**
Three weeks of full-time work in various local public health agencies. In addition to this supervised field training and observation, the student is required to complete one social case study for presentation at a weekly seminar. Required for fourth-year medical students. Prerequisite, permission.

476 Advanced Public Health Statistics (5; S; offered alternate years, offered 1953-54) **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. Prerequisites, 470 and 472.

477 Statistical Methods in Biological Assay (3; offered alternate years, not offered 1953-54) **Bennett**
Methods appropriate to estimation of the dose-effect relationship; biological standardization; microbiological assay; design of experiments. For nonmedical students. Prerequisite, permission.

480 Public Health Problems (2-6; AWS and Summer) **Staff**
Special assignments in the field of public health. Prerequisite, permission.

482 Field Practice in Public Health (2-6; by arrangement) **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; by arrangement) **Staff**
An assignment to a local health department for practice in program planning. For nonmedical students. Prerequisite, permission.

484 Field Practice in Public Health (3; by arrangement) **Staff**
An assignment to a local health department for training in the utilization of community resources. For nonmedical students. Prerequisite, permission.

492J Problems in International Health (2; A) **Powers, Leahy**
Conference and discussion based on a survey of international health organizations and the services offered, by regions and countries. For nonmedical students. Offered jointly with the School of Nursing. Prerequisite, permission.

Conjoint 495 Prevention of Illnesses in Childhood (see Conjoint Courses)

Conjoint 496 Concept of the Child (see Conjoint Courses)

497 Senior Medical Students' Elective (*; Summer) **Sims, Fountain, McGill**
Work in the Venereal Disease Clinic, the Tuberculosis Clinic, or the Industrial Hygiene and Rehabilitation Clinic. Prerequisite, permission.

498 Undergraduate Thesis (*; all terms) **Staff**
For medical students. Prerequisite, permission.

499 Undergraduate Research (*; all terms) **Staff**
For medical students. Prerequisite, permission.

CONJOINT COURSES, MEDICAL PRACTICE, AND ROTC

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; W) **Deisher, Baldwin, Staff**

Study of the child from the standpoint of normal growth and development and nutritional and emotional needs. Offered by the Departments of Pediatrics and Public Health and Preventive Medicine. For nonmedical students. Prerequisite, permission.

317-318 Elementary Anatomy and Physiology (6-6; W and Summer-SA) **Skahen, Staff**

Human physiology with anatomical demonstrations. An elementary course integrating anatomy, histology, physiology, and biochemistry of the human body. Offered by the Departments of Anatomy and Physiology. For nursing and dental hygiene students only.

350-351 Human Function and Structure (6-6; W and Summer-SA) **Skahen, Staff**

An intermediate course integrating anatomy, histology, physiology, and biochemistry of the human body. Offered by the Departments of Anatomy and Physiology. For master's degree candidates in psychology and other students not majoring in anatomy or physiology. Prerequisite, permission.

407 Basis of Neurology (9; S) **Everett, Patton, Ruch**

An advanced course in the anatomy of the central nervous system and its correlation with neurophysiology. Offered by the Departments of Anatomy and Physiology. Required for first-year medical students. Prerequisite for graduate students, permission.

408 Endocrinology (2; S) **Blandau, Patton, Hanahan**

Correlation of the histology, physiology, and cytology of the endocrines. Offered by the Departments of Anatomy, Biochemistry, and Physiology. Required for first-year medical students. Prerequisite for graduate students, permission.

426-427 Cinical Medicine (*-*; W-S) **Staff**

Introduction to clinical medical specialties. 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.

445-446-447 Laboratory Procedures (*-*-*; A-W-S) **Ellerbrook, Scribner, Staff**

Lectures on the principles of some of the common clinical laboratory tests, to enable the students to interpret results correctly and to use the laboratory intelligently; laboratory work to demonstrate technical details, sources of error, and relative accuracy of certain of these tests, and to provide an opportunity for students to become rather proficient in performing tests they will use in ward duty. At frequent intervals "unknown" abnormal specimens are examined by these procedures and the proficiency of the students is gauged from the results they report. Offered by the Departments of Pathology and Medicine. Required for second-year medical students. Prerequisite for graduate students, permission.

481, 482, 483, 484 Regional Surgical Anatomy (3,3,3,3; A,W,S, and Summer) **R. Johnson**

An intensive course of lectures and dissection devoted to one region of the body each quarter, i.e., thorax, abdomen, upper extremity, head and neck. Offered by the Departments of Surgery and Anatomy. Prerequisite for nonmedical students, permission.

488 Pharmacotherapeutic Conference (*; by arrangement)

One conference a week devoted to comprehensive reports by the participants on pharmacological aspects of therapeutic problems. Offered by the Departments of Pharmacology and Medicine.

495 Prevention of Illnesses in Childhood (*; all terms) **Deisher, Staff**

Opportunity for more complete understanding of the well child and the factors contributing to his well-being. Participation in care of children at the University Child Health Center. Offered by the Departments of Pediatrics and Public Health and Preventive Medicine.

496 Concept of the Child (3; S) **Deisher, 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.

MEDICAL PRACTICE AND PROBLEMS

First-year medical students are required to take either Medical Practice 411, 412, and 413 (First Aid and Emergency Medical Care) or the Medical ROTC courses 417, 418, and 419 (Military Science I, Basic).

COURSES

401 Introduction to Medicine (*; A) **Turner, Staff**
Survey of the objectives of medicine with an introduction to the historical background of medical ethics and economics. Medical historical material illustrates the reflection of social and economic readjustments in medical progress. Required for first-year medical students.

411, 412, 413 First Aid and Emergency Medical Care (1,1,1; A,W,S) **Baier, Staff**
Intensive lectures, demonstrations, and practice to train the medical student in the fundamentals of first aid and emergency medical care, with emphasis on the medical aspects of military and civilian disasters and atomic and biological warfare. This sequence is identical to ROTC 417, 418, and 419, and first-year medical students must enroll in one or the other.

475 Externship in General Practice (*; all terms) **Scheyer, Staff**
Three weeks of work with a selected general practitioner to give a firsthand view of the interests and problems presented in medical practice. Required for fourth-year medical students.

481 Medical Ethics, Economics, and Public Relations (*; all terms) **Turner, Staff**
Lectures and discussions by authorities in these fields on topics of current and practical interest for the future physician. Required for fourth-year medical students.

482 Forensic and Legal Medicine (*; all terms) **Wilson**
Lectures and case descriptions which provide an introduction to the legal implications and responsibilities of medical practice. Required for fourth-year medical students.

RESERVE OFFICERS TRAINING PROGRAM

Professor of Military Medical Science: COLONEL GEORGE F. BAIER III

D212 Health Sciences Building

The Medical ROTC program is offered cooperatively by the School of Medicine and the Department of Military Science.

First-year medical students are required to take either the Medical ROTC courses 417, 418, and 419 (Military Science I, Basic) or courses 411, 412, and 413 (First Aid and Emergency Medical Care) offered in the Medical Practice and Problems section. This requirement applies equally to veteran and nonveteran medical students.

The complete Medical ROTC program is an elective course open to all qualified male medical students who are citizens of the United States. Students who enter the program attend one class a week for thirty-two weeks during each of the four years of medical school. Veterans with one or more years of service and nonveterans with two years of Advanced ROTC training may be excused from the first two years of Medical ROTC work.

There are no drill, ceremony, or uniform requirements, but students must attend a six weeks' summer camp some time during the four years of medical school.

When the program has been successfully completed, a commission as First Lieutenant, Medical Corps Reserve, in either the Army or the Air Force will be granted. Information about Army and Air Force internships and residencies is given as part of the course.

COURSES

417, 418, 419 Military Science I, Basic (Medical) (1,1,1; A,W,S) **Baier, Staff**
Intensive lectures, demonstrations, and practice to train the medical student in the fundamentals of first-aid and emergency medical care, with emphasis on the medical aspects of military and civilian disasters and atomic and biological warfare. This sequence is identical to Medical Practice 411, 412, and 413, and first-year medical students must enroll in one or the other.

427, 428, 429 Military Science II, Basic (Medical) (1,1,1; A,W,S) **Baier, Staff**
Preventive medicine and tropical medicine.

457, 458, 459 Military Science III, Advanced (Medical) (1,1,1; A,W,S) **Baier, Staff**
The psychology of leadership; personnel management; military psychiatry.

487, 488, 489 Military Science IV, Advanced (Medical) (1,1,1; A,W,S) **Baier, Staff**
Physical medicine; field medicine; map reading; aviation medicine; techniques of instruction; military medicine.

CLINICAL MEDICAL SCIENCES

MEDICINE

Executive Officer: ROBERT H. WILLIAMS, A407 Health Sciences Building

In the second year the student is introduced to many problems of clinical medicine and the main avenues for their resolution; in the third year he becomes more adept in the complete work-up and therapy of problems in general internal medicine; in the fourth year emphasis is placed on the difficult and special problems.

COURSES

Conjoint 426-427 Clinical Medicine (see Conjoint Courses)

Conjoint 445-446-447 Laboratory Procedures (see Conjoint Courses)

465 Clinical Clerkships (*; all terms) **Staff**
Approximately three hospital patients a week are assigned to each student for a complete work-up. Ward rounds are held daily; lectures, clinics, and conferences weekly. Two weeks are spent at Firland Sanatorium and two weeks with neurology inpatients. Required for third-year medical students.

480 Clinical Clerkships (*; all terms) **Staff**
One half of the students are assigned about five patients a week on the medical wards while the other half work in the Outpatient Department of King County Hospital. The two groups are brought together about twice daily for discussion of the most instructive patients. Most of the time is devoted to problems in allergy, arthritis, cardiology, chest, dermatology, gastroenterology, infectious diseases, metabolism, neurology, and psychiatry. The two groups of students exchange assignments in the middle of the quarter. Required for fourth-year medical students.

497 Senior Medical Students' Elective (*; all terms) **Staff**
Elective work in any of the following clinics: Medical, Dermatology, Allergy, Arthritis, Metabolic, Cardiology, Neurology, Gastroenterology, Electrocardiography, or Hematology; clinical clerkship in King County or Veterans Administration Hospital, or other approved hospital.

498 Undergraduate Thesis (*; all terms) **Staff**
For medical students. Prerequisite, permission.

499 Undergraduate Research (*; all terms) **Staff**
Case studies, with laboratory research. For medical students. Prerequisite, permission.

OBSTETRICS AND GYNECOLOGY

Executive Officer: RUSSELL R. DE ALVAREZ, B528 Health Sciences Building

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)

465 Clinical Clerkships (*; twice each term) **de Alvarez, Staff**
With the exception of two weekly lectures, 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 (*; twice each term) **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 out-

patient clinics devoting himself to the office problems of the specialty. One-third of the senior clerkship is spent in two Army hospitals in the community, under supervision of able members of the departmental faculty. Required for fourth-year medical students.

497 Senior Medical Students' Elective (*; all terms) **de Alvarez, Staff**
Elective work in any of the following: vaginal cytology, endocrinology, Postoperative Gynecology Clinic, Gynecology Clinic, New Obstetrics Clinic, Prenatal Clinic, Postpartum Clinic, Tumor Clinic, gynecologic pathology, operative gynecology, planned parenthood, obstetric and gynecologic endocrinology, and Obstetric and Gynecologic Endocrinology Seminar. Prerequisite, permission.

498 Undergraduate Thesis (*; all terms) **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 Introduction to Normal Growth and Development (see Conjoint Courses)

Conjoint 426-427 Clinical Medicine (see Conjoint Courses)

465 Clinical Clerkships (*; all terms) **Staff**
Weekly lectures, thirty-three 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 (*; all terms) **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, of spastic children at the Preschool Spastic Clinic, and of children with psychiatric problems at the Child Guidance and Psychiatric Clinics. Required for fourth-year medical students.

Conjoint 495 Prevention of Illnesses in Childhood (see Conjoint Courses)

Conjoint 496 Concept of the Child (see Conjoint Courses)

497 Senior Medical Students' Elective (*; Summer) **Staff**

498 Undergraduate Thesis (*; all terms) **Staff**
For medical students. Prerequisite, permission.

COURSE FOR GRADUATES ONLY

505 Physical Growth of the Well Child (2; S) **Moll, Staff**
Weekly seminars, eighteen hours. The correlation between growth and development and diseases in the child as pertaining to dental health. For graduate students in dentistry. Prerequisite, permission.

PSYCHIATRY

Executive Officer: HERBERT S. RIPLEY, B516 Health Sciences Building

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; Summer, W) **Leider**
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.

400 Human Personality Development and Behavior (*, maximum 3; AWS) **Ripley, Lemere**
The application of a method of personality evaluation to patients is introduced. Comparative personality development is illustrated by animal and human behavior. Correlation is made between the growth of the nervous system and action patterns, intellectual development, and emotional reactions of the maturing organism. Required for first-year medical students.

Conjoint 426-427 Clinical Medicine (see Conjoint Courses)

430 Psychopathology (*; A) **Ripley, Staff**
Abnormalities of behavior, thinking, and feeling, and the structural and psychological factors that produce them. Anxiety, depression, evasion, withdrawal, repression, compensation, projection, and other defense mechanisms are discussed. Required for second-year medical students.

450 Principles of Personality Development (2; A) **Weiland**
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 old age. For nonmedical students. Not open to students who have taken 267.

452J Survey of Psychodynamics and Psychopathology (3; W) **Heilbrunn, Staff**
Presentation of the psychodynamics involved in day-to-day adjustments and the psychodynamics of overtly pathologic or abnormal adjustment as seen in mental illness. Both the psychologic and physiologic dynamics seen in human behavior are considered. Quiz sections are directed toward discussion of specific problems and the roles of various professional groups in solving these problems. For nonmedical students. Offered jointly with the School of Nursing. Prerequisite, 267 or 450.

457J Fundamentals of Clinical Psychiatry (5; S) **Staff**
Presentation of the fundamentals of clinical psychiatry with an emphasis on modern concepts. The discussion section is directed toward a consideration of the roles of clinical specialists in cooperating with dynamic programs of treatment for the mentally ill and in participating in community programs for the conservation of mental health. For nonmedical students. Offered jointly with the Department of Psychology and the School of Nursing. Not open to students who have taken 557. Prerequisite, 267 or 450 or permission.

465 Clinical Clerkships (*; all terms) **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 (*; all terms) **Staff**
Three weeks of work at a state or private 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. Required for fourth-year medical students.

480 Clinical Diagnosis and Treatment (*; all terms) **Staff**
During the period devoted to pediatrics and obstetrics, half a day a week is spent in a psychiatric clinic for children. Emphasis is placed on an understanding of the total dynamics resulting in behavior problems of children; treatment including individual psychotherapy for the child and parents; the function of a psychiatric team composed of psychiatrist, social worker, nurse, and psychologist; and the utilization of community facilities. During the periods devoted to surgery and medicine, time is spent in the psychiatric adult outpatient department of a general hospital. Required for fourth-year medical students.

497 Senior Medical Students' Elective (*; all terms) **Staff**
Instruction in outpatient psychiatric treatment and practical experience treating patients under supervision. Other elective work may be arranged to suit individual needs and interests. For medical students. Prerequisite, permission.

498 Undergraduate Thesis (*; terms 1,2) **Staff**
For medical students. Prerequisite, permission.

499 Undergraduate Research (*; all terms) **Staff**
For medical students. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

553 Psychodynamics and Psychopathology (2; A) **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 450 or permission.

554 Psychodynamics and Psychopathology (2; W) **Heilbrunn**
Continuation of Psychiatry 553. Prerequisite, 553.

557 Clinical Psychiatry (2; W) **Staff**
Discussion of clinical psychiatry considering causation, prevention, treatment, and rehabilitation. Not open to students who have taken 457J. Prerequisite, 267 or 450 or permission.

558 Seminar: Interviewing (2; W) **Kaufman**
Case studies are presented by individual students for discussion of the psychodynamics and methods of dealing with personality problems. For graduate students carrying cases in counseling. Prerequisite, permission of instructor.

559 Child Psychiatry (2; S) **Kaufman**
Series of discussions and lectures dealing with psychopathology of children. Prerequisite, *267* or 450 or permission.

RADIOLOGY

Executive Officer: FREDERIC E. TEMPLETON, 415 Cobb 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

465 Diagnostic and Therapeutic Radiology (*; all terms) **Staff**
Lectures on the use of X-ray in diagnosis, the physical factors used in diagnostic roentgenology, the physical principles involved in therapeutic radiology, and the types of radiant energy with their effects on normal and abnormal tissue. Methods of measurement and protection are demonstrated. Required for third-year medical students.

497 Senior Medical Students' Elective (*; all terms) **Templeton, Cantril, Addington, Buschke, Carlile, Gilbertson, Nelson, Walker, Ward**
Observations of and participation in the clinical work of everyday practice. The course is in two sections, therapeutic radiology and diagnostic radiology. Prerequisite, permission.

498 Undergraduate Thesis (*; all terms) **Staff**
The student may write his thesis in either therapeutic or diagnostic phases of radiology.

SURGERY

Executive Officer: HENRY N. HARKINS, B504 Health Sciences Building

COURSES

Conjoint 426-427 Clinical Medicine (see Conjoint Courses)

465 Clinical Clerkships (*; all terms) **Harkins, Merendino, Ward, McDonald, Ray, Staff**
Four equal periods in the divisions of general surgery, neurosurgery, urology, and orthopedics in King County and Veterans Administration Hospitals. The student is assigned interesting cases in rotation and is responsible for a complete work-up of the patient, including the routine laboratory examination. The patient is followed by the student from admission until discharge. Bedside clinics with discussions of the student's write-ups and differential diagnoses, as well as ward rounds, are conducted daily. The basic science approach is correlated with the mechanisms of clinical disease. Scrubbing in the operating room is optional. Special instruction in technique is a prerequisite to operating room participation. Instruction also includes practical experience in anesthesia, surgical pathology, and formal lecture periods in the surgical specialties. Formal lectures are presented in ophthalmology and otolaryngology. Required for third-year medical students.

480 Clinical Clerkships (*; all terms) **Harkins, Merendino, Ward, McDonald, Ray, Crystal, Baker, Loe, 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.

Conjoint 481, 482, 483, 484 Regional Surgical Anatomy (see Conjoint Courses)

497 Senior Medical Students' Elective (*; all terms) **Staff**
Experimental surgery: operative technique, anesthesia; clinical problems in surgery: difficult and interesting ward cases; record and case study: for those doing clinical theses in surgery; advanced experimental surgery: assisting staff members in animal operations.

498 Undergraduate Thesis (*; all terms) **Staff**

499 Undergraduate Research (*; all terms) **Staff**

COURSES FOR GRADUATES ONLY

520 Seminar (5; all terms) — **Harkins, Merendino**
Conferences, seminars, and round-table discussions of advanced surgical topics and recent literature in the field.

590 Surgical Experimental Techniques (5; all terms) — **Harkins, Merendino**
Basis for graduate research and advanced thesis work.

591 Applied Basic Sciences in Orthopedic Surgery (*; all terms) — **Ray, Staff**
Lectures, demonstrations, and laboratory periods devoted to the application of anatomy, physiology, and pathology to clinical problems in orthopedic surgery.

594 Seminar in Orthopedic Surgery (*; all terms) — **Ray, Staff**
Discussions of recent literature, experimental work, and relative clinical problems.

598 Seminar in Urology (*; all terms) — **McDonald, Staff**
Problems in the field of urology discussed by various visiting members of the faculty of urology and of other departments, to provide a well-rounded basic scientific and clinical presentation.

600 Research (*; all terms) — **Harkins, Merendino, Ward, Ray, McDonald, Staff**

ROSTER OF STUDENTS

FIRST-YEAR CLASS, ENTERED 1952

ADAMS, Betty Kathleen, *Moses Lake*
Washington State College

ATKINSON, James Russell, *Reno, Nev.*
B.S., University of Washington

BEALE, David Alan, *Spokane*
Whitman College

BEALL, Joseph Hilary, Jr., *Wenatchee*
University of Washington

BOWMAN, Howard Randolph, *Naches*
B.S., College of Puget Sound
University of Washington

BREMNER, James Douglas, *Lynden*
College of Puget Sound

BROWN, Clyde Elmo, *Seattle*
B.S., Brigham Young University

BROWN, Harold Wendell, *Eugene, Ore.*
B.S., College of Idaho
University of Oregon

BROWN, Leo Richard, *Seattle*
University of Washington

BURKHARDT, Garfield Fred, *Tacoma*
B.S., College of Puget Sound
University of Washington

BURNS, Robert Milton, *Seattle*
University of Washington

CARNEY, Robert Emmett, *Mt. Vernon*
University of Washington

CHAPMAN, Niles Daniel, *Butte, Mont.*
B.S., Montana State College

CLARKE, Samuel James, Jr., *Winslow*
University of Washington

CONNOR, Ralph Gordon, *Alderwood Manor*
B.S., University of Washington

CORPRON, Douglas Ogden, *Yakima*
B.S., Chapman College
Texas Christian University

CREWDSON, Frank Roy, Jr., *Olympia*
Boston University

CUNNINGHAM, Robert Donald, *Concrete*
University of Washington

DAHL, Allen Wilbur, *Blaine*
B.S., University of Washington

DANIELS, Jack Richard, *Spokane*
B.S., Washington State College

DAVIS, Hal Walter, *Pocatello, Idaho*
B.S., Idaho State College
Brigham Young University

DEAN, Orval, *Colbert*
Whitworth College

DE GROOT, Lambert, *Everett*
University of Washington

DRAKE, David, *Seattle*
B.A., Harvard College

EDDINGS, Ralph Hueston, *Tacoma*
B.A., Whitman College

EFFORD, Robert James, *Vancouver, B. C.*
B.A., University of British Columbia
M.A., Stanford University

ELISON, Christian, *Tacoma*
B.S., College of Puget Sound

ERICKSON, Robert Vernon, *Seattle*
B.A., University of Washington

EVANS, Thomas Oscar, *Spokane*
University of Washington

EWY, Vincent Owre, *Seattle*
University of Washington

EYER, Kenneth Moore, *Seattle*
University of Washington

FARNHAM, Norman Gardner, *Payette, Idaho*
B.S., University of Idaho

FOUTY, Robert Almond, *Seattle*
University of Washington

FULLINGTON, Warren Richard, *Bremerton*
University of Washington

GABRIELSEN, Trygve Olav, *Seattle*
University of Washington

GO, Sumio, *Seattle*
University of Washington

GREER, Robert Joseph, *Billings, Mont.*
University of Washington

HARTWIG, James Henry, *Seattle*
B.S., University of Washington

HEITMAN, Richard Andrews, *Spokane*
University of Colorado

HESCH, Donald Joseph, *Seattle*
B.A., University of Washington

HOFFMAN, Gerhard Heinz, *Snohomish*
B.A., North Central College

HOLCOMB, Fred Duane, *Kelso*
University of Washington

HOLLOWAY, Jonathan Aldrich, *Seattle*
B.A., Oberlin College

HOSHIWARA, Isao, *Seattle*
B.A., University of Washington

JOHNSON, Lloyd Philip, *Yakima*
University of Washington

KENDALL, John Walker, Jr., *Seattle*
B.A., Yale University

LARSON, Vernon Oscar, *Palouse*
Washington State College

LICHTY, Lloyd Real, *Seattle*
B.A., University of Washington

LIMBECK, George Andrew, *Seattle*
University of Washington

MUZZALL, Hugh Arthur, *Ellensburg*
Washington State College

MUZZALL, Richard Edwin, *Ellensburg*
B.A., Central Washington College of Education

MYERS, Harvey A. P., III, *Seattle*
B.S., University of Washington

NAGEL, Donald Armin, *Seattle*
B.A., Elmhurst College
University of Washington

NELSON, Melvin Hilding, *Everett*
Seattle Pacific College

OLIPHANT, Manford Merle, Jr., *Chehalis*
University of Washington

PEARSON, James Campbell, *Seattle*
University of Washington

PRINEAS, Manoel Mike, *Seattle*
B.S., University of Washington

PYFER, Howard Richard, *Seattle*
B.A., M.S., University of Washington
Willamette University

RANDOLPH, Ernest LeRoy, *Parkland*
Pacific Lutheran College

ROBERG, Elizabeth Ann, *Yakima*
University of Washington

ROBINSON, Richard Fox, *Everett*
University of Washington

ROWE, Marvin, *Seattle*
University of Washington

SHAW, Russell Laverne, *Seattle*
B.S., University of Washington

SMITH, Edward Alan, *Spokane*
B.A., Stanford
Gonzaga University

SNYDER, Loretta Ann, *Anchorage, Alaska*
B.S., Washington State College

STAVIG, Darrell Elwood, *Seattle*
University of Washington

STEWART, Charles Henry, *Ellensburg*
Harvard College

SYMONDS, Frank Bruce, *Anacortes*
B.A., Western Washington College of Education

VIRAK, Roy Harold, *Bonners Ferry, Idaho*
B.A., Pacific Lutheran College

WANGSNESS, Margaret Karen, *Everett*
B.S., University of Washington

WATANABE, James Michio, *Seattle*
B.A., University of Washington

WESTLAND, Eugene Larin, *Eatonville*
College of Puget Sound

WILLIAMS, Buerk, *Walla Walla*
B.A., Whitman College

WILLIAMSON, Robin A., *Seattle*
B.S., Washington State College

WONG, Kenneth Gen, *Seattle*
B.S., University of Washington

WYNNE, Garnet Francis, *Havre, Mont.*
University of Minnesota

SECOND-YEAR CLASS, ENTERED 1951

ARNDT, Harrison William, *Whitefish, Mont.*
Montana State College

ASPER, Paul Ansgar, *Monroe*
Pacific Lutheran College

BACHMAN, Lester Bruce, *Missoula, Mont.*
Montana State College

BARCLAY, David Lewis, *Seattle*
University of Washington

BARDARSON, Baird Milton, *Seattle*
University of Washington

BARRETT, John Edgar, *Concrete*
University of Washington

BILSTEN, George B., *Seattle*
B.A., University of Washington

BLOOMSTROM, Albert Duane, *Seattle*
B.S., University of Washington

BOLMAN, William Merton, *Yakima*
B.A., Harvard College

BUNCH, Stephan Andrew, *Yakima*
Yale University

CARLSON, Dennis Gordon, *Seattle*
University of Washington

COOKE, Shirley Ann, *Seattle*
B.A., University of Washington

ELANDER, Carl Richard, *Seattle*
University of Washington

FAIRFAX, George Taylor, *Puyallup*
B.S., College of Puget Sound

FARRELL, Dennis Herbert, *Seattle*
B.S., University of Washington

FITHIAN, Robert Arthur, *Anacortes*
B.S., University of Washington

FLANNIGAN, Fredric Cecil, *Puyallup*
B.A., M.A., University of Washington

GAMES, Jack Edward, *Seattle*
University of Washington

GARRETT, Walter E., *Oakland, Calif.*
A.B., University of California, Berkeley

GRIFFIN, Arthur Russell, *Seattle*
University of Washington

GRIFFIN, James Trenholme, *Seattle*
University of Washington

GUNSUL, Alan Lane Webster, *Seattle*
Seattle University

GUTMANN, Nelly, *Vancouver, B. C.*
University of British Columbia

HEGSTROM, Robert Marvin, *Seattle*
University of Washington

KIDD, Kenneth Laverne, *Port Townsend*
Colgate University

KING, Harold Eugene, *Seattle*
B.A., University of Washington

KUMASAKA, Yukio, *Seattle*
University of Washington

LANE, James Joseph, Jr., *Three Forks, Mont.*
B.S., Northwestern University

LaVIOLETTE, Rodney Melvin, *Seattle*
University of Washington

LEE, Eldon Edward, *Seattle*
Seattle Pacific College

LEIN, John Nave, *Spokane*
B.S., University of Idaho

MAGOON, Carl Chatman, *Seattle*
B.S., Aurora College

MARK, John Sui Tahn, *Honolulu, T. H.*
University of Washington

McGLYNN, Lynn Douglas, *Sidney, Mont.*
B.A., Montana State University

McGUINNESS, Donald Lee, *Yakima*
Stanford University

McNEALY, Donald Eddins, *Kelso*
University of Washington

MEHAFFEY, Janet Luschei, *Spokane*
B.S., University of Washington

MOLINERO, Donald Peter, *Roslyn*
B.A., University of Washington

MORTON, William Edwards, *Seattle*
College of Puget Sound

MULLEN, Marr Parker, *Seattle*
B.A., Dartmouth College

MURPHY, Francis J., Jr., *Seattle*
Seattle University

NEAL, Richard King, *Seattle*
University of Washington

NISCO, Frank Samuel, *Seattle*
B.A., Rutgers University

NIXON, John Elliott, *Seattle*
B.S., University of Washington

ORTH, Rodney Davis, *Spokane*
B.A., Whitman College

PETERSEN, Walter Connell, *Seattle*
University of Washington

PHIBBS, Clifford Matthew, Jr., *Sumner*
Washington State College

POAGE, Donald Ellis, *Tacoma*
B.S., College of Puget Sound

POSNER, Jerome Beebe, *Seattle*
University of Washington

PRINCE, Cyrus Edward, *Tacoma*
B.A., M.A., College of Puget Sound

ROHRBACKER, Donald Max, *Yakima*
Linfield College

SALMON, Peter Alexander, *Victoria, B. C.*
University of Washington

SAMPLE, Donald William, *Seattle*
University of Washington

SASAKI, Edwin Hideo, *Seattle*
B.S., University of Washington

SHELDON, William Barnard, *Seattle*
University of Washington

SHERRY, Robert Arnold, *Seattle*
University of Washington

SIMMONDS, Joe B., *Otis Orchards*
Creighton University

SMITH, Mackenzie, *Seattle*
B.A., University of Washington

SMITH, Patricia Marie, *Seattle*
B.S., Seattle University

SNYDER, Joseph, *Tacoma*
B.S., College of Puget Sound

SOSS, Siedell Lawrence, *Spokane*
B.S., University of Washington

THRUPP, Lauri David, *Seattle*
B.A., Stanford University

TRANTOW, John William, *Kelso*
B.S., University of Washington

TURNER, Leslie Dean, *Seattle*
B.S., Stanford University

VOYNOW, Robert Bernard, *Kew Gardens, N.Y.*
B.S., Queen's College

WALKER, Vern Neil, *Seattle*
University of Washington

WIEGERT, Henry Thomas, *Seattle*
University of Washington

WOLFE, William Jackson, *Seattle*
University of Washington

THIRD-YEAR CLASS, ENTERED 1950

ALDEN, Alfred Milton, *Rock Creek, B. C.*
University of Washington

ANDERSON, Arden O., *Grandin, N. D.*
B.A., University of Minnesota

ANDERSON, Arthur Alexander, Jr., *Tacoma*
B.S., University of Washington

ANDERSON, Arthur Melvin, *Seattle*
University of Washington

BALYEAT, George Edward, *Kelso*
University of Washington

BARTH, Grant Dean, *Opportunity*
B.A., University of Washington

BROOKS, Thomas P., *Anacortes*
B.A., University of Washington

CAILLOUETTE, James C., *Tacoma*
B.A., College of Puget Sound

CAREY, Thomas Francis, Jr., *Seattle*
University of Washington

CASE, Austin McLain, *Seattle*
B.A., Stanford University

COON, Duane Afton, *Sitka, Alaska*
B.S., University of Washington

COTTINGTON, Gordon Malcolm, *Honolulu*
B.S., Bethany College

COULTER, James Arthur, *Browning, Mont.*
B.S., University of Washington

DAHL, Arne, *Bellingham*
B.S., University of Washington

DEFENBACH, Robert Byron, *Spokane*
B.S., Washington State College

DOTY, Donald James, *Cashmere*
B.A., University of Washington

DOWLING, Harold, *Seattle*
University of Washington

DUNG, William, *Vancouver, Wash.*
University of Washington

ELLIOTT, William E., *Paris, Mo.*
B.A., University of Missouri

FAULKNER, John Malcolm, *Juneau, Alaska*
B.A., Stanford University

GRANT, Richard Elton, *Ellensburg*
Central Washington College

GRIEFF, Marvin Herman, *Bellingham*
B.A., University of Washington

HIESTER, George John, *Seattle*
Seattle University

HOLEMAN, Charles Wesley, Jr., *Blaine*
B.A., Western Washington College

HOOVER, Galen Hayes, *Tacoma*
B.S., College of Puget Sound

JOHNSON, Robert Clifton, *Tacoma*
B.S., College of Puget Sound

JOHNSON, R. Holmes, *Kodiak, Alaska*
B.A., Willamette; M.A., University of Michigan

KATZNELSON, Gordon, *Vancouver, B. C.*
University of British Columbia

KELLER, Daniel Marsh, *Redmond*
Washington State College

KELLER, Marcia Marie, *Redmond*
Washington State College

KITCHING, Richard Depew, *Seattle*
University of Washington

KRAFT, Robert Arnold, *Seattle*
B.A., University of Washington

KUHARIC, Henry Anton, *Renton*
B.A., Harvard College

LARSON, Wyllis G., *Sisseton, S. D.*
B.A., Augustana College

LAYTON, Richard H., *Seattle*
University of Washington

MAAS, Louis Phillip, *Pullman*
B.S., Washington State College

MANIRE, John Emmett, *Seattle*
B.S., Seattle Pacific College

MANSY, Alexander William, *Seattle*
B.S., University of Washington

MARTINIS, Andrew John, *Everett*
University of Washington

MERRILL, Clinton Franklin, *Harrah*
B.A., Linfield College

MINOR, Ralph Hugh, *Monroe*
B.S., U. S. Naval Academy, Annapolis, Md.

MOLONEY, Eugene Ira, *Seattle*
Seattle University

NOTHSTEIN, Donald Lou, *Tacoma*
B.A., Pacific Lutheran College

NUTLEY, Eugene Arthur, *Seattle*
B.A., University of Washington

OLSON, Lloyd L., *Langford, S. D.*
University of South Dakota

PALMER, Marguerite Louise, *Deer Park*
B.S., Seattle Pacific College

PATON, Richard Reid, *Cashmere*
B.S., University of Washington

PEARSON, Roger Warren, *Seattle*
University of Washington

PETERSON, Malcolm Lee, *Bremerton*
B.S., Stanford University

REEBS, Frederick W., *Fairbanks, Alaska*
University of Washington

SCHER, Maryonda Edmondstone, *Seattle*
B.S., University of Washington

SENZ, Keith Melvin, *Port Angeles*
University of Washington

SHIELDS, John Paul, Jr., *Gardiner, Mont.*
Montana State University

SHIELDS, John Riley, *Seattle*
B.S., University of Chicago

SHULL, Thomas Earl, *Moscow, Idaho*
University of Idaho

SIDELL, Alvin D., *Seattle*
University of Washington

SKALLEY, Thomas Waldo, *Everett*
University of Washington

SMITH, Wayne M., *Seattle*
B.S., M.S., University of Washington

SNYDER, Malcolm E. *Everett*
B.A., College of Puget Sound

SNYDER, Maurice, *Everett*
B.A., College of Puget Sound

STRANDNESS, Donald Eugene, Jr., *Olympia*
B.A., Pacific Lutheran College

SUNDSTROM, Walter E., *Seattle*
B.S., University of Washington

TOLLS, Roy Eugene, Jr., *Olympia*
St. Martin's College

VANDENBERG, James Joseph, *Seattle*
University of Washington

VOEGTLIN, Joseph W., Jr., *Seattle*
University of Washington

WILSON, Arthur Henry, *Tacoma*
B.S., University of Washington

FOURTH-YEAR CLASS, ENTERED 1949

ALEXANDER, Paul James, *Seattle*
B.A., Whitman College

ALLISON, Donald Floyd, *Seattle*
University of Washington

ALTIZER, E. Mercedes Fairfax, *Vancouver B. C.*
University of British Columbia

BAKER, William Blake, *Seattle*
B.S., Yale University

BEALL, Gildon Neal, *Cheney*
B.S., University of Washington

BERGLUND, Byron R., *Seattle*
University of Washington

BIRCHFIELD, Richard Irvin, *Seattle*
B.S., University of Washington

BOUILLON, Victor Joel, *Ellensburg*
B.S., University of Washington

BRIDGE, Robert Eugene, *Hamilton, Mont.*
B.S., University of Washington

BUCKLEY, Harold Douglas, *Seattle*
B.S., University of Washington

BURNETT, Jack Fitzgibbon, *Seattle*
B.S., University of Washington

COBURN, William Plummer, *Spokane*
Oregon State College

COFFIN, Harvard Stanley, *Seattle*
University of Washington

DARVILL, Claris LaViolette, *Seattle*
B.S., University of Washington

DAVIDSON, Robert Craig, *Great Falls, Mont.*
Northwestern University

DAVIS, Brantley Pierce, *Kelso*
B.S., University of Washington

DE VITO, Robert Vincent, *Trail, B. C.*
University of British Columbia

DOORNINK, Glenn Marion, *Wapato*
B.S., Washington State College

ELLINGER, Daniel J., *Seattle*
University of Washington

FISHER, William Thomas, *Seattle*
B.S., University of Washington

GARDNER, Phil H., Jr., *Seattle*
B.S., Northwestern University

GILPATRICK, Thomas S., *Spokane*
B.A., Harvard College

GRAY, Edmund Wesley, *Colville*
Gonzaga University

GREGORES, Basil John, *Seattle*
University of Washington

HALASEY, Tom Gray, *Attalia*
B.A., University of Washington

HARNISH, Alan Richard, *Seattle*
B.S., University of Washington

HONEYCUTT, John Holcombe, *Kirkland*
B.S., University of Washington

HUNTER, Joe, *Sedro Woolley*
B.S., University of Washington

JESSEPH, John Irvin, *Walla Walla*
B.A., Whitman College

JOHANSSON, Arnold William, *Seattle*
University of Washington

JONES, Thomas W., *Seattle*
Washington State College

KNUTH, Warren Perry, *Camas*
University of Washington

KO, Eugene, *Seattle*
B.S., University of Washington

KOLER, John Joseph, *Seattle*
B.S., University of Washington

KRAFT, Robert Allen, *Seattle*
B.S., University of Washington

KRAMER, Robert James, *Spokane*
B.S., University of Idaho

KUFFEL, Cornelius Fabian, *Missoula, Mont.*
Montana State University

LONG, Joseph Charles, *Spokane*
B.S., Washington State College

LOVE, Gerald Frank, *Sultan*
University of Washington

LUFT, John H., *Seattle*
B.S., University of Washington

LUND, Ronald Royce, *Seattle*
B.S., University of Washington

McKAY, Thomas Frederick, *Tacoma*
B.S., University of Washington

MACKOFF, Leslie, *Spokane*
B.A., University of California

MAHAFFEY, Gerald Harry, *Spokane*
B.S., Whitworth College

MARTIN, George M., *College, Alaska*
University of Alaska

MATTHEWS, Bobby Jean, *Seattle*
University of Washington

MILLMAN, Morton, *Spokane*
B.S., University of Washington

MOORE, Eugene Field, *Seattle*
B.S., University of Washington

MORAN, John Regis Robert, *Renton*
Seattle University

NELLERMOE, Carrol W., *Richland*
B.S., Washington State College

OSTEN, Barbara, *Seattle*
B.A., Stanford University

OSTLUND, Philip Dean, *Vermillion, S. D.*
University of South Dakota

OTIS, John V., Jr., *Seattle*
B.S., Seattle University

PASS, Bertram, *Seattle*
B.S., University of Washington

PLACEK, Frank, *Seattle*
University of Washington

PURDY, Donald Dana, *Alder*
B.S., University of Washington

PYNE, Gordon Earl, *Olympia*
University of Washington

RALPH, Jesse Clyde, Jr., *Seattle*
B.S., University of Washington

SAMSON, Werner Edgar, *Seattle*
B.S., University of Washington

SCHWENKE, Quentin G., *Butte, N. D.*
B.A., University of North Dakota

SEKIJIMA, Haruto, *Spokane*
B.S., University of Washington

SEVERSON, Jewell Arvin, *Sioux Falls, S. D.*
B.A., University of South Dakota

SIVERLING, Robert L., *Walla Walla*
B.A., Whitman College

SMITH, James William, *Seattle*
University of Washington

TAVES, Donald Ralph, *Ephrata*
B.S., University of Washington

THULINE, Horace Crockett, *Seattle*
B.S., Seattle Pacific College

VANDENBOS, Kermit Quentin, *Mitchell, S. D.*
B.A., University of South Dakota

WALLOCH, Antone S., *Richmond Beach*
B.S., University of Washington

WEINSTEIN, Haskell Joseph, *Seattle*
B.S., University of Washington

WELLINGS, Sefton Robert, *Poulsbo*
University of Washington

WHITE, Lowell Elmond, Jr., *Seattle*
B.S., University of Washington

WOLD, DeWitt Edlay, *Kirkland*
B.S., University of Washington

THIRD CLASS OF GRADUATES

Degree of Doctor of Medicine Conferred June 14, 1952

BAKER, Jerry Lynn, *Tacoma*
College of Puget Sound

BARRETT, Beach, *Seattle*
M.E., University of Washington

BOCK, Lewis Lincoln, *Wenatchee*
B.S., Whitworth College

BROWN, Charles Keeler, *Kirkland*
B.S., University of Washington

BROWN, Rodney Allison, *Tacoma*
College of Puget Sound

BROWN, Virgil George, *Seattle*
University of Washington

BUCKNER, Fillmore, *Seattle*
University of Washington

BUNGE, Clarence Lester, *Carnation*
University of Washington

BUSTEED, Frank Ferguson, *Vancouver, B. C.*
B.A., University of British Columbia

CLEMENT, Lucia T., *Bremerton*
University of Washington

COLBURN, Robert Child, *Spokane*
University of Minnesota

CUTTER, Albert Wilson, *Seattle*
University of Washington

DORPAT, Klarese, *Seattle*
B.S., University of Washington

DORPAT, Theodore Lorentz, *Spokane*
B.S., Whitworth College

DYE, David F., *Seattle*
B.S., University of Washington

FAGHIN, Jack, *Vancouver, B. C.*
B.A., University of British Columbia

FAIRFAX, Walter Albert, Jr., *Seattle*
B.S., University of Washington

FREEMAN, Robert Mark, *Tacoma*
College of Puget Sound

FURUKAWA, Hiroshi, *Pullman*
B.S., M.S., Washington State College

GILLINGS, Richard Leon, *Omak*
B.S., University of Washington

GORDON, James Raymond, *Seattle*
University of Washington

HAMMOND, Charles Allison, *Sumner*
University of Washington

HELME, James B., Jr., *San Francisco, Calif.*
B.A., Princeton University

HICKS, John Davis, *Ellensburg*
University of Washington

KASSEBAUM, Frank George, Jr., *Seattle*
University of Washington

KING, Philip J., *Vancouver, B. C.*
B.A., University of British Columbia

MALONEY, Walter H., *Cavalier, N. D.*
University of North Dakota

MOLONEY, Patrick James, *Vancouver, B. C.*
B.A., University of British Columbia

NELSON, Wallace, *Seattle*
University of Washington

NEVLER, Leonard, *Seattle*
B.S., University of Washington

NOVACK, Alvin John, *Ravensdale*
University of Washington

REYNOLDS, Hal Elton, *Boise, Idaho*
B.A., College of Idaho

SCHALLER, Gilbert Kern, *Seattle*
B.S., University of Washington

SCHUELER, Lawrence Anthony, Jr., *Seattle*
University of Washington

SHAPARD, Robert Irvin, *Seattle*
University of Washington

STEWART, Allison Reid, *Seattle*
B.S., University of Washington

STOTTS, Harold Lyle, *Yakima*
University of Washington

STRAND, Glenn Theodore, Jr., *Seattle*
B.S., University of Washington

SWAN, Robert Edward, *Tekoa*
University of Washington

TARICA, Samuel Harry, *Seattle*
University of Washington

WOLTER, David Frank, *Seattle*
B.S., University of Washington

WRIGHT, Robert Raymond, *Puyallup*
University of Washington

ZACKS, Arthur, *Seattle*
B.S., University of Washington

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 85), 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 predental 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 or 115, 116 (General)	10
Chemistry 113 (Qualitative Analysis)	5
Chemistry 231, 232, 241, 242 (Organic)	10
Physics 101, 102, 103 or 104, 105, 106 (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 *April 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 two letters of recommendation, one from a science instructor and one from a business or professional person.

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 and March 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 may be requested to appear for a personal interview. A personal interview will not be requested if the credentials are not satisfactory. 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 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 2.0 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 faculty of the School of Dentistry 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.

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 76. The University reserves the right to change any of its fees without notice.

SPECIAL FEES. From $2 to $5 is charged for late registration, $2 for changed registration, and $6 for late medical examination and X-ray. Fees for special examinations and removal of Incompletes range from $1 to $5.

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.

TRANSFER EXAMINATION FEE. Students transferring to the School of Dentistry from other dental schools pay a fee of $10.

GRADUATE DENTISTS EXAMINATION FEE. Graduates of dental schools who take additional training in the School of Dentistry to qualify for dental board examinations are charged $25.

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 fees will be refunded if withdrawal is made during the first thirty calendar days. Fee refunds are not made to students withdrawing under discipline.

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 $95, and instruments will cost about $275. Approximate second-year costs will be $105 for books and $600 for instruments and supplies; third year, $55 for books, $210 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 2.0; (4) fulfilled all special requirements; and (5) discharged all indebtedness to the institution.

Work leading to the following degrees is also offered in the School of Dentistry.

TUITION AND FEES FOR STUDENTS OF DENTISTRY AND DENTAL HYGIENE

AUTUMN QUARTER

Class	*Tuition*	*Incidental Fee*	*ASUW Fee*	*Microscope Rental**	*Dental Engine Rental**	*Laboratory Case Rental*	*Total*
FRESHMAN							
Resident	$100.00	$21.50	$8.50	$7.00	$....	$2.50	$139.50
Nonresident	165.00	21.50	8.50	7.00	....	2.50	204.50
SOPHOMORE							
Resident	100.00	21.50	8.50	7.00	3.50	2.50	143.00
Nonresident	165.00	21.50	8.50	7.00	3.50	2.50	208.00
JUNIOR							
Resident	100.00	21.50	8.50	7.00	3.50	2.50	143.00
Nonresident	165.00	21.50	8.50	7.00	3.50	2.50	208.00
SENIOR							
Resident	100.00	21.50	8.50	....	3.50	2.50	136.00
Nonresident	165.00	21.50	8.50	....	3.50	2.50	201.00
GRADUATE							
Resident	100.00	21.50	8.50	....	3.50	2.50	136.00
Nonresident	165.00	21.50	8.50	....	3.50	2.50	201.00

WINTER QUARTER

FRESHMAN							
Resident	$100.00	$21.50	$8.50	$7.00	....	$2.50	$139.50
Nonresident	165.00	21.50	8.50	7.00	....	2.50	204.50
SOPHOMORE							
Resident	100.00	21.50	8.50	7.00	3.50	2.50	143.00
Nonresident	165.00	21.50	8.50	7.00	3.50	2.50	208.00
JUNIOR							
Resident	100.00	21.50	8.50	....	3.50	2.50	136.00
Nonresident	165.00	21.50	8.50	....	3.50	2.50	201.00
SENIOR							
Resident	100.00	21.50	8.50	....	3.50	2.50	136.00
Nonresident	165.00	21.50	8.50	....	3.50	2.50	201.00
GRADUATE							
Resident	100.00	21.50	8.50	....	3.50	2.50	136.00
Nonresident	165.00	21.50	8.50	....	3.50	2.50	201.00

SPRING QUARTER

FRESHMAN							
Resident	$100.00	$21.50	$8.50	$7.00	$3.50	$2.50	$143.00
Nonresident	165.00	21.50	8.50	7.00	3.50	2.50	208.00
SOPHOMORE							
Resident	100.00	21.50	8.50	7.00	3.50	2.50	143.00
Nonresident	165.00	21.50	8.50	7.00	3.50	2.50	208.00
JUNIOR							
Resident	100.00	21.50	8.50	7.00	3.50	2.50	143.00
Nonresident	165.00	21.50	8.50	7.00	3.50	2.50	208.00
SENIOR							
Resident	100.00	21.50	8.50	....	3.50	2.50	136.00
Nonresident	165.00	21.50	8.50	....	3.50	2.50	201.00
GRADUATE							
Resident	100.00	21.50	8.50	....	3.50	2.50	136.00
Nonresident	165.00	21.50	8.50	....	3.50	2.50	201.00

SUMMER QUARTER

GRADUATE							
Resident and Nonresident	$100.00	$21.50	$2.50	$....	$3.50	$2.50	$130.00

NOTE: Dental hygiene students are not required to pay the fees for dental engine rental and laboratory case rental. Microscope fees are charged as necessary.
*Subject to change.

BACHELOR OF SCIENCE. The curriculum leading to this degree is given by the Department of Dental Hygiene (see page 85).

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 2.5 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 Victorian Sivertz, Predental Adviser, 121 Education 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.*

Graduate courses in oral surgery, periodontology, and prosthodontics will be given at a future date.

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 semiannually 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 Board of Licenses, 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. Plans are under way to make available one-day-a-week and one-day-a-month courses extending for ten weeks and one year respectively. Announcements of these courses may be obtained from the Director of Postgraduate Dental Education.

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 (2,3; A,W) **Gaskill, Gilbert, Plummer**
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; A) — **Jones, Anderson**
Dentistry as a health profession: its scope, responsibilities, and contacts with other vocations; qualities and traits which lead to high attainment and social usefulness in the profession; purposes, correlation, and development of the various phases of dental education, meaning and value of the scientific method and the critical point of view in the field.

200 Dental History (1; A) — **Anderson, 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; W,S) — **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 dyscrasies, endocrine gland and nutritional disturbances, and other conditions.

302 Technical Composition (2; S) — **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; A,W,S) — **Staff of the Schools of Dentistry and Medicine**
Correlation of preclinical basic medical science and other preclinical study with clinical procedures and requirements. New findings and practices are submitted so that senior students may utilize such information.

403 Jurisprudence (1; S) — **Wilson**
Legal problems and obligations incident to the practice of dentistry: state dental laws, contracts, malpractice, and dentists as expert witnesses.

431, 432, 433 Dental Ethics and Office Management (2,1,1; A,W,S) — **Anderson**
Office location, arrangement, equipment, and personnel; records; patient-dentist business relationships; credit, collections, and fees; accounting, insurance, and investments; buying materials; Code of Ethics of the American Dental Association.

DENTISTRY

Executive Officer: ALTON W. MOORE, B337 Health Sciences Building

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 Advanced Oral Histology, Embryology, and Oral Pathology (4; W) — **Thomas, Ogilvie**
Lectures and seminar discussions on the details of development, histology, and pathology of cranial, facial, and oral structures, with emphasis on clinical application of basic knowledge. (Dept. of Periodontology)

510 Applied Osteology and Myology of the Head and Neck (2; A) — **Riedel, Moore**
Detailed study as a background for the study of the growth and development of the head and for cephalometric roentgenogram interpretation. (Dept. of Orthodontics)

511 Roentgenographic Cephalometry (2; A) — **Moore, Riedel, Takano**
Basic principles, history, and techniques of roentgenographic cephalometry. (Dept. of Orthodontics)

512, 513 Growth and Development (2,2; S,Summer) — **Moore**
Review of the various methods of human growth, with special emphasis upon studies of the head; growth of the head and development of the dentition from birth through maturity; analysis of the factors that produce normal occlusion and malocclusion. Each course is a prerequisite to the following course. (Dept. of Orthodontics)

521 Applied Dental Nutrition (1; AWS) **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. (Dept. of Periodontology)

522 Dental Caries Control (2; S) **Law, Staff**
Seminar on etiology and control of dental caries. Discussion based on assigned reading on physiology, composition of saliva, chemical composition of the teeth, oral microbiology, degradation of carbohydrates, systemic factors in the caries process, fluorides, enzyme inhibitors, and caries susceptibility tests. (Dept. of Pedodontics)

523 Public Health Dentistry (1; by arrangement) **Hoffman**

580 Gnathodynamics (2; S) **Moore, Young**
A seminar devoted to a comprehensive review of the temporomandibular joint and its associated structures. Thorough review of the anatomy and growth processes of the head and oral mechanism, with special emphasis upon the functional aspect of the human denture. Study of the instruments designed to imitate jaw movement and their effectiveness, together with the pathologies of the temporomandibular joint. (Depts. of Orthodontics and Prosthodontics)

581 Restorative Treatment Planning (4; by arrangement) **Stibbs, Staff**
Coordinated application of knowledge gained from both graduate and undergraduate courses to the diagnosis and treatment of the more complicated cases. (Dept. of Operative Dentistry)

582 Cast Metal Restorations (4; by arrangement) **Stibbs, Staff**
Metallography of cast metals; physical properties of waxes and investments. Control of shrinkage. Interrelationships of physical properties of metals and physiology of oral tissues; thermal conductivity and pulpal response; galvanism; tissue tolerance in respect to various metals. Direct and indirect technics. Principles of cavity preparation that apply specifically to cast restorations. (Dept. of Fixed Partial Dentures)

583 Reproduction of Oral Tissues (4; AWS) **Young, Regli**
A seminar-laboratory-clinic in the various needs for reproduction of oral tissues in restorative dentistry. Physical requirements of various types of restoration; routines, materials, and equipment used; tissue responses to physical and functional stimuli. (Dept. of Prosthodontics)

FIXED PARTIAL DENTURES

Executive Officer: GERALD D. STIBBS, B406 Health Sciences Building

In this department the student learns the construction of fixed partial dentures, gold crowns, and inlays and crowns of baked porcelain.

COURSES

231, 232, 233 Fixed Partial Denture Technic (4,4,4; A,W,S) **Sproule, Staff**
Fixed partial denture fundamentals; construction of selected cases on technic models.

234, 235 Ceramic Technic (2,2; A,W) **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; A,W,S) **Guthrie**
Lectures on various phases of typical crown and fixed partial denture construction.

347 Clinical Crowns and Fixed Partial Dentures (4; AWS) **Stibbs, Staff**
Construction of crowns 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; A,W) **Stibbs, Hagen**
Lectures on refinements in technical procedures. Relatively difficult, atypical clinical cases are discussed and analyzed, with emphasis on diagnosis and treatment planning and on the relationship of this field to other forms of treatment.

446 Advanced Clinical Crowns and Fixed Partial Dentures (6; AWS) **Stibbs, Staff**
Continuation and advancement of clinical experience, including clinical ceramics, with treatment of more difficult clinical cases under close supervision.

COURSES FOR GRADUATES ONLY

561 Abutments and Distribution of Masticatory Stresses (4; by arrangement) **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; by arrangement) **Stibbs, Staff**
Baked porcelain as a substitute for lost tooth structure. Physical properties of the material; pyrochemical reactions in firing. Indications and contra-indications 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.

OPERATIVE DENTISTRY

Executive Officer: GERALD D. STIBBS, B406 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; S) **Morrison, Staff**
Fundamental principles of cavity preparation; training in digital skill.

132, 133 Oral Anatomy (6,4; A,W) **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; A,W,S) **Morrison, Staff**
Advanced application of the principles and requirements of operative procedures; exercises on manikins to further manual dexterity; consideration of instrumentation and of manipulation of restorative materials.

261 Clinical Orientation (2; S) **Hamilton, Staff**
Transition of thought and attention from technic and theory to clinical application in preparation for treatment of patients.

300, 301, 302 Operative Dentistry (1,1,1; A,W,S) **Hamilton**
Lectures on the clinical application of knowledge acquired in lower-division technic courses; introduction to professional conduct and clinical demeanor.

346 Clinical Operative Dentistry (6; AWS) **Stibbs, Staff**
Clinical procedures in all phases of operative dentistry; varied clinical experience under close supervision.

400, 401, 402 Advanced Operative Dentistry (1,1,1; A,W,S) **Stibbs, Jones**
Lectures on refinements in technical procedures, treatment of atypical cases, and problems in diagnosis and treatment planning.

446 Advanced Clinical Operative Dentistry (6; AWS) **Stibbs, Staff**
Supervised opportunity to attain optimum experience and self-reliance so that each student may develop as an operator to the best of his ability.

COURSES FOR GRADUATES ONLY

561 Plastics As Restorative Materials (4; by arrangement) **Stibbs, Staff**
Metallography of silver-tin amalgams; physical properties of zinc oxyphosphate cements, siliceous cements, and acrylic resins. Post-operative history of teeth restored with plastic materials; relative service life of materials. Basic and variant designs of cavity preparation, considering morphology of tooth, masticatory stress, physical properties of material, and location and size of restoration. Variant technics of manipulation of plastics; analysis of failures in plastics.

562 Gold Foil Restorations (4; by arrangement) **Stibbs, Staff**
Tissue reactions to operative procedures; response of dental pulp to thermal change; age changes in dentinal wall and histology of dental pulp. Indications and contraindications for gold foil in restorative procedures. Physical properties of dentin, cohesive and noncohesive pure gold foil, and platinum-centered foil. Rationale of manipulation of these materials. Modifications of basic cavity preparation for foil: Black, Ferrier, Woodbury, True, etc. Procedures for condensation and finishing.

ORAL DIAGNOSIS AND TREATMENT PLANNING

Executive Officer: FREDERIC L. JACOBSON, B309 Health Sciences Building

In this department the student learns to use diagnostic techniques, such as examination and X-ray, to interpret his findings, and to plan a course of treatment on the basis of his diagnosis.

COURSES

216, 217 Oral Roentgenology (1,1; W,S) **Jacobson**
Physical, clinical, and interpretative aspects of dental X-ray procedures, with practical application in the completion of two acceptable full mouth surveys.

300, 301 Oral Diagnosis and Treatment Planning (1,1; A,W) **Jacobson, Degering**
Fundamental procedures in oral diagnosis; preparation for advanced instruction.

346 Clinical Oral Diagnosis and Treatment Planning (3; AWS) **Staff**
Opportunity for examining patients and observing diagnostic procedures; rendering emergency treatment to patients.

400, 401, 402 Advanced Oral Diagnosis and Treatment Planning (1,1,1; A,W,S) **Jacobson**
Treatment planning of cases and familiarization with the clinical detection of oral pathological conditions.

446 Advanced Clinical Oral Diagnosis and Treatment Planning (3; AWS) **Staff**
Advanced instruction in diagnosis and in the handling of patients. Typical cases of the various conditions in the oral cavity are presented.

ORAL SURGERY

Executive Officer: ROBERT E. JOHNSON, B348 Health Sciences Building

The Department of Oral Surgery provides training and clinical experience in the procedures used for all types of operations in the oral cavity.

COURSES

200 Local Anesthesia (1; S) **Cooley**
Introduction to methods of local anesthesia for dental and oral surgery. Review of the anatomy of the head and neck in relation to local anesthesia; review of the physical, chemical, and biological effects of local anesthesia; armamentarium; indications and contra-indications for local anesthesia; injection technique; and the handling of postanesthetic complications. Lectures and clinical demonstrations on oral surgery patients.

300, 301, 302 Exodontia (1,1,1; A,W,S) **Johnson, Cooley**
General principles of oral surgery practice; history taking and the performance of oral examination; principles of asepsis and operative technique; armamentarium for surgical treatment; fundamental principles of surgical techniques in the extraction of teeth; pre- and postoperative care of the patient; types, prevention, and control of hemorrhage; diagnosis and treatment of complicated extractions and pathological conditions.

303 General Anesthesia (1; S) **Mattes**
Introduction to the use of general anesthesia for oral surgery; agents employed and the physiological action, including the stages of anesthesia; methods of administration; premedication of the patient; armamentarium; complications and accidents; agents designed primarily for administration to children. Lectures and clinical demonstrations.

346 Clinical Exodontia (3; AWS) **Johnson, Staff**
Dental extractions and minor oral surgery under local anesthesia. The student is responsible for the history, oral examination, X-ray diagnosis, clinical diagnosis, treatment planning, treatment, and postoperative treatment, under supervision of the staff. He assists a senior student on the more difficult cases and manages the simpler cases under the close supervision of the oral surgery staff. Opportunity is given for practical application of the principles of sterilization of supplies and instruments as well as the administration of local anesthetics and antibiotic, sedative, and analgesic drugs.

400, 401, 402 Oral Surgery (1,1,1; A,W,S) **Johnson, Cooley, Wanamaker**
Major types of oral surgery, including the diagnosis and treatment of fractures of the jaws; disturbances of the temporomandibular articulation; developmental deformities of the maxilla and mandible; congenital cleft lip and palate; fundamentals of prevention and treatment of shock; fundamentals of maxillo-facial surgery.

446 Clinical Oral Surgery (3; AWS) **Johnson, Staff**
Advanced application of the principles of exodontia and minor oral surgery. Directly supervised treatment of multiple extractions and preparation of the mouth for dentures; removal of unerupted or impacted teeth; removal of benign cysts and tumors of the maxilla and mandible; biopsies; management of oral infections.

ORTHODONTICS

Executive Officer: ALTON W. MOORE, B337 Health Sciences Building

Orthodontics is the branch of dentistry whose objective is the prevention and correction of malocclusion of the teeth.

In addition to the courses for dental students, the Department of Orthodontics offers a graduate program for students working toward the Master of Science in Dentistry with a major in orthodontics.

COURSES

300 Orthodontics (1; S) **Moore**
Discussions and illustrations of the periodontal membrane, bone, and adjacent tissues as related to the forces of occlusion, of a balanced occlusion, and of the growth and development of the individual, with special emphasis on the head. Review of the major growth studies in the literature and their applications to dentistry and to orthodontics.

316 Orthodontic Technic (2; A) **Riedel, Staff**
Technics of filing as well as soldering orthodontic wires and bands; adaption of orthodontic bands to teeth; construction of simple appliances used as space maintainers and other preventive orthodontic mechanisms.

400, 401 Advanced Orthodontics (1,1; A,W) **Moore, Riedel, Empenger**
Brief historical review of the etiology of malocclusion; classification and analysis of cases; growth anomalies as well as deformities and their evaluation; the temporomandibular joint; the mandibular position as related to orthodontic case analysis; treatment planning; types of appliances and their uses; retention; the ultimate outcome of orthodontic treatment. Prerequisites, 300 and 316.

COURSES FOR GRADUATES ONLY

500, 501, 502, 503, 504 Orthodontics Seminar (2,4,4,2,2; A,W,S,Summer,A) **Staff**
Methods of diagnosis, analysis, and treatment planning of malocclusion; analysis of methods and theoretical principles used in the treatment of malocclusion. The student presents a detailed case analysis and plan of treatment for each clinical patient he is supervising. Each course is a prerequisite to the following course.

546, 547, 548, 549, 550, 551 Clinical Orthodontics (4,5,5,5,5,6; A,W,S,Summer,A,W) **Staff**
Technics of construction and manipulation of the edgewise arch mechanism; application of the technics in the treatment of malocclusion. Treatment of patients begins in the second quarter. Each course is a prerequisite to the following course.

600 Research (*; AWS and Summer) **Staff**
Prerequisite, permission.

Thesis (*; AWS and Summer) **Staff**
An investigative program carried out under the direction of a member of the Department staff by the candidate for the degree of Master of Science in Dentistry. The problem may be in one of the basic sciences or may have a clinical application.

PEDODONTICS

Executive Officer: DAVID B. LAW, B343 Health Sciences Building

The Department of Pedodontics provides training in children's dentistry, public health dentistry, and the maintenance of dental health.

In addition to the courses for dental students, the Department of Pedodontics offers a graduate program for students working toward the Master of Science in Dentistry with a major in pedodontics.

COURSES

100 Public Health Dentistry (1; S) **Hoffman**
Introduction to the field.

200, 201, 202 Preventive Dentistry (1,1,1; A,W,S) **Law, Moore**
Etiology and control of dental caries. Physiology and composition of saliva, ecology of the mouth, chemical composition of teeth, degradation of 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.

300, 301 Pedodontics (1,1; A,W) **Law**
Emotional development of the child and its implications in pedodontic procedures. Space maintenance, the interception of incipient malocclusion, and clinical management of oral habits.

316 Pedodontics (2; A) **Staff**
Operative technics applicable to primary and mixed dentitions: cavity preparations in primary teeth, construction of a functional space maintainer, and restoration of a fractured incisor.

347 Clinical Pedodontics (2; WS) **Staff**
Diagnosis and examination of the child patient. Restorative procedures in primary and mixed dentitions, with special emphasis on application of the rubber dam.

400 Pedodontics and Public Health Dentistry (1; S) **Hoffman**
The child in the dental health program. Organization of dental health programs on local, state, and national levels. The role of the dentist in community public health planning. Public health legislation and its implications to the dental profession.

446 Advanced Clinical Pedodontics (3; AWS) **Staff**
Diagnosis and treatment planning, with emphasis upon preventive dentistry. Complete operative procedures, including vital pulp therapy, construction of space maintainers, bite planes, and restoration of fractured anterior teeth.

COURSES FOR GRADUATES ONLY

500, 501, 502, 503, 504 Pedodontics Seminar (2,2,2,2,2; A,W,S,Summer,A) **Law**
Seminar on problems of tooth formation, development, calcification, and eruption in the child. Management of clinical problems of tooth development; operative procedures, pulp therapy, treatment planning, and the consideration of emotional factors in pedodontic practice.

546, 547, 548, 549, 550 Clinical Pedodontics (*,*,*,*,*; A,W,S,Summer,A) **Staff**
Advanced clinical practice. Assignment of selected cases, with student responsibility for complete examination, diagnosis, and treatment planning including completion of the case. The use of appliances to effect limited tooth movement in cases of space closure and the application of the Broadbent-Bolton cephalometer in diagnosis and treatment.

600 Research (* AWS) **Staff**
Prerequisite, permission.

Thesis (*; AWS) **Staff**
An investigative program carried out under the direction of a member of the Department staff by the candidate for the degree of Master of Science in Dentistry. The problem may be in one of the basic sciences or may have a clinical application.

PERIODONTOLOGY

Executive Officer: B. O. A. THOMAS, B410 Health Sciences Building

In this department students are taught the basic knowledge and techniques necessary in diagnosing and treating diseases of the mouth.

COURSES

100 Comparative Dental Anatomy (1; W) **Thomas**
Evolution, form, and function of the human dentition; temporomandibular articulation and associated parts of the skull.

131 Oral Histology and Embryology (4; S) **Thomas, Ogilvie, Neilson, Hileman**
Development of the facial region, with emphasis on nasal, pharyngeal, and oral structures. Histology of enamel, dentin, dental pulp, cementum, periodontal membrane, alveolar bone, oral mucous membrane, maxillary sinus, and temporomandibular articulation.

200 Introduction to Periodontology (1; W) **Staff**
Illustrated lectures on elementary material necessary for clinical work.

231 Endodontia Technic (2; S) **Ingle, Starks, Vaughn**
Root canal treatment in terms of present-day concepts, with emphasis on a definite, simplified technic. Treatment of extracted teeth as practice for clinical cases.

261 Periodontology Orientation (1; S) **Staff**
Instruction in oral examination, diagnosis, and the technic of oral prophylaxis.

300, 301, 302 Periodontology (1,1,1; A,W,S) **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 Endodontia (1; A) **Ingle**
The differential diagnosis of facial pain; problems in pulp anesthesia; periapical surgery (root resection and periapical curettage); and systemic antibiotic therapy.

331 Oral Pathology (4; A) **Thomas, Ogilvie, Neilson, Hileman**
Clinical pathological problems, including dental caries, pulp reaction to filling materials, pulp and periapical pathology, histopathology of periodontal disease, unerupted teeth, tooth resorption, soft tissue lesions, cysts, and benign and malignant oral tumors.

346 Clinical Periodontology (3; AWS) **Staff**
Treatment of routine cases of periodontal disease; oral prophylaxis.

349 Clinical Endodontia (1½; AWS) **Staff**
Root canal therapy.

400 Advanced Periodontology (1; A) **Staff**
Systemic factors in periodontal disease, clinical laboratory tests, nutritional deficiencies, occlusal dysfunction, preventive periodontics, and recent advances in periodontology.

446 Advanced Clinical Periodontology (3; AWS) **Staff**
Advanced and unusual cases of periodontal disease, including nutritional deficiencies, occlusal equilibration, and periodontal surgery.

449 Advanced Clinical Endodontia (1½; AWS) **Staff**
In addition to filling several root canals, the student performs periapical surgery, and at least three minor operations (pulp capping, pulpotomy, or bleaching).

PROSTHODONTICS

Executive Officer: HARRY A. YOUNG, C404 Health Sciences Building

The Department of Prosthodontics offers instruction in the construction and fitting of artificial dentures.

COURSES

131 Complete Denture Technic (8; S) **Regli, Boder, Staff**
Theories, principles, and technics of constructing complete dentures.

231, 232 Removable Partial Denture Technic (4,4; A,W) **Regli, Staff**
Theories, principles, and technics of constructing removable partial dentures.

300, 301, 302 Complete Denture Prosthodontics (1,1,1; A,W,S) **Young**
Evolution of concepts and operative procedures employed in clinical complete denture treatments.

303, 304 Removable Partial Denture Prosthodontics (1,1; W,S) **Regli**
Evolution of clinical procedures and concepts; discussion of operative procedures employed in clinical removable partial denture treatments.

346 Junior Clinical Prosthodontics (8; AWS) **Staff**
Clinical treatment of edentulous and partial edentulous patients.

400, 401 Advanced Complete Denture Prosthodontics (1,1; A,S) **Young, Special 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; W) **Regli**
Concepts related to stress control, methods of construction, and materials used. Biological and physical considerations in designing. Indications and uses of specialized appliances.

446 Senior Clinical Prosthodontics (5; AWS) **Staff**
Clinical treatment of edentulous and partial edentulous patients. Construction of complete dentures and removable partial dentures; repairs of both types of dentures.

COURSES FOR GRADUATES ONLY

561 Immediate Dentures (4; AWS) **Young, Regli**
A seminar-clinic in removable partial denture treatments. Discussions of diagnosis and treatment planning; variations in basic denture procedures; the surgical operations of preparing the ridges for dentures; tissue reaction and wound healing; postoperative care; patient information. Clinical operations using procedures and equipment for denture construction.

562 Removable Partial Dentures (4; AWS) **Young, Regli**
A seminar-clinic in removable partial denture treatments. 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.

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 two-year basic curriculum, for undergraduate students, provides preparation for the professional practice of dental hygiene. It includes adequate clinical experience and theoretical study to enable its graduates to meet the requirements of a state board of dental examiners for licensure as registered dental hygienists. The other curriculum, for graduate dental hygienists, provides background and training for administrative work with specialization directed toward the field of practice selected by the student. Both curricula lead to the Bachelor of Science degree.

ADMISSION

Applications and all credentials should be sent to the Committee on Admissions of the School of Dentistry. On or before March 1, each applicant must submit the following: (1) formal application for admission on the form furnished by the School of Dentistry; (2) official transcript of previous academic record (sent directly to the Committee on Admissions from the registrar of the institution where study was completed) showing the complete record with grades and credit hours, subjects the applicant is taking or will take to complete her preprofessional training prior to registration in the Department of Dental Hygiene, and credit granted for high school study; (3) two unmounted recent photographs (2 by 3 inches); and (4) at least two letters of recommendation, one from a previous science instructor and one from a business or professional person.

The Committee on Admissions will consider as candidates for entrance to the basic curriculum of the Department of Dental Hygiene individuals who meet the entrance requirements of the University of Washington and the College of Arts and Sciences in the University, and have completed 90 academic quarter credits, together with the required quarters of physical education activity, in an accredited university or college. Minimum course requirements for entrance are: 9 quarter credits in English composition, 10 in biology, 10 in inorganic chemistry, 5 in physics, 5 in psychology, 5 in public speaking, and 5 in sociology. Of the remaining 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 twenty-five dental hygiene students is admitted each spring.

Students who are taking their preprofessional training at the University follow the two-year predental hygiene program offered in the College of Arts and Sciences (see the *College of Arts and Sciences Bulletin*).

Candidates for admission to the graduate 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 page 76).

BACHELOR OF SCIENCE

BASIC CURRICULUM. This program includes specific courses in the Schools of Dentistry and Medicine and the Colleges of Pharmacy and Arts and Sciences. The student takes in sequence all the courses offered for undergraduates in the Department of Dental Hygiene and the following additional courses: Chemistry 230 (Organic); Conjoint 317-318 (Elementary Anatomy and Physiology); Home Economics 300 (Nutrition); Microbiology 301 (General Bacteriology); Nursery School 305 (Personality Growth of the Preschool Child); Pathology 302 (General); Physical Educa-

tion 292 (First Aid and Safety); Pedodontics 200 (Preventive Dentistry); Pharmacy 352 (Pharmacy and Therapeutics); and Public Health 402 (Communicable Disease Control), 412 (Organizations and Services), 461 (School and Community Health Programs), and 464 (Community Health Education Techniques).

A total of 180 academic credits is required for graduation.

CURRICULUM FOR GRADUATE DENTAL HYGIENISTS. This program provides dental hygienists with the opportunity to supplement their previous education with the background necessary for positions in administration, teaching, and public health. Students choose a major in either dental hygiene or public health dental hygiene. The requirement for graduation in this curriculum is a total of 180 academic credits, which must include predental 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 preprofessional program and the basic curriculum. They must have a total of 36 to 46 credits in dental hygiene, including a minimum of 10 taken at this school. Courses 491, 492, and 493 are required.

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 at this school); 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; W) — **School of Dentistry Staff**
Lectures in dental procedures, with emphasis on the application of dental assisting.

331 Dental Anatomy (4; A) — **Schroeter**
Morphology of permanent and deciduous teeth; sketching and carving of essential units.

332 Dental Materials (2; W) — **Gaskill**
Survey of the physical and chemical properties of dental materials, with laboratory experience in their manipulation.

333 Oral Radiographic Technique (2; A) — **Wilkins, Saito**
Principles and procedures in radiographic technique.

334 Oral Histology (3; W) — **Ogilvie**
Development and microscopic anatomy of structures of the oral cavity.

335 Oral Prophylaxis (2; W) — **Wilkins, Newell, Saito**
Objectives and principles of oral hygiene; instrumentation and procedure of oral prophylaxis; training in digital skill.

346 Clinical Dental Procedures (1; S) — **School of Dentistry Staff**
Clinical experience in dental assisting.

347 Clinical Oral Prophylaxis (1; S) — **Wilkins, Newell, Saito**
Clinical experience in the performance of oral prophylaxis, topical application of sodium fluoride, and home care instruction for patients.

401 Office Procedures and Ethics (2; S) — **Anderson, Wilkins**
Dental office and clinic procedure; dental and dental hygiene ethics.

402, 403, 404 Principles of Dental Hygiene Practice (1,1,1; A,W,S) — **Wilkins**
Presentation and analysis of dental health problems, with emphasis on patient education.

405, 406 Oral Pathology (1,1; A,W) — **Thomas**
Study of diseases and abnormalities of the hard and soft tissues of the oral cavity. 405 is prerequisite for 406.

407, 408 Principles of Periodontology (1,1; A,W) — **Hileman**
Classification, etiology, and principles of treatment of periodontal diseases and the relationship of these to dental hygiene practice. 407 is prerequisite for 408.

446 Dental Clinic Practice (2; WS) — **Wilkins, McCullough**
Advanced clinical practice, including work in the Child Health Center and in public health and School of Dentistry clinics.

447, 448, 449 Dental Hygiene Practice (2,2,2; A,W,S) — **Wilkins, Newell, Saito**
Advanced application of the principles of clinical dental hygiene.

OTHER COURSES FOR DENTAL HYGIENE STUDENTS

Chemistry 230 Organic Chemistry (5; AS) **Department of Chemistry Staff**
For home economics and nursing students and others taking only one quarter of organic chemistry. Prerequisite, 101.

Home Economics 300 Nutrition (2; AS) **Rowntree**
Importance of food to the maintenance of health; nutritive values and human needs emphasized. For nonmajors in home economics.

Nursery School 305 Personality Growth of the Preschool Child (3; AWS) **Harris**
Developmental trends and age-level expectancies with emphasis on the child from two to six years; motor controls, adaptive behavior, communications, personal-social adjustments. One hour each week between 9 and 12 must be kept free for observation in the nursery school. Prerequisite, Psychology 100.

Pharmacy 352 Pharmacy and Therapeutics for Dental Hygienists (3; S) **Rising**
Principles of pharmacy; mathematics of pharmacy; pharmacological and therapeutic action of drugs pertaining to dentistry.

Physical Education 292 First Aid and Safety (3; AWS) **Clark**
The student may meet requirements for both Standard and Advanced American Red Cross First Aid Certification. Includes safety education in schools.

COURSES FOR GRADUATE DENTAL HYGIENISTS

491 Seminar in Dental Hygiene (2; A) **Wilkins**
Study of professional education, accreditation, legislation, organization, and literature. Responsibilities of the dental hygienist to the community.

492 Readings in Current Literature in Dental Hygiene and Preventive Dentistry (2; A) **Wilkins**
Discussion of reported readings and survey of background material, with emphasis on dental research and its application to dental health education.

493 Problems in Dental Hygiene (2-4; A) **Wilkins**
Problems for study directed toward increased understanding in the selected field of practice. Presentation of background, causes, program, and evaluation.

ROSTER OF STUDENTS IN DENTISTRY

FIRST-YEAR CLASS, ENTERED 1952

BAKER, Cecil Richard, *Logan, Utah*
Utah State Agricultural College

BARTLETT, Thomas Henry, *Great Falls, Mont.*
College of Great Falls

BAUGH, Leland Ray, Jr., *Seattle*
University of Washington

BELCH, Harold Elliott, Jr., *Ellensburg*
Central Washington College of Education

BRAAFLADT, 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

DOBYNS, Lowell Calvin, *Wenatchee*
Walla Walla College

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

HAWKSLEY, Robert Locke, *Seattle*
University of Washington

HAYES, Donald Clayton, *Kirkland*
University of Washington

HEID, David William, *Seattle*
University of Washington

HEIGHTON, Robert Stanhope, *Seattle*
University of Washington

HILL, David, *Seattle*
B.A., 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

JANISCH, Edward Robert, *Seattle*
University of Washington

KARREN, Keith Obray, *Salt Lake City, Utah*
University of Utah

KELLER, Robert Ernest, *Seattle*
Seattle University

KINNEAR, Ian Farquharson, *Maui, T. H.*
University of Washington

KISER, George Cluff, *Salt Lake City, Utah*
B.S., University of Utah

LLEWELLYN, John Grant, *Kent*
Seattle University

LOFLIN, Leonard Ernest, *Tacoma*
College of Puget Sound

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 Philip, *Seattle*
University of Washington

MILLER, Arbie Glenn, Jr., *Anthony, Idaho*
University of Idaho

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, Utah*
University of Utah

POOLE, Robert E., *Idaho Falls, Idaho*
Utah State Agriculture College

PRICHARD, Paul D., *Hoquiam*
University of Washington

PRINCE, Jack Phillip, *Tacoma*
College of Puget Sound

REDMAN, Robert William, *Seattle*
University of Washington

REICHELT, Carrol Elroy, *Everett*
University of Washington

RIDDELL, Norman Albert, *Bellevue*
B.S., University of Washington

ROATS, Audrey Mae, *Seattle*
B.A., Seattle University

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

SORENSON, Sigmund Harry, *Tacoma*
Pacific Lutheran College

SPINOLA, Joseph Sebastian, *Seattle*
University of Washington

STANTON, Paul Byron, *Seattle*
B.S., Oregon State College

STEINER, Donald Paul, *Beverly Hills, Calif.*
Santa Monica City College

SWENSON, Roger Neil, *Seattle*
University of Washington

TAYER, Harold Edward, *Seattle*
University of Washington

THOMPSON, William Joseph, *Seattle*
University of Washington

VIGG, John, *Seattle*
University of Washington

VISSAC, Jacques N., *Vancouver, B. C.*
University of British Columbia

WARD, Thomas Walker, Jr., *Salt Lake City, Utah*
University of Utah

WEBB, Robert Taylor, *Twin Falls, Idaho*
B.S., University of Idaho

WHITE, Howard Wesley, *Spokane*
Washington State College

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

SECOND-YEAR CLASS, ENTERED 1951

ABLES, Thomas Lemual, *Seattle*
B.S., University of Washington

BAIRD, Russell Elwood, *Everett*
B.S., University of Oregon

BARCLAY, Ronald Loyd, *Seattle*
University of Washington

BERG, Norman Eugene, *Seattle*
University of Washington

BEVERIDGE, Ed., *Missoula, Mont.*
Montana State University

BINNS, Farrell Newren, *Richland*
Washington State College

CHALFA, Jack Edward, *Issaquah*
Seattle University

CLARK, Howard Earl, *Richland*
Gonzaga University

COPITHORNE, 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 Agriculture College

DYE, Lawrence Lee, *Olympia*
University of Washington

EHRET, William Walter, *Centralia*
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

HEANEY, George Francis, III, *Seattle*
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

HUTSON, Phillip M., *Winlock*
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., Uiversity 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

LONG, Kenneth Carl, *Port Angeles*
University of Washington

LOWRY, Van Lee, *Tacoma*
College of Puget Sound

MAR, Roy Sing, *Seattle*
Seattle University

McKAY, Herbert Patrick, *Tacoma*
College of Puget Sound

MICHAEL, Mike Peter, *Seattle*
University of Washington

MILLER, Ellis Weger, *Seattle*
Seattle University

MONAGHAN, Robert Douglas, *Tacoma*
University of Washington

MORBY, Morris Leland, *Tacoma*
Pacific Lutheran College

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

PRINCE, Stanford Daniel, *Spokane*
B.A., University of Washintgon

RIRIE, Morgan Jensen, *Provo, Utah*
Brigham Young University

SCHULTZ, Gerry Drysdale, *Edmonds*
University of Washington

SIEBERT, Leonard Anton, *Washougal*
University of Washington

SKAGGS, Marion M., *Tacoma*
College of Puget Sound

SOBOTTKA, Hugh Charles, *Seattle*
University of Washington

STEVENS, Doyt Edward, *Seattle*
Seattle University

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

VAUGHN, John Kenneth, *Selah*
B.S., Washington State College

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

THIRD-YEAR CLASS, ENTERED 1950

BEAL, 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, Homer Jenning, 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

FRAAS, Robert John, *Mount Vernon*
University of Washington

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

JOHNSON, George Blaine, *Tacoma*
College of Puget Sound

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

McCANN, Raymond, *Seattle*
University of Washington

McDOUGALL, William Douglas, *Victoria, B.C.*
University of British Columbia

MacGEORGE, Thomas Hamilton, *Seattle*
University of Washington

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

RUSSON, George Albert, *Seattle*
University of Washington

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

TEEL, Walter Stephen, *Harrington*
B.S., University of Washington

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

FOURTH-YEAR CLASS, ENTERED 1949

BARRINGER, Frank E., *Spokane*
Gonzaga University

BEASLEY, Bruce A., *Kirkland*
University of Washington

BISHOP, Roger M., *Toppenish*
University of Washington

BLUM, Thomas A., *Edmonds*
A.B., University of North Carolina

BOKSTROM, Peter, *Haney, B.C.*
University of British Columbia

BONNEY, Roy H., *Wenatchee*
University of Washington

BOWLES, Joseph H., *Tacoma*
B.A., Pacific Lutheran College

BRAITHWAITE, Kenneth J., *Provo, Utah*
Brigham Young University

BROCK, Edward G., *Vancouver, B.C.*
B.A., University of British Columbia

BROWN, Shirl A., *Seattle*
University of Washington

BURHEN, William Kenneth, *Seattle*
University of Washington

CHIN, William, *Seattle*
University of Washington

CLARK, Barney B., *Provo, Utah*
B.A., Brigham Young University

CODD, John Stuart, *Colfax*
B.S., University of Washington

COLSON, Joe Walter, *Boise, Idaho*
University of Washington

COX, Herschel A., Jr., *Seattle*
B.S., University of Washington

CUMMING, Joseph R., *Bremerton*
University of Washington

EDMUNDSON, Reggie, *Tacoma*
University of Washington

FENNO, Robert T., *Seattle*
Seattle University

FISHER, William H., *Tacoma*
College of Puget Sound

GATTON, John Francis, *Spokane*
University of Washington

GOODMAN, Burton H., *Tacoma*
Seattle University

GOULD, John C., Jr., *Tacoma*
College of Puget Sound

HAUG, Ronald D., *Seattle*
University of Washington

HAYS, James W., *Bellingham*
Western Washington College of Education

HOWELL, Walter D., *Seattle*
B.S., University of Washington

IVERSON, James R., *Anacortes*
University of Washington

JOHNSON, Carl E., *Seattle*
B.S., University of Washington

JOHNSON, Gordon K., *Payson, Utah*
B.S., Brigham Young University

KERSEY, Samuel E., *St. Maries, Idaho*
University of Idaho

LEE, Joseph, *Spokane*
University of Washington

LEMON, Jack Willard, *Sequim*
University of Washington

LOMBARDI, Richard E., *Pocatello, Idaho*
B.S., Idaho State College

LUND, Theodore G., *National*
University of Washington

McAULEY, Robert B., *Seattle*
University of Washington

MASTON, Earl C., *Seattle*
University of Washington

MOLINE, David O., *Spokane*
Washington State College

MOSS, Frederick, W., Jr., *Selah*
Washington State College

NEWTON, Gordon C., *Tukwila*
Central Washington College of Education

NEVIN, Harold R., Jr., *Camas*
A.B., Willamette University

OLSON, Dale L., *Marysville*
University of Washington

OLSON, Edward A., *Tacoma*
University of Washington

OLSWANG, Kay B., *Seattle*
University of Washington

OSWALD, Harold, *Tacoma*
B.S., University of Washington

OVERBY, Grant E., *Seattle*
B.S., University of Washington

PAGE, Joseph W., *Seattle*
B.S., University of Washington

PERRODIN, John A., *Sherman Oaks, Calif.*
University of Wyoming

PETERSON, Harland B., *Tacoma*
College of Puget Sound

PETERSON, William J., *Seattle*
B.S., University of Washington

PHILLIPS, Roy A., Jr., *Denver, Colo.*
University of Denver

PIHL, Eric B., *Bothell*
University of Washington

PITTS, Howard W., *Chewelah*
B.S., Washington State College

REDDICK, James M., *Seattle*
B.S., University of Washington

REDFERN, Melvin L., *Long Beach*
University of Washington

REYNOLDS, Thomas G., *Seattle*
B.S., University of Washington

ROOS, John Richard, *Cheney*
B.A., Eastern Washington College of Education

SLUSHER, Menuard F., *Seattle*
University of Washington

SOLVIE, Douglas A., *Saco, Mont.*
University of Washington

STOCKSTAD, Arvid L., *Milnor, N.D.*
University of Washington

SULLIVAN, Dean T., *Tacoma*
College of Puget Sound

SWENSON, Ralph D., *Seattle*
University of Washington

SWENSON, Robert L., *Seattle*
University of Washington

TINDALL, LeRoy E., *Denver, Colo.*
B.A., University of Denver

TRANMER, Arthur D., *Twin Falls, Idaho*
B.A., Idaho State College

WALKER, John C., *Kirkland*
B.M.S., University of Washington

WALLER, Denning E., *Vancouver, B.C.*
B.A., University of British Columbia

WEBSTER, Roy F., *Omak*
B.A., Eastern Washington College of Education

WERLICH, Edwin P., *Seattle*
University of Washington

THIRD CLASS OF GRADUATES

Degree of Doctor of Dental Surgery Conferred June 13, 1952

ALLEY, William D., *Veradale*
Eastern Washington College of Education

BECKER, Lawrence F., *Seattle*
University of Washington

BELL, John A., *Seattle*
University of Washington

BURRELL, Frank C., *Seattle*
Seattle University

CRABTREE, C. Larry, *Idaho Falls, Idaho*
Montana State University

DICKSON, G. Ronald, *Ladysmith, B.C.*
University of British Columbia

DOW, Pierre, R., *Seattle*
B.S., University of Washington

ENDZELL, Frank E., *Seattle*
University of Washington

FURUKAWA, John K., *Seattle*
University of Washington

GILBERT, Howard C., *Seattle*
Seattle University

GROSS, Willis A., *Seattle*
University of Washington

HARRISON, Richard P., *Seattle*
University of Washington

HEACOCK, Winston A., *Seattle*
University of Washington

HODSON, Charles G., *Seattle*
University of Washington

HUEY, Ralph H., *Spokane*
University of Washington

HUMPHREY, Robert B., *Colfax*
University of Washington

HURD, Rollin L., *Hoquiam*
University of Washington

JACOBSEN, John D., *Seattle*
University of Washington

JOHNSON, Marvin A., *Shelton*
University of Washington

KANE, Thomas V., *Seattle*
University of Washington

LARGENT, Dean E., *Sandpoint, Idaho*

LAWS, Robert K., *Vancouver*
Clark Junior College

LEWIS, Robert D., *Seattle*
Seattle University

McAULEY, Frank C., *Seattle*
University of Washington

McCARTER, Robert G., *Seattle*
B.A., University of Washington

McVEY, Kenneth E., *Spokane*
Gonzaga University

MASTERS, Paul N., *Seattle*
Seattle University

MILLER, Edward F., *Tacoma*
B.S., College of Puget Sound

MILLER, Ronald W., *Outlook*
B.A., Eastern Washington College of Education

MONTGOMERY, Jay C., *Heber City, Utah*
University of Oregon

PEARSON, Alfred S., *Seattle*
B.S., University of Washington

PHILLIPS, Charles K., Jr., *Denver, Colo.*
University of Denver

PLUMB, Basil M., *North Vancouver, B.C.*
University of British Columbia

RAYNES, John G., *Spokane*
University of Washington

RHODES, John C., *Pullman*
B.S., Washington State College

RIGGS, Floyd E., *Tacoma*
University of Washington

SAHLIN, David C., Jr., *Tacoma*
College of Puget Sound

SHIMMIN, John R., *Vernal, Utah*
University of Utah

SMITH, Neil S., *Renton*
University of Washington

STUDERUS, Walter L., *Seattle*
University of Washington

TIMBERLAKE, Keith R., *Seattle*
University of Washington

TOGNOTTI, Lorne A., *Vancouver, B.C.*
University of British Columbia

TREFRY, William H., *Spokane*
Gonzaga University

WICK, Edwin L., *Seattle*
University of Washington

WILSON, Robert D., *Nampa, Idaho*
University of Utah

ZECH, Jerome M., *Seattle*
B.S., University of Washington

GRADUATE SCHOOL, ENTERED 1951

Orthodontics

BUTORI, Eugene F., *Portland, Ore.*
D.M.D., University of Oregon

DONA, Aldo A., *Laramie, Wyo.*
D.D.S., Creighton University

McNAIR, Raymond W., *Klamath Falls, Ore.*
D.D.S., Northwestern University

PHILLIPS, John R., *Minneapolis, Minn.*
D.D.S., University of Minnesota

WILLIS, Robert Henry, *Oakland, Calif.*
D.D.S., University of California

Restorative Dentistry

COULOMBE, Roger J. A., *Co. Montmagny, Quebec*
B.A., D.D.S., University of Montreal

RILEY, Thomas James, Jr., *Seattle*
D.D.S., Columbia University

GRADUATE SCHOOL, ENTERED 1952

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

BLAKE, Samuel R., *Altadena, Calif.*
D.D.S., University of Southern California

DRAKE, John Victor, *Milwaukee, Wis.*
D.D.S., Marquette University

FAILOR, Richard Olney, *Seattle*
D.D.S., University of Washington

GIBBS, Kenneth Eugene, *Lewiston, Idaho*
D.D.S., University of California

McGOVERN, William Carr, *Tacoma*
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

TAYLOR, Robert F., *Franklin, Tenn.*
D.D.S., University of Tennessee

DEGREE OF MASTER OF SCIENCE IN DENTISTRY CONFERRED JUNE 14, 1952

Orthodontics

ANDERSON, Roland M., *Minneapolis, Minn.*
D.D.S., University of Minnesota

BOLTON, Wayne A., *Seattle*
D.D.S., University of Washington

DESPOSATO, John D., *Washtucna*
B.S., D.D.S., Northwestern

SCHOVERLING, W. J., *Houston, Texas*
B.S., D.D.S., University of Texas

STEPHENS, Paul H., *Anaconda, Mont.*
D.M.D., University of Oregon

Pedodontics

BAIRD, Frank P., *Spokane*
D.D.S., University of Washington

SEIMS, William G., Jr., *Libby, Mont.*
D.D.S., University of Southern California

Students in Dental Hygiene

FIRST-YEAR CLASS, ENTERED 1952

ATWOOD, Marilyn, *San Francisco, 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*
Washington State College

JENNERSON, Mabel W., *Seattle*
University of Washington

McCARTER, Shirley J., *Seattle*
University of Washington

REYNOLDS, Barbara J., *Seattle*
University of Washington

WERTTEMBERGER, Joyce A., *Seattle*
University of Washington

WHETSTONE, Emily J., *Seattle*
University of Washington

WIENIR, Rochelle J., *Seattle*
University of Washington

SECOND-YEAR CLASS, ENTERED 1951

CHUNN, Mary K., *Seattle*
B.A., University of Washington

COX, Ardath M., *Seattle*
University of Washington

FRANK, Joanne, *Spokane*
Washington State College

GULLIKSON, Virginia C., *Seattle*
University of Washington

HATLEY, Gail T., *Seattle*
Mankato State Teachers College

HILL, Mary E., *Seattle*
University of Washington

NOLAND, Sally E., *Seattle*
University of Washington

NORGAAR, Anine, *Manchester*
Central Washington College

SOLVIE, Joanne B., *Seattle*
University of Washington

FIRST CLASS OF GRADUATES

Degree of Bachelor of Science Conferred June 13, 1952

ANDERSON, Virginia K., *Seattle*
University of Washington

FAULCONER, Zoe E., *Seattle*
B.A., University of Washington

GORDON, Joanne L., *Kingston*
University of Washington

HODSON, Jean E., *Bothell*
University of Washington

HOLT, MaryAnne E., *Seattle*
University of Washington

McCULLOUGH, Patricia A., *Seattle*
University of Washington

SHELLEY, Mary A., *Hoquiam*
University of Washington

WARNER, Joyce L., *Spokane*
Gulfpark Junior College

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.

BULLETIN
UNIVERSITY
OF
WASHINGTON

SCHOOL OF **NURSING** 1953-1954

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 home 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
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
DIVISION OF HEALTH SCIENCES
  SCHOOL OF DENTISTRY
  SCHOOL OF MEDICINE
  SCHOOL OF NURSING
  COLLEGE OF PHARMACY
SCHOOL OF LAW

Other Bulletins

PRELIMINARY SUMMER ANNOUNCEMENT
SUMMER QUARTER ANNOUNCEMENT
HOME STUDY
EXTENSION CLASSES

CONTENTS

CALENDAR

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

AUTUMN QUARTER, 1953

REGISTRATION PERIOD

SEPT. 8-SEPT. 29	Registration for students in residence Spring Quarter, 1953. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 25, but no later than September 18.*)
SEPT. 11-SEPT. 29	Registration for former students not in residence Spring Quarter, 1953. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 25, but no later than September 18.*)
SEPT. 14-SEPT. 29	Registration for new students. (*August 28 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—WEDNESDAY	Instruction begins (8 a.m.)
OCT. 2—FRIDAY	President's Convocation (11 a.m.)
OCT. 6—TUESDAY	Last day to add a course
NOV. 11—WEDNESDAY	Armistice and Admission Day holiday
NOV. 26-NOV. 29	Thanksgiving recess
DEC. 18—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1954

REGISTRATION PERIOD

NOV. 23-DEC. 11	Registration for students in residence Autumn Quarter, 1953. (*Registration appointments will be issued on presentation of ASUW cards beginning October 23.*)
DEC. 29-DEC. 31	Registration for former students not in residence Autumn Quarter, 1953. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 19.*)
DEC. 29-DEC. 31	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. 4—MONDAY	Instruction begins
JAN. 8—FRIDAY	Last day to add a course
FEB. 22—MONDAY	Washington's Birthday and Founder's Day holiday
MAR. 19—FRIDAY	Instruction ends

SPRING QUARTER, 1954

REGISTRATION PERIOD

FEB. 24-MAR. 12	Registration for students in residence Winter Quarter, 1954. (*Registration appointments will be issued on presentation of ASUW cards beginning January 22.*)
MAR. 24-MAR. 26	Registration for former students not in residence Winter Quarter, 1954. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 18.*)
MAR. 24-MAR. 26	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. 29—MONDAY	Instruction begins
APR. 2—FRIDAY	Last day to add a course
MAY 21—FRIDAY	Governor's Day
MAY 31—MONDAY	Memorial Day holiday
JUNE 6—SUNDAY	Baccalaureate Sunday
JUNE 11—FRIDAY	Instruction ends
JUNE 12—SATURDAY	Commencement

SUMMER QUARTER, 1954

REGISTRATION PERIOD

JUNE 2-JUNE 4 JUNE 14-JUNE 18	Registration for all students. (*Registration appointments for students in residence Spring Quarter, 1954, and for former students not in residence Spring Quarter, 1954, may be obtained from the Registrar's Office beginning April 19. 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 21—MONDAY	Instruction begins
JUNE 22—TUESDAY	Last day to add a course for the first term
JUNE 25—FRIDAY	Last day to add a course for the full quarter
JULY 5—MONDAY	Independence Day holiday
JULY 21—WEDNESDAY	First term ends
JULY 22—THURSDAY	Second term begins
JULY 23—FRIDAY	Last day to add a course for the second term
AUG. 20—FRIDAY	Instruction ends

AUTUMN QUARTER, 1954

REGISTRATION PERIOD

SEPT. 7-SEPT. 28	Registration for students in residence Spring Quarter, 1954. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 24, but no later than September 17.*)
SEPT. 10-SEPT. 28	Registration for former students not in residence Spring Quarter, 1954. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 24, but no later than September 17.*)
SEPT. 13-SEPT. 28	Registration for students. (*August 27 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. 29—WEDNESDAY	Instruction begins (8 a.m.)
OCT. 1—FRIDAY	President's Convocation (11 a.m.)
OCT. 5—TUESDAY	Last day to add a course
NOV. 11—THURSDAY	Armistice and Admission Day holiday
NOV. 25-NOV. 28	Thanksgiving recess
DEC. 17—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1955

REGISTRATION PERIOD

NOV. 22-DEC. 10	Registration for students in residence Autumn Quarter, 1954. (*Registration appointments will be issued on presentation of ASUW cards beginning October 22.*)
DEC. 29-DEC. 31	Registration for former students not in residence Autumn Quarter, 1954. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 18.*)
DEC. 29-DEC. 31	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—MONDAY	Instruction begins
JAN. 7—FRIDAY	Last day to add a course
FEB. 22—TUESDAY	Washington's Birthday and Founder's Day holiday
MAR. 18—FRIDAY	Instruction ends

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

CHANGES IN UNIVERSITY REGULATIONS

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ADMINISTRATION

BOARD OF REGENTS

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

John Spiller, *Secretary*

OFFICERS OF ADMINISTRATION

HENRY SCHMITZ, Ph.D.	*President of the University*
HAROLD P. EVEREST, M.A.	*Vice-President of the University*
ETHELYN TONER, B.A.	*Registrar*
NELSON A. WAHLSTROM, B.B.A.	*Comptroller and Business Manager*
LILLIAN B. PATTERSON, R.N., M.A.	*Dean of the School of Nursing*

SCHOOL OF NURSING FACULTY

AIRTH, ANNABELLE MARGARET, 1946 ..... *Instructor in Out-patient Nursing*
R.N., B.S., 1946, Washington

ANDERSON, HELEN CORNELIA, 1945 (1951) ..... *Assistant Professor of Orthopedic Nursing*
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 ..... *Assistant Professor of Public Health Nursing*
B.S., 1931, Minnesota; R.N., 1936, Huntington Memorial School of Nursing (California); C.P.H.N., 1938, M.N., 1942, Washington

BACHMANN, LOIS MURIEL, 1952 ..... *Instructor in Public Health Nursing*
R.N., 1943, Englewood Hospital Training School for Nurses (Illinois); B.S., 1946, P.H.N., Loyola (Illinois); M.N., 1951, Washington

BELCHER, HELEN CAMP, 1952 ..... *Assistant Professor of Nursing; Assistant Director Basic Nursing Research Program*
A.B., 1942, Mount Holyoke; R.N., 1944, Massachusetts General Hospital School of Nursing; M.N., 1952, Washington

BLACKMAN, HELEN MARIE, 1945 ..... *Instructor in Tuberculosis Nursing; Director of Nurses, Firland Sanatorium*
R.N., 1929, St. Luke's School of Nursing (Iowa); B.S., 1942, C.N.S., 1942, Washington

BRECKINRIDGE, FLORA JANE, 1953 ..... *Instructor in Operating Room Nursing*
R.N., 1941, Evanston Hospital School of Nursing; B.S., 1952, Western Reserve University

BROWN, VIOLA JOYCE, 1953 ..... *Instructor in Nursing Arts*
R.N., B.S., 1950, Washington (PHN)

BRYSON, SYLVIA, 1953 ..... *Instructor in Public Health Nursing*
R.N., 1923, Wesley Hospital School of Nursing; B.S., 1942 C.P.H.N., 1942, George Peabody College

BURKE, A. EVELYN, 1943 (1953)..... *Associate Professor of Public Health Nursing*
B.S., 1930, Akron Municipal University; R.N., 1930, M.A., 1941, Western Reserve University; C.P.H.N., 1943, Washington

CHINQUE, KATHERINE, 1947..... *Assistant Professor of Nursing (Child Health and Development)*
R.N., 1931, Providence Hospital (Michigan); B.S., 1946, Wayne University (PHN); M.A., 1951, Michigan

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

DAVIS, HELEN ESTHER, 1952..... *Instructor in Medical Nursing*
B.A., 1940, Santa Barbara College; R.N., 1944, Knapp College of Nursing (California)

DEAN, RUTH WHEWELL, 1949..... *Instructor in Public Health Nursing*
B.N., R.N., 1936, Yale (PHN); M.A., 1941, Columbia

DUNNING, MARY MARGUERITE, 1953..... *Instructor in Public Health Nursing*
R.N., 1921, University of Michigan School of Nursing; B.S., 1929, Michigan State College

EKLIND, HERINA, 1946..... *Assistant Professor of Nursing (Hon.); Superintendent, The Swedish Hospital*
R.N., 1917, Ravenswood Hospital School of Nursing (Illinois)

ELWOOD, EVELYN ROSE, 1949..... *Instructor in Surgical Nursing*
R.N., 1939, Presbyterian Hospital School of Nursing (New York); B.S., 1949, Columbia

ELY, BETTY JANE, 1952..... *Instructor in Psychiatric Nursing*
R.N., 1945, Presbyterian Hospital School of Nursing (Pennsylvania); B.S., 1951, University of Virginia; M.N., 1953, Washington

FRANZ, VESTA LORRAINE, 1953..... *Instructor in Surgical Nursing*
R.N., 1948, Samaritan Hospital School of Nursing (Idaho); B.S., 1953, Oregon

GADACZ, MARY AGNES, 1951..... *Assistant Professor of Nursing (in charge of Poliomyelitis Nursing Research)*
R.N., B.S., 1937, C.P.H.N., 1938, Minnesota; C.P.T., 1941, Harvard Medical School

GANNON, MARGARET ELIZABETH, 1949..... *Instructor in Nursing (Diet Therapy)*
B.A., 1932, Montana

GAY, JOAN BERNIECE, 1953..... *Instructor in Psychiatric Nursing*
R.N., 1945, Wichita Hospital School of Nursing; B.S., 1952, Washington

GIBLIN, ELIZABETH CLARE, 1950..... *Instructor in Clinical Nursing*
R.N., B.S., 1943, Washington

GLYNN, DOROTHY ELIZABETH, 1948..... *Assistant Professor of Nursing; Director of Nursing Service, Harborview-King County Hospital System*
B.A., 1926, Colorado School of Education; R.N., 1932, Kahler Hospitals School of Nursing

GOERTZ, LEAH, 1952..... *Instructor in Psychiatric Nursing*
R.N., 1945, Wichita Hospital School of Nursing; B.S., 1951, Washington

GRAY, FLORENCE IRENE, 1945 (1951)..... *Assistant Professor of Nursing; Educational Director Harborview Division*
R.N., B.S., 1945, M.S., 1950, Washington

HANSEN, JULIA ANNE, 1953..... *Instructor in Medical Nursing*
B.A., 1939, University of Redlands; R.N., B.A., 1942, Stanford

HARBY, WINIFRED CUSHING, 1950..... *Assistant Professor of Tuberculosis Nursing*
B.A., 1934, Maine; M.N., 1937, Yale (PHN)

HEITMAN, SALLY, 1950 — *Assistant Professor of Nursing*
R.N., 1927, Illinois Training School for Nurses; *Service Administration*
C.P.H.N., 1930, B.S., 1934, Washington; M.A., 1949, Columbia

HILL, MARIE, 1953 — *Instructor in Nursing*
R.N., 1937, French Hospital School of Nursing; A.B., 1948,
San Francisco State College

HOFFMAN, KATHERINE JANET, 1942 (1950) — *Associate Professor of Nursing*
A.B., 1929, College of Puget Sound; R.N., 1934, Tacoma General Hospital
School of Nursing; M.N., 1941, Washington

HUNTINGTON, VIVIAN GENEVIEVE, 1952 — *Instructor in Operating Room Nursing*
R.N., 1940, St. Peter's School of Nursing (Washington);
B.S., 1949, Washington

HUTCHINS, ALTHEA CAROL, 1953 — *Instructor in Psychiatric Nursing*
R.N., 1945, Good Samaritan Hospital School of Nursing (Oregon);
B.S., 1952, Washington

JACKSON, EVELYN MARIE, 1952 — *Instructor in Obstetrical Nursing*
R.N., B.S., 1951, Washington (PHN)

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, Columbia

KINTNER, NANCY JANE, 1942 — *Instructor in Psychiatric Nursing; Director*
R.N., B.S., 1940, Washington *of Nurses, Northern State Hospital*

KITTELSBY, ROMA MARIE, 1953 — *Instructor in Nursing Arts*
R.N., B.S., 1943, Minnesota

KUCHENBECKER, ARDELL ELIZABETH, 1951 — *Instructor in Nursing Arts*
R.N., B.S., 1944, Minnesota; M.N., 1951, Washington

KYNOCH, RUTH CECILIA, 1953 — *Instructor in Pediatric Nursing*
R.N., 1946, Santa Rosa Junior College School of Nursing; C.N.S., 1949,
B.S., 1950, Washington

LAMBRECHT, MAXINE IDELLE, 1950 — *Instructor in Nursing Arts*
R.N., B.S., 1948, Colorado; M.N., 1953, Washington

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

LITTLE, DOLORES EMMA, 1951 — *Instructor in Surgical Nursing*
R.N., B.S., 1946, Washington

LUBY, GRACE KATHRYN, 1953 — *Instructor in Public Health Nursing*
R.N., 1928, St. Joseph's Hospital School of Nursing (Nebraska);
C.P.H.N., 1943, B.S., 1944, George Peabody College

MANSPERGER, MARGUERITE, 1952 — *Instructor in Nursing; Director of Nurses,*
R.N., 1932, Seattle General Hospital School of Nursing; *Virginia Mason*
B.S., 1939, Washington *Hospital*

MERCER, SYBIL LITTLEFIELD, 1951 — *Instructor in Tuberculosis Nursing*
R.N., 1944, New England Deaconess Hospital School of Nursing;
B.S., 1951, Washington

MITCHELL, EDITH LAUBSCHER, 1947 — *Instructor in Public Health Nursing;*
R.N., 1929, General Hospital *Director of Nurses, Tacoma-Pierce*
of Everett School of Nursing; *County Public Health Nursing Association*
C.P.H.N., 1929, B.S., 1929, Washington

MOODY, ADELINE LUCILLE, 1952 — *Assistant Professor of Nursing (Hon.); Director of Nurses, The Doctors Hospital*
R.N., 1929, Saskatoon City Hospital

MORGAN, TIRZAH MAY, 1949 — *Assistant Professor of Psychiatric Nursing*
R.N., B.S., 1938, California; M.A., 1946, Columbia

MURRAY, BEATRICE LOUISE, 1950 (1952) — *Assistant Professor of Pediatric Nursing*
R.N., B.S., 1938, Portland; M.N., 1950, Washington

NASH, SHIRLEY ISTAS, 1952 — *Instructor in Nursing; Educational Director, Virginia Mason Hospital Division*
R.N., 1941, Virginia Mason Hospital School of Nursing; B.S., 1949, Washington

NELSON, MARGARET FLORENCE, 1951 — *Instructor in Public Health Nursing*
R.N., B.S., C.P.H.N., 1930, Minnesota

NORGAARD, ESTHER ALICE, 1952 — *Instructor in Clinical Nursing*
R.N., B.S., 1946, Washington; M.S., 1952, Western Reserve University

NORTHROP, MARY WATSON, 1931 — *Instructor in Nursing (Diet Therapy)*
B.A., 1920, Vassar College; M.S., 1923, Columbia

OLCOTT, VIRGINIA, 1931 (1945) — *Associate Professor of Nursing*
R.N., 1926, Peter Brent Brigham Hospital School of Nursing (Massachusetts); B.S., 1927, M.S., 1931, C.P.H.N., 1949, Washington

O'NEAL, MILDRED CATHERINE, 1952 — *Instructor of Surgical Nursing*
R.N., 1941, Central Washington Deaconess Hospital School of Nursing; B.S., 1949, Washington

PATTERSON, LILLIAN BEATRICE, 1945 (1951) — *Professor of Nursing; Dean of the School of Nursing*
R.N., 1923, Presbyterian Hospital School of Nursing (Illinois); B.A., 1941, C.P.H.N., 1942, M.A., 1943, Washington

PINYAN, FRANCES ADELAIDE GREGG, 1949 — *Instructor in Operating Room Nursing*
R.N., 1947, St. Helena School of Nursing (California); B.S., 1949, Pacific Union College (California)

POOL, MARION ESTELLE, 1953 — *Instructor in Public Health Nursing*
R.N., 1938, St. Joseph's Hospital School of Nursing; B.S., 1941, C.P.H.N., 1941, George Peabody College; M.S., 1947, Western Reserve University

RAINEY, HELEN ELAINE SUND, 1952 — *Instructor in Clinical Nursing*
R.N., 1944, Swedish Hospital School of Nursing (Washington); B.S., 1952, Washington

REITZ, ESTHER LUELLA, 1951 — *Instructor in Medical Nursing*
R.N., 1948, Swedish Hospital School of Nursing; B.S., 1950, Minnesota

ROBINSON, BESSIE RICE, 1952 — *Instructor in Nursing Arts*
A.B., 1928, Willamette University; R.N., 1936, New York Hospital School of Nursing; M.A., 1941, New York University (PHN)

ROHWEDER, ANNE WILLRICH, 1950 — *Instructor in Psychiatric Nursing*
R.N., 1948, Virginia Mason Hospital School of Nursing; B.S., 1950, Washington

ROSE, PATRICIA ANN, 1952 — *Instructor in Obstetric Nursing*
R.N., 1946, St. Joseph's Hospital School of Nursing (Washington); B.S., 1949, Washington

SAND, OLE, 1952 — *Associate Professor of Nursing; Chief Investigator, Basic Nursing Research Program*
B.S., 1941, Minnesota State Teachers College; M.A., 1947, Ph.D., 1948, University of Chicago

SEELS, FRANCES MARGARET, 1950 — *Instructor in Medical Nursing*
R.N., B.S., 1942, Washington

SMITH, HARRIET HOLBROOK, 1949.....*Assistant Professor of Nursing Service Administration*
A.B., 1918, Mount Holyoke College; R.N., 1920, Seattle General Hospital School of Nursing

SOULE, ELIZABETH STERLING, 1920 (1950).....*Professor Emeritus of Nursing; Dean Emeritus of the School of Nursing*
R.N., 1907, Malden Hospital School of Nursing (Massachusetts); B.A., 1926, M.A., 1931, Washington; D.Sc., (Hon.), 1944, Montana State College

SVELANDER, KATHERINE GUSTAFSON, 1946.....*Assistant Professor of Nursing; Educational Director, The Swedish Hospital Division*
R.N., 1928, Swedish Hospital School of Nursing; B.S., 1928, Washington

TSCHUDIN, MARY STICKELS, 1942 (1948).....*Associate Professor of Nursing; Assistant Dean of the School of Nursing*
R.N., B.S., 1935, C.P.H.N., 1936, M.S., 1939, Washington

WASSON, LOUISE, 1951.....*Assistant Professor of Clinical Nursing*
R.N., 1937, Samaritan Hospital School of Nursing (Idaho); B.S., 1947, Ohio State; M.A., 1951, Columbia

WOOD, THELMA JEAN, 1952.....*Instructor in Obstetric Nursing*
R.N., 1949, Tacoma General Hospital School of Nursing; B.S., 1952, Washington

MEDICAL LECTURERS IN THE SCHOOL OF NURSING

BARNES, ROBERT H., JR.....*Clinical Instructor in Medicine; Lecturer in Nursing*
B.S., 1940, Virginia Military Institute; M.D., 1943, Virginia

BAUER, FRIEDA.....*Lecturer in Nursing*
M.D., 1911, University of Vienna (Austria)

BINGHAM, JAMES.....*Clinical Assistant Professor of Medicine; Lecturer in Nursing*
B.S., 1935, M.D., 1937, Wisconsin

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 in Nursing*
B.A., 1930, Whitman; M.D., 1934, Johns Hopkins

CANTRIL, SIMEON T.....*Clinical Associate Professor in Radiology; Lecturer in Nursing*
A.B., 1929, Dartmouth; M.D., 1932, Harvard

CLARKE, EDMUND R., JR.....*Clinical Associate in Medicine; Lecturer in Nursing*
B.A., 1940, Denver; M.D., 1943, Colorado

CODLING, JOHN WILLIAM.....*Clinical Assistant in Obstetrics and Gynecology; Lecturer in Nursing*
Ph.D., 1929, B.S., 1932, Washington; M.D., 1942, Oregon

COE, HERBERT E.....*Senior Consultant in Surgery; Lecturer in Nursing*
A.B., 1904, M.D., 1906, Michigan

DAY, CHARLES WARD.....*Clinical Instructor in Obstetrics and Gynecology; Lecturer in Nursing*
B.S., 1939, Washington; M.D., 1942, Oregon

DOCTER, JACK MERTON.....*Clinical Instructor in Pediatrics; Lecturer in Nursing*
B.S., 1937, Washington; M.D., 1941, Columbia

FLASHMAN, FORREST L.....*Clinical Associate in Orthopedic Surgery; Lecturer in Nursing*
M.D., 1941, Northwestern

FODOR, OSCAR A., *Clinical Associate in Medicine; Lecturer in Nursing*
B.S., 1938, Franklin and Marshall College (Pennsylvania);
M.D., 1942, Indiana

GREENLEAF, RICHARD CRANCH *Clinical Instructor in Medicine; Lecturer*
B.S., 1939, Yale; M.D., 1942, Columbia *in Nursing*

HAMES, GEORGE H. *Clinical Instructor in Medicine; Lecturer in Nursing*
B.A., 1926, Victoria College (Canada); M.D., 1929, Toronto

HAVILAND, JAMES WEST *Clinical Associate Professor of Medicine;*
A.B., 1932, Union College (New York); *Assistant Dean of School of*
M.D., 1936, Johns Hopkins *Medicine; Lecturer in Nursing*

HOGNESS, JOHN R. *Clinical Associate in Medicine; Lecturer in Nursing*
B.S., 1943, M.D., 1946, Chicago

JARVIS, FRED J. *Consultant in Surgery; Lecturer in Nursing*
B.A., 1928, M.D., 1932, Iowa

JOHNSON, ROGER H. *Clinical Associate in Surgery; Lecturer in Nursing*
B.S., 1937, M.D., 1939, Wisconsin; M.S., 1944, Minnesota

JOHNSTON, HAROLD B. *Lecturer in Nursing*
M.D., 1949, Texas

JONES, CHARLES HERBERT *Clinical Affiliate in Psychiatry; Lecturer in Nursing*
B.S., 1940, Washington; M.D., 1943, Oregon

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

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

MACULANS, GEORGE ALEXANDER *Lecturer in Nursing*
M.D., 1938, University of Latvia

MARSHALL, HELEN S. *Clinical Associate in Medicine; Lecturer in Nursing*
B.S., 1939, M.D., 1942, Wisconsin

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; M.D., 1946, Columbia

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

RANKIN, ROBERT M. *Clinical Instructor in Medicine; Lecturer in Nursing*
B.S., 1937, Washington; M.D., 1942, Johns Hopkins

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*

SCHROEDER, HERMAN J. ..... *Clinical Instructor in Obstetrics and Gynecology;*
Ph.C., B.S., 1931, Washington; M.D., 1940, Oregon *Lecturer in Nursing*

SHEEHY, THOMAS F., JR. ..... *Clinical Associate in Medicine; Lecturer in Nursing*
B.S., 1942, Villanova; M.D., 1945, Temple

SHERIDAN, ALFRED ..... *Clinical Associate in Surgery; Lecturer in Nursing*
B.S., 1938, Washington; M.D., 1943, Northwestern

SPEIR, EDWARD B. ..... *Consultant in Surgery; Lecturer in Nursing*
B.A., 1929, M.D., 1933, Kansas

STEWART, ROBERT H. ..... *Clinical Instructor in Obstetrics and Gynecology;*
M.D., 1927, Oregon *Lecturer in Nursing*

STROH, JAMES E. S. ..... *Clinical Assistant Professor of Medicine; Lecturer in Nursing*
B.S., 1928, South Dakota; M.D., 1931, Illinois

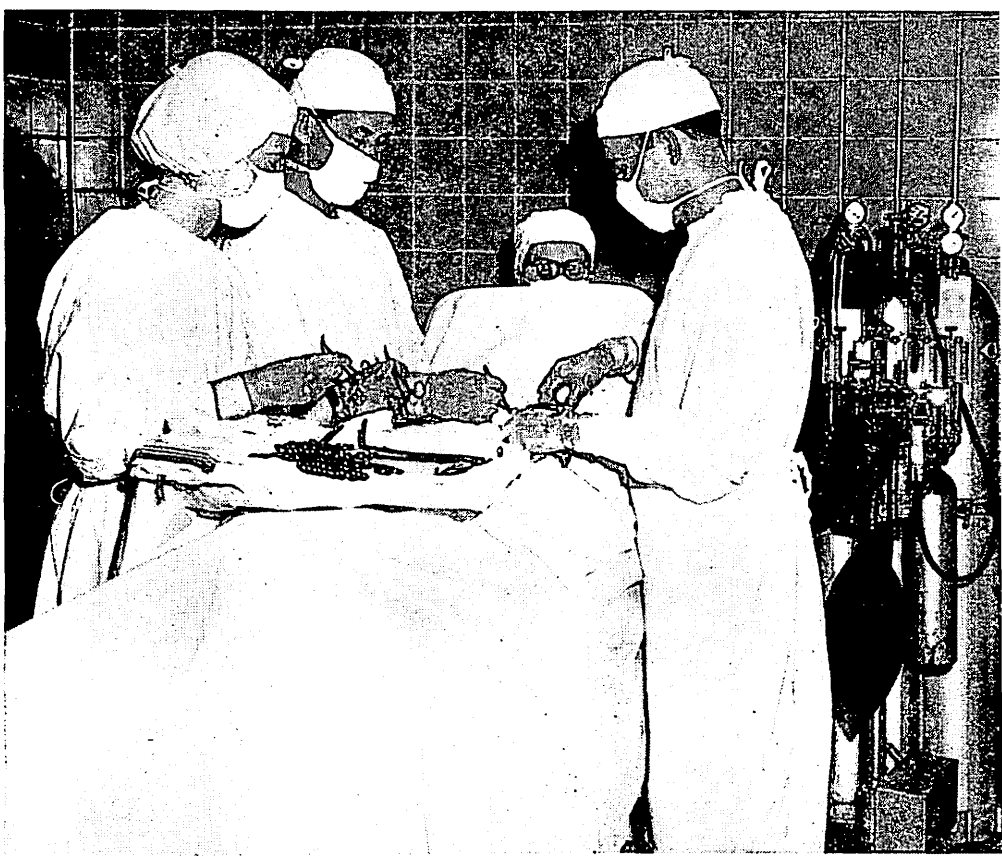
TRUESDELL, DUANE EARL ..... *Lecturer in Nursing*
B.S., 1943, Washington; M.D., 1949, Northwestern

VENNESLAND, KIRSTEN ..... *Lecturer in Nursing*
B.S., 1934, M.D., 1942, Chicago

VON MENDELSSOHN, FELIX ..... *Lecturer in Nursing*
M.D., 1943, Lausanne (Switzerland)

WANAMAKER, FRANK HERMAN ..... *Consultant in Surgery; Lecturer in Nursing*
D.D.S., 1922, M.D., 1929, Northwestern

ZAHN, DANIEL W. ..... *Clinical Assistant Professor of Medicine; Lecturer in Nursing*
B.S., 1934, M.D., 1938, Glasgow (Scotland)



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 integrated with the University's program and meeting 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. This first course, 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 public health 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, including both the basic five-year combined program and a public health nursing course. Realization of a continuously growing need for preparing young women for 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 as a student 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 on an advanced level. In 1945, the School became an autonomous professional school of nursing. 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, its graduates have been prepared to take first-level positions in public health nursing.

In 1952, the Bachelor of Science program for graduate nurses was reorganized, and it too became an integrated program. Today, all students meeting requirements for the Bachelor of Science degree have completed a program that prepares them professionally for both public health and hospital nursing. Also in 1952, Virginia Mason Hospital School of Nursing became another division of the School. The Basic Nursing Experimental Research Program is offered through this division.

The School of Nursing has grown from a department in the College of Arts and Sciences to an independent professional School of Nursing within the framework of the Division of Health Sciences, having its own dean, administrative organization, and faculty.

After thoughtful study, the philosophy which has been 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 interprofessional 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 medical library in which students in the basic and health sciences study and work together. The teaching and research hospital, 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 44,000 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 community teaching units of the School of Nursing. Each division maintains a carefully selected library: Harborview, 1448 volumes; Swedish Hospital, 1278 volumes; and Virginia Mason Hospital, 1256 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, as part of the Division of Health Sciences, utilizes a wide variety of hospitals and health agencies. Students in all curricula, basic, graduate, and affiliates from other schools of nursing, receive experience in these agencies under the School's direction. These agencies and their fields are:

ALL HOSPITAL CLINICAL FIELDS (including outpatient departments): Harborview-King County Hospital, Harborview Division, capacity, 560 beds; The Doctor's Hospital, capacity, 200 beds; The Swedish Hospital, capacity, 404 beds; and Virginia Mason Hospital, capacity, 208 beds.

PEDIATRIC NURSING: Harborview-King County Hospital and Tacoma Indian Hospital.

TUBERCULOSIS NURSING: Firland Sanatorium, capacity, 1268 beds.

PSYCHIATRIC NURSING: Northern State Hospital, Sedro Woolley, capacity, 2273 beds; Western State Hospital, Fort Steilacoom, capacity, 3007 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 Health Department; and Health and Welfare Section, General Electric Company, Richland, Washington.

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.

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 28, 1953, or August 27, 1954.* 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 TO THE BASIC NURSING PROGRAM

Candidates for admission to the basic nursing program must be graduates of an accredited high school and must have completed one year's work at an accredited college or university with a grade-point average of 2.0 (equivalent to a C average on the Washington State grading system). High school preparation should include 3 units of English; 2 units of one foreign language; 1 unit each of laboratory science and social science; either 1 unit of algebra and 1 of geometry or 2 units of algebra; and 7 units of electives. College preparation should consist of 45 academic quarter credits in addition to the required quarters of physical education activity. In the year of college work, courses must include 9 quarter credits in English composition; 10 in chemistry (5 in organic and 5 in inorganic); 5 in psychology; and 5 in either sociology or anthropology.

Students who plan to take their prenursing college work at the University of Washington should enter the College of Arts and Sciences and follow its one-year prenursing curriculum (see the *College of Arts and Sciences Bulletin* for detailed information about entrance requirements). The prenursing curriculum is outlined below. Students at other colleges should arrange similar schedules.

AUTUMN QUARTER	CREDITS
Engl. 101 Composition	3
Phys. Educ. 110 Health Educ.	2
Sociol. 110 Survey or Anthro. 102 Principles	5
Electives	5
Phys. Educ. activity	1
	16

WINTER QUARTER	CREDITS
Chemistry 101 General	5
Engl. 102 Composition	3
Electives	7
Phys. Educ. activity	1
	16

SPRING QUARTER	CREDITS
Chem. 230 Organic	5
Engl. 103 Composition	3
Psychol. 100 General	5
Electives	2
Phys. Educ. activity	1
	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 prenursing electives from the social sciences or the humanities (such as music, art, literature, home economics, psychology, or sociology). It is extremely important that any deficiency in the high school units required for entrance to the prenursing curriculum be removed during the first year. A plan for the removal of the deficiency should be worked out with an adviser at the time of the first registration.

Prenursing students at this University should arrange for a conference with an adviser in the School of Nursing during the first quarter of the prenursing program. An application for admission to the School may be filled out at that time.

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 the University (or, if previous college work has been taken, an application for admission to advanced standing). 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.

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 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.

The National League for Nursing Graduate Nurse Qualifying Examination is 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.

An American Public Health Association 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.

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 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 on campus each quarter.

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) She has been granted regular admission to a school or college of the University. (2) Her current schedule for credit is satisfactory to the dean of her school or college. (3) She has completed all of the required steps for registration, including paying tuition and fees, filing her class cards, and depositing her registration book at Sections.

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.

Veterans who are accepted for entrance to the School of Nursing 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 two months before 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 consult a Veterans Administration regional office at least one month before the beginning of the quarter. 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, because allowances are not made until after monthly attendance is established.

Principal fees for each quarter (Autumn, Winter, and Spring) are listed below.

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 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 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.

Incidental Fee, per quarter

Full-time students — 21.50

Part-time students (registered for 6 credits or less) — 7.00

Students in the clinical division — 5.00

The incidental fee for students in the clinical division is paid not by the student but by the Nursing Education Fund.

ASUW Fees

Membership, per quarter — 8.50

Optional for auditors, part-time students, and students in the clinical division.

Athletic admission ticket (for ASUW members, optional), per year — 5.00

Good for all athletic events during the school year; must be validated each quarter when fees are paid.

Breakage Ticket Deposit — 3.00

Required in some laboratory courses; ticket is returnable for full or partial refund. No deposits are required of students in the clinical division.

Laboratory Fees, per year 7.00
No laboratory fees are required of students in the clinical division.

Test Fees 4.00-8.00
These fees are paid only once for special tests given to students in the graduate nurse, post-bachelor's, and master's degree programs.

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 to $5 is charged for late registration; $2 for each change of registration; $5 for a late medical examination; and $1 for a late X ray. The fee for a special examination is $1; for an advanced-credit examination, $2 per credit; and for removal of an Incomplete, $2.

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.

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

Fees for the one-year prenursing curriculum in the College of Arts and Sciences are the same as those for the first year in the School of Nursing, except that uniforms, equipment, and laboratory fees are not required.

First Year in School of Nursing

Tuition, Incidental, and ASUW Membership Fees
Resident student $165.00
Nonresident student 315.00

Athletic Admission Ticket (optional) 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 house 445-460.00
Room and meals in sorority house 660-700.00
Initial cost of joining a sorority is not included; this information may be obtained from the Panhellenic Council.

Uniforms and Equipment for Entrance to Clinical Division 100.00

Third and Fourth Years

Books, each year 30.00
During the period the student is in the clinical division, she receives board, room, and uniform laundry, and her tuition is paid for her; the only costs are books and personal expenses.

In addition to the above, students should be prepared to bear the costs of transportation between the University campus and the hospital. This amount will vary from quarter to quarter.

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 is 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 Swedish Hospital Board of Directors Award, the Elizabeth Sterling Soule Scholarship, the Evelyn H. Hall Memorial Scholarship, and the Evelyn H. Hall Memorial Award. Additional scholarships are available from time to time.

BASIC NURSING EXPERIMENTAL RESEARCH PROGRAM. Scholarships are the Mason Clinic and the Jane Angove scholarships.

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 annually to a student in public health nursing; the Darigold Company Scholarship, awarded annually to a graduate student majoring in pediatric nursing; 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 is 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. Housing is also available through the Student Cooperative Association, 1114 East Forty-fifth Street, Seattle 5. Information about sororities can be obtained 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, Friends' Center, and sorority houses. Other living arrangements must be approved by the Office of the Dean of Students.

Students over twenty-one can obtain a listing of available rooms and apartments from the Office of Student Residences. 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 (see page 24).

HEALTH SERVICES

The University Health Center helps to guard against infectious diseases and incipient ill health. Treatment is available for most cases of illness. A dispensary serves students during class hours,, and an infirmary receives bed patients at any hour. Infirmary patients receive nursing care, medicine, and the attendance of a staff doctor up to one week each quarter without charge; after the first week, the cost is $2 a day. At their own expense, 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. 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 their own eyeglasses and dental care.

To supplement the protection of the Health Center, the ASUW and the Board of Regents have approved a student accident insurance plan. This low-cost group policy is underwritten by a private insurance company and provides twenty-four-

hour coverage up to $500 for accidental injuries sustained on or off campus. Participation is optional. Detailed information about quarterly cost and limits of coverage is given to students during registration.

PLACEMENT

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.

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.

THE PROGRAMS IN NURSING

THE PROGRAMS IN NURSING

THE SCHOOL OF NURSING offers a basic degree curriculum, a basic nursing experimental 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 in Nursing, Master of Science in Nursing, and Master of Nursing. Post-bachelor's programs in selected clinical areas are presented for graduate nurses.

In addition 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 DEGREES

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. Every student has the privilege of graduating under the requirements in effect either the year she enters (provided that not more than ten years have elapsed since that date) or the year she receives her degree. No application for a degree can be accepted until all entrance deficiencies have been removed.

SCHOLARSHIP AND CREDITS

The University scholarship requirement is the maintenance of a 2.0 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. 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 total 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.

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.

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 requirement are granted to:

1. Students who have attained the age of twenty-five.
2. Special students.
3. Part-time students, those registered for six credits or less.
4. Students who because of physical condition are exempted by the Graduation Committee upon the recommendation of the dean of their 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 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. For women transfer students with less than a normal year's credit, the question of imposing this requirement shall be referred to the Department of Physical Education for Women.

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.

BACHELOR OF SCIENCE IN NURSING

This portion of the basic curriculum must be taken at the University of Washington. The requirements are:

AUTUMN QUARTER	CREDITS
Home Ec. 119 Nutrition & Food Prep	3
Physics 170 Physics for Nurses	5
Psych. 320 Child Behavior in Nursery School	2
Electives	5
Phys. Educ. activity	1
	16

WINTER QUARTER	CREDITS
Conj. 317- Elem. Anatomy & Physiology	6-
Micro. 301 General	5
Pharm. 251 Elementary	2
Psychiatry 267 Intro. to Mental Hygiene	2
Phys. Educ. activity	1
	16

SPRING QUARTER	CREDITS
Conj. -318 Elem. Anatomy & Physiology	-6
Nursing 291 Principles & Practice of Elem. Nurs.	5
Path. 301 Gen. & Clinical Pathology	2
Pharm. 261 Pharmacology & Therapeutics	3
Phys. Educ. activity	1
	17

SUMMER QUARTER	CREDITS
Nursing 295 Adv. Nursing Procedures	3
Nursing 296 Prin. Gen. Medicine & Surg.	5
Nursing 297 Elem. Nursing & Spec. Hosp. Depts. Practice	2
	10

AUTUMN QUARTER	CREDITS
Nursing 300 Prin. Medical & Surg. Specialities	5
Nursing 301 Med. Nursing Practice	5
Home Ec. 305 Diet in Health & Disease	3
	13

WINTER QUARTER	CREDITS
Nursing 302 Preventive Medicine & Nursing Care in Communicable Disease	4
Nursing 303 Operating Room Practice	5
Soc. Work 300 Field of Social Work	3
	12

SPRING QUARTER	CREDITS
Nursing 304 Prin. Special Therapy	2
Nursing 305 Communicable Disease & Dietary Practice	5
Nursing 339 Intro. Health Teach.	2
Elective	3
	12

SUMMER QUARTER	CREDITS
Nursing 220 History of Nursing	3
Nursing 306 Surgical Nursing Practice	5
Nursing 330 Obstetrics & Obstetric Nursing	5
	13

AUTUMN QUARTER	CREDITS
Nursing 331 Obstetric Nursing Practice	5
Nursing 332 Pediatrics & Pediatric Nursing	5
	10

WINTER QUARTER	CREDITS
Nursing 333 Pediatric Nursing & Nursery School Practice	5
Nursing 340 Pub. Health Nursing & Community Health Agencies	3
Elective	2
	10

SPRING QUARTER	CREDITS
Nursing 400 Psychiatry & Psychiatric Nursing	5
Nursing 401 Psychiatric Nursing Practice	5
	10

SUMMER QUARTER	CREDITS
Nursing 402 Tuberculosis Nursing Care	2
Nursing 403 Tuberculosis Nursing Practice	3
Nursing 404 Practice in Surgical Specialties	3
	8

AUTUMN QUARTER	CREDITS
Nursing 405 Family & Community Nursing Problems	3
Nursing 406 Public Health Nursing Practice	5
Elective	2
	10

WINTER QUARTER	CREDITS
Nursing 407 Ward Management & Bedside Teaching	3
Nursing 408 Senior Nursing Practice	5
Nursing 409 Professional Problems	2
	10

BASIC NURSING RESEARCH PROGRAM

The School of Nursing offers a new program for the student who may wish to enroll in an interrupted program in a university school of nursing. The plan of the curriculum permits the student to work as a graduate nurse before completing the total curriculum leading to the bachelor's degree.

Both the Virginia Mason Research Program and the Basic Degree Program of the University endeavor to prepare a nurse who has a broad professional background as well as general competence in nursing, although the plan and organization of the two curricula differ.

Under the research program, which begins fall, 1953, all students will be enrolled at the University in order that nursing and other courses may be taken simultaneously. Students may begin the program only in the Autumn Quarter of each year. The student registers as a regular University student during the entire period and receives full University credit for her work.

During the first year, in addition to introductory courses in nursing, the student will take courses in the physical, biological, and social sciences which will contribute to the development of the broad background of a professional nurse.

The second and third years of the program will be devoted largely to clinical courses in nursing at the Virginia Mason Hospital Division and other teaching units of the School of Nursing. The student will continue to take some science courses on campus during these two years. After completion of the third year, it is planned that the student will be eligible to take the licensing examination to become a registered nurse, and may, if she chooses, work as a graduate nurse before continuing with the last year of the program.

During the fourth year, the student will return to the campus for most of her work, which includes both nursing and other courses. Although public health nursing is included throughout the entire curriculum, there will be special emphasis in this area in the last year of the program, and practical experience in public health nursing will be provided. It is planned that on completion of the fourth calendar year of the program, the student will have completed requirements for the degree of Bachelor of Science in Nursing from the University.

In conjunction with this program, research is being carried on to study the most effective ways of preparing professional nurses. Both the Washington State Department of Licenses and the National Nursing Accrediting Service have approved the plan for research.

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 450 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 and will be arranged with students individually.

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,* which is published just before registration begins.

COURSES FOR BASIC DEGREE STUDENTS

220 History of Nursing (3; W,Summer) **Soule**
A study of nursing from earliest times, with emphasis on the place of nursing in world history and the present social order.

222 Basic Elements of Nursing (5; A) **Nash, Robinson**
Elementary nursing procedures, laboratory practice, and supervised clinical practice for students in the basic research program. Three lectures, one three-hour laboratory, and six hours of clinical practice weekly.

225 Introduction to Clinical Nursing (1; A,S) **Lambrecht**
Orientation to the field of nursing. Weekly lecture and optional two-week observation in hospitals. Students observe ward situations and practice elementary nursing skills. Open to any university student.

290 Elementary Nursing Arts (4; A,S) **Brown, Kittelsby, Kuchenbecker, Lambrecht**
Continued elementary nursing techniques and patient care. Two lectures, one two-hour laboratory, and four hours of supervised hospital practice weekly. Not open to students who have taken 291.

291 Principles and Practice of Elementary Nursing (5; A,S) **Brown, Kittlesby, Kuchenbecker, Lambrecht**
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; W, Summer) **Brown, Kittelsby, Kuchenbecker, Lambrecht**
Advanced general nursing procedures; clinical nursing care study; practice in planning nursing care with reference to physical, emotional, social, and economic needs of patients.

296 Principles of General Medicine, Surgery, Otolaryngology, and Nursing Care (5, W, Summer) **Elwood, Franz, Little, Reitz, Seels**
Diseases of the cardiovascular system; malignant neoplasms; diseases of the blood; diseases of the gastrointestinal system; diseases of the endocrine and integumenatry system; medical conditions of the genito-urinary tract; eye, ear, nose, and throat conditions. Survey of fields, with etiology, pathology, symptoms, complications, treatment, prevention, and specialized nursing care of each condition. Medical lectures, nursing demonstrations, and clinics; recording and nomenclature.

297 Practice in Elementary Nursing and Special Hospital Departments (2; W, Summer) **Brown, Kittlseby, Kuchenbecker, Lambrecht**
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; A,S) **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; A,W,S, and Summer) **Davis, Giblin, Reitz, Seels**
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; W, Summer) **Rainey, Seels**
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; A,W,S, and Summer) **Breckenridge, Giblin, Huntington, Pinyan**
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.

304 Principles of Special Therapy (2; W, Summer) **H. Anderson**
Use of light, electricity, heat, water, massage, exercise, and occupation for the prevention, care, and rehabilitation of disability. The interrelationship of nursing, physical therapy, and occupational therapy, and the correlated and cooperative responsibilities of personnel for patient care.

305 Communicable Disease Nursing and Dietary Practice (5; A,W,S, and Summer) **Gannon, Hansen, Northrop, Seels**
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; A,W,S, and Summer) **H. Anderson, Elwood, Franz, O'Neal**
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; W, Summer) **Jackson, Wood**
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; A,W,S and Summer) **Giblin, Jackson, Rose, Wood**
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; A,W,S, and Summer) **Kynoch, Murray**
Development of well children; principles of care; prevention of illness. Medical and nursing care of sick infants and children in home and hospital; introduction to community agencies concerned with child care. Medical lectures and nursing demonstrations.

333 Pediatric Nursing and Nursery School Practice (5; A,W,S, and Summer) **Kynoch, Murray**
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; A,S) **Burke**
Orientation to teaching functions of the nurse in both hospital and community situations.

340 Public Health Nursing and Community Health Agencies (3; A,W,S, and Summer) **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; A,W,S, and Summer) **Ely, Hutchins**
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; A,W,S, and Summer) **Hutchins, Kintner**
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; A,W,S, and Summer) **Harbey**
Use of special therapies; rehabilitation; prevention and control; public health and social aspects. Lectures and demonstrations.

403 Tuberculosis Nursing Practice (3; A,W,S, and Summer) **Blackman, Harbey**
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 Practice in Surgical Specialties (3; A,W,S, and Summer) **Little, Rainey**
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 Nursing Problems with the Family and the Community (3; A,W,S, and Summer) **Kinney**
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 coworkers. Case discussion and group and individual conferences. To be taken concurrently with 406.

406 Public Health Nursing Practice (5 ;A,W,S, and Summer) **Burke, Staff**
One quarter of experience in generalized public health nursing with opportunity to apply basic principles and skills as a family health consultant and health teacher. 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 hours of conference and thirty hours of field practice weekly. To be taken concurrently with 405.

407 Principles of Ward Management and Bedside Teaching (3; A,W,S, and Summer) **Heitman, 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; A,W,S, and Summer) **Gray, 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; W, Summer) **Gray, Svelander**
Responsibilities of the professional nurse to the community. Study of professional organizations, opportunities in various fields of nursing, legislation, accreditation, and professional literature.

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; A,S) **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; A,W) **Lambrecht**
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.

COURSES FOR BASIC NURSING AFFILIATE STUDENTS

250 Introduction to Psychiatry and Psychiatric Nursing (5; A,W,S, and Summer) **Ely, Goertz, Rohweder**
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; A,W,S, and Summer) **Goertz, Rohweder**
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; A,W,S, and Summer) **Mercer**
Basic concepts of treatment, rehabilitation, prevention, and control. Lectures and demonstrations.

253 Selected Tuberculosis Nursing Practice (3; A,W,S, and Summer) **Mercer**
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 tuberculosis, 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.

350 Principles and Theory of Community Nursing (3; A,W,S, and Summer) **Bachmann, Burke, Staff**
Lectures, demonstrations, and family care studies involving use of community health and social agencies.

351 Community Nursing Practice (3; A,W,S, and Summer) **Bachmann, Burke, Staff**
Six weeks of experience in a visiting nurse service, with responsibility for a selected case load in an assigned district. Two-hour conference and thirty hours of practice weekly.

BACHELOR'S DEGREE PROGRAM FOR THE 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 management. 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 community 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 32) is set up as follows: 9 credits each in English composition and required public health and social work courses; 15 credits each in biological and physical science and 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:

FIRST QUARTER	CREDITS
Nursing 365 Therapeutics & Nursing Care	2
Biological or physical science	5
English 101 Composition	3
Psychology 100 General	5
	15

SECOND QUARTER	CREDITS
Nursing 366 Spec. Probs. Nursing Care	2
Biological or physical science	5
English 102 Composition	3
Sociology 310 General	5
	15

THIRD QUARTER	CREDITS
Nursing 417 Teaching Nursing & Health	3
English 103 Composition	3
Pub. Health 402 Communicable Disease Control	3
Pub. Health 412 Pub. Health Org. & Services	3
Elective	3
	15

FOURTH QUARTER	CREDITS
Nursing 418 Supervision in Nursing	3
Biological or physical science	5
Social Work 300 Field of Social Work	3
Electives	4
	15

FIFTH QUARTER	CREDITS
Social science elective	5
Electives	11
	15

SIXTH QUARTER	CREDITS
Nursing 361 Contemporary Nursing	2
Electives	14
	16

SEVENTH QUARTER	CREDITS
Nursing 419 Contemporary Nursing in Hospital	3
Electives	10
	13

EIGHTH QUARTER	CREDITS
Nursing 406 Pub. Health Nursing Pract.	5
Nursing 443 Prin. & Org. Pub. Health Nursing	5
	10

COURSES FOR GRADUATE NURSE STUDENTS

361 Survey of Trends in Contemporary Nursing (2; W, Summer) **Olcott, Soule**
Particular emphasis on current problems in nursing.

365 Therapeutics and Nursing Care (2; A,S) **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; W, Summer) **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.

406 Public Health Nursing Practice (5; A,W,S, and Summer) **J. Anderson, Staff**
One quarter of experience in generalized public health nursing with opportunity to apply basic principles and skills as a family health consultant and health teacher, 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-hours conference, thirty hours of field practice weekly.

417 Principles of Teaching Nursing and Health (3; A,W) **Tschudin**
Application of learning principles to teaching methods and effective nursing techniques.

418 Supervision in Nursing (3; W, Summer) **Heitman**
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; A,W,S, and Summer) **Heitman**
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.

443 Principles and Organization of Public Health Nursing (5; A,W,S, and Summer)
J. Anderson, Leahy
Analysis of principles of public health nursing in the health movement; 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 WORK AND DEGREES

The School of Nursing offers post-bachelor's programs and three master's degrees programs designed to assist the student in the development of superior competence in the major field. Students in these programs must meet the admission requirements of the Graduate School as outlined in the *Graduate School Bulletin* (see also page 22).

Field or clinical courses or residencies are designed to meet individual student needs for guided experience and do not carry graduate credit for application to the master's degree.

The applicant for either the post-bachelor's 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 mental hygiene, nursing education, nursing service administration, psychiatric nursing, and public health nursing. Within the first quarter in residence 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 PROGRAMS

Short-term planned sequences in selected clinical areas on the post-bachelor's level emphasize increased professional competence, additional facility in leadership roles, and guided experience in administrative and instructional techniques and in the use of teaching and community facilities.

Programs of study are designed on an individual basis to meet specific student needs, and are generally planned for two quarters. Selected courses from these programs may apply toward a master's degree. Suggested plans for specific programs will be sent upon request.

A program leading to the certificate in public health nursing is also offered on the post-bachelor's level.

MASTER'S DEGREE PROGRAMS

The three advanced degrees offered in the field of nursing by the University of Washington are:

MASTER OF SCIENCE IN NURSING, an academic degree with a minor in a biological or physical science.

MASTER OF ARTS IN NURSING, 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 a foreign language is not required.

All students enrolled in these programs carry out original research in nursing and present a written thesis. Course work is planned to strengthen the background in the major field, and the student has the opportunity to select from the total University offerings those courses which enrich personal life and professional practice. Dynamics of interpersonal and interprofessional relationships are stressed. 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. Upon conclusion of the program selected, graduates are qualified for positions of administrative, academic, or clinical responsibility, and for leadership in nursing progress.

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 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; A) — **J. Anderson, Staff**
Health teaching and nursing. To be taken concurrently with 383 and 384.

383 Field Practice in Public Health Nursing (5; A) — **J. Anderson, Staff**
Administrative activities and record work. To be taken concurrently with 382 and 384.

384 Field Practice in Public Health Nursing (6; A) — **J. Anderson, Staff**
Family health planning. Use of social agencies and maintenance of community relationships. To be taken concurrently with 382 and 383.

420 Advanced Nursing Practice in Medical Nursing (3) — **Staff**
(Not offered 1953-54.)

421 Advanced Nursing Practice in Surgical Nursing (3) — **Staff**
(Not offered 1953-54.)

422 Advanced Nursing Practice in Pediatric Nursing (3) — **Staff**
(Not offered 1953-54.)

423 Advanced Nursing Practice in Obstetric Nursing (3) — **Staff**
(Not offered 1953-54.)

424 Advanced Nursing Practice in Operating Room (3) — **Staff**
(Not offered 1953-54.)

425 Advanced Nursing Practice in Tuberculosis (3) — **Staff**
(Not offered 1953-54.)

427 Advanced Outpatient Department and Emergency Nursing (3) — **Staff**
(Not offered 1953-54.)

430 Advance Psychiatric Nursing Practice I (3; A,S) — **Morgan**
Practical development of advanced principles of psychiatric nursing, with supervision in solving selected patient care problems. Planned experience in selected psychiatric hospitals with men and women patients in active medical and rehabilitative treatment programs. Seminar-clinics, nursing conferences, and medical staff conferences.

431 Advanced Psychiatric Nursing Practice II (2; A,S) — **Morgan**
Practical development of advanced principles of psychiatric nursing care. Emphasis on psychotherapeutic nursing skills. Supervised practice in developing personal proficiency in team situations. Prerequisites, 430 and permission.

432 Principles of Advanced Nursing (2; W) — **Morgan, Wasson**
Integration of all aspects of nursing in the solution of nursing problems in special clinical fields.

434 Advanced Orthopedic Nursing Practice (3) — **H. Anderson, Staff**
(Not offered 1953-54.)

435 Practice Supervision in Nursing (3; W) — **Heitman, Staff**
One quarter's experience in 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; W) — **Tschudin, Staff**
One quarter's experience in 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; S) — **J. Anderson, Staff**
Experience in public health nursing supervision or special fields. Prerequisite, permission of instructor.

443 Principles and Organization of Public Health Nursing (5; A,W,S, and Summer) **J. Anderson, Leahy**
Analysis of principles of public health nursing in the health movement; 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.

454 Administration in Nursing (2; A) **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; W) **Gray, Olcott, Svelander**
Application of principles of administration to the school of nursing. Includes consideration of overall 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; W) **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, interdepartmental and interpersonal relations. Prerequisite, 418, 454, or permission.

459 Current Literature in Clinical Nursing (2; A,W,S, and Summer) **Staff**
Reading an discussion of current literature in clinical nursing, including a survey of background material. Emphasis is on generally accepted concepts and on those which are developmental or experimental.

462 Teaching of Nursing Arts and Science (3; A) **Hoffman, Tschudin**
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; S) **Morgan**
The development, aims, and objectives of personnel guidance programs. Major areas are developed to enable the nurse to apply principles in the organization, administration, and function of guidance in nursing. Prerequisite, Education 447 or permission.

464 The Role of the Nurse in Mental Hygiene (2-3; W) **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 of instructor.

466 In-Service Education in Nursing (3; S) **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; A) **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; A,S) **Leahy, Powers**
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; W) **Kinney**
Community facilities and public health nursing care of the adult and aging population.

494 Reading in Current Literature in Public Health Nursing (2; A,W) **Staff**
Reading and discussion of current literature in public health nursing with emphasis on newer developments and research. Prerequisites, 443 or permission.

498 Methods of Supervision in Public Health Nursing (3; W) **Leahy**
Principles and methods of supervision in public health nursing and their relationship to administration. Prerequisites, preparation and experience in public health nursing and permission of instructor.

501 Development of Nursing Procedures (2; A) **Wasson**
Nursing procedures as basis for nursing service planning and as teaching tool. Procedures analyzed against selected criteria. Development of procedures according to clinical needs.

505 Seminar in Administration of Schools of Nursing (3; S) **Hoffman, Tschudin**
Discussion, analysis of situations in administration of schools of nursing. Prerequisite, 455 or equivalent.

506 Seminar in Nursing Service Administration (3; S) **Heitman, Smith**
Includes overall 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; S) **Kinney**
Nursing case material analyzed to provide a working concept of the principles of mental hygiene and to clarify the functions of the nurse in this area. Prerequisite, permission of instructor.

510 Curriculum Development in Nursing Education (5; W, Summer) **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; W) **Morgan**
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 nine hours of clinical laboratory experience weekly. Prerequisites, basic course in psychiatric nursing and permission.

512 Advanced Fields in Psychiatric Nursing (3; W) **Morgan**
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 of instructor.

515 Special Fields in Public Health Nursing (3; A) **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 of instructor.

521 Methods of Research in Nursing (2; W) **Patterson**
Methods of research applied to the solution of problems in all fields of nursing.

600 Research (*; A,W,S, and Summer) **Patterson, Staff**

Thesis (*; A,W,S, and Summer) **Patterson, Staff**

REQUIRED COURSES IN ALLIED FIELDS

CHEMISTRY

101 General Chemistry (5) **Staff**
For students in home economics, nursing, and others preparing for 230. Periodic system, reactions, and principles.

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

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. For nursing and dental hygiene students only.

ENGLISH

101, 102, 103, Composition (3,3,3) **Leggett**
Fundamentals of effective exposition; collecting, organizing, and evaluating materials for writing; reading contemporary writings for meaning and form.

HOME ECONOMICS

119 Nutrition and Food Preparation (3) **Rose**
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) **Johnson, Goers**
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) **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.

PATHOLOGY

301 General and Clinical Pathology for Nurses (2) **Ellerbrook, Staff**
The first part of the course is a series of lectures and demonstrations concerned with the practical aspects of clinical pathology as they involve the nurse in her hospital duties. The principles and uses of certain tests are discussed as well as the function of the nurse in

collection of specimens, handling of materials, and liaison with the clinicians and laboratory personnel. A few of the more common tests are demonstrated. In the second part of the course, each class includes a didactic lecture, a laboratory demonstration, and a laboratory discussion. The material presented shows the causes, processes, and effects of a number of important diseases and demonstrates the basic underlying principles involved in the most important diseases. Congenital lesions and inflammatory, circulatory, neoplastic, and degenerative diseases are considered. One or more autopsies are demonstrated to show the relationship of pathology to the practice of medicine. For nursing students; others by permission.

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 for Nurses (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) — **Gunn, Horne, McLellan, Waters**
Health problems of freshman women. Required of all freshmen.

111 through 170; 211 through 270 Physical Education Activities (Women) (1 each) — **Staff**
111, adapted activities; 113-114, basic activities; 115, archery; 118, badminton; 121, bowling (fee, $3); 124, fencing; 126, golf (fee, $3 Autumn and Spring, $1.50 Winter); 128, riding (fee); 131, dry skiing; 132, beginning 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; 160, adapted swimming; 161, beginning swimming; 162, elementary swimming; 215, intermediate archery; 218, intermediate badminton; 221, intermediate bowling (fee, $3); 222, advanced bowling (fee, $3); 224, intermediate fencing; 228, intermediate riding (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; 263, intermediate swimming; 264, advanced swimming; 265, rhythmic swimming; 266, diving; 267, lifesaving; 268, water safety instruction.

PHYSICS

170 Physics for Nurses (5) — **Sanderman**
Selected physical theories and principles and their applications to various nursing situations and to hospital equipment.

PSYCHIATRY

267 Introduction to Mental Hygiene (2) — **Leider, Weiland**
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.

PSYCHOLOGY

100 General Psychology (5) — **McKeever, Staff**
Introduction to the principles of human behavior.

320 Observation of Child Behavior in the Nursery School (2) — **Evans**
Analysis of developmental trends and age level expectancies of the preschool-age child with interpretations of typical behavior manifestations.

PUBLIC HEALTH

402 Communicable Disease Control (3) — **Lazarus**
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) — **Powers**
Study of local, national, and international public health services. Prerequisite, 301, or 402, or permission.

SOCIAL WORK

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.

SOCIOLOGY

110 Survey of Sociology (5) — **Schrag, 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**

1953-1954

Announcements of the College of Pharmacy, issued in 1953 in the present University of Washington COLLEGE OF PHARMACY BULLETIN, will be published in 1954 in combination with those of the Schools of Dentistry, Medicine, and Nursing. The new publication, to be called the HEALTH SCIENCES BULLETIN, will be issued biennially thereafter as one of the school, college, and general bulletins composing the official University bulletin series.

Information concerning the programs in dentistry, medicine, and nursing may be obtained by writing to the University Registrar or to the dean of the appropriate school or college.

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.

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ADMINISTRATION

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FOREST J. GOODRICH, Ph.D.	*Dean of the College of Pharmacy*

COLLEGE OF PHARMACY FACULTY

FISCHER, LOUIS, 1929 (1945)—*Professor of Pharmaceutical Chemistry; Assistant to the Dean*
B.S., 1926, Ph.C., 1926, M.S., 1928, Ph.D., 1933, Washington

GOODRICH, FOREST J., 1914—*Professor of Pharmacognosy; Dean of the College of Pharmacy; State Chemist*
Ph.C., 1913, B.S., 1914, M.S., 1917, Ph.D., 1927, Washington

HALL, NATHAN A., 1952—*Assistant Professor of Pharmaceutical Chemistry*
B.S., 1939, Ph.D., 1948, Washington

KRUPSKI, EDWARD, 1944 (1949)—*Assistant Professor of Pharmaceutical Chemistry*
B.S., 1939, M.S., 1941, Ph.D., 1949, Washington

LANGENHAN, HENRY A., 1947—*Lecturer in Pharmacy*
Ph.C., 1909, Illinois; B.S., 1914, M.S., 1916, Ph.D., 1918, Wisconsin

MCCARTHY, WALTER C., 1949—*Assistant Professor of Pharmaceutical Chemistry*
B.S., 1943, Massachusetts Institute of Technology; Ph.D., 1949, Indiana

PLEIN, ELMER M., 1938 (1951)—*Professor of Pharmacy*
Ph.C., 1929, B.S., 1929, M.S., 1931, Ph.D., 1936, Colorado

RISING, L. WAIT, 1934 (1936)—*Professor of Pharmacy*
Ph.G., 1924, B.S., 1924, Oregon State College; M.S., 1926, Ph.C., 1928, Ph.D., 1929, Washington

YOUNGKEN, HEBER W., JR., 1942 (1952)—*Professor of Pharmacognosy*
A.B., 1935, Bucknell; B.S., 1938, Massachusetts College of Pharmacy; M.S., 1940, Ph.D., 1942, Minnesota

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Naumann, Walter, D.D.S.—Supervisor, Medicinal Plant Garden

Roth, William, M.S.—Assistant State Chemist

CALENDAR

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

AUTUMN QUARTER, 1953

REGISTRATION PERIOD

SEPT. 8-SEPT. 29	Registration for students in residence Spring Quarter, 1953. (*Registration appointments will be issued by the Registrar's Office on presentation of ASUW cards beginning May 25, but no later than September 18.*)
SEPT. 11-SEPT. 29	Registration for former students not in residence Spring Quarter, 1953. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning May 25, but no later than September 18.*)
SEPT. 14-SEPT. 25	Registration for freshmen entering directly from high school and for new transfer students with less than sophomore standing. (*August 28 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. 14-SEPT. 29	Registration for new transfer students with at least full sophomore standing. (*August 28 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—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—WEDNESDAY	Instruction begins (8 a.m.) for all other students
OCT. 2—FRIDAY	President's Convocation (11 a.m.)
OCT. 6—TUESDAY	Last day to add a course
NOV. 11—WEDNESDAY	Armistice and Admission Day holiday
NOV. 26-NOV. 29	Thanksgiving recess
DEC. 18—FRIDAY	Instruction ends (6 p.m.)

WINTER QUARTER, 1954

REGISTRATION PERIOD

NOV. 23-DEC. 11	Registration for students in residence Autumn Quarter, 1953. (*Registration appointments will be issued on presentation of ASUW cards beginning October 23.*)
DEC. 29-DEC. 31	Registration for former students not in residence Autumn Quarter, 1953. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning October 19.*)
DEC. 29-DEC. 31	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. 4—MONDAY	Instruction begins
JAN. 8—FRIDAY	Last day to add a course
FEB. 22—MONDAY	Washington's Birthday and Founder's Day holiday
MAR. 19—FRIDAY	Instruction ends

SPRING QUARTER, 1954

REGISTRATION PERIOD

FEB. 24-MAR. 12	Registration for students in residence Winter Quarter, 1954. (*Registration appointments will be issued on presentation of ASUW cards beginning January 22.*)
MAR. 24-MAR. 26	Registration for former students not in residence Winter Quarter, 1954. (*Registration appointments may be obtained by writing to or applying at the Registrar's Office beginning January 18.*)
MAR. 24-MAR. 26	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. 29—MONDAY	Instruction begins
APR. 2—FRIDAY	Last day to add a course
MAY 21—FRIDAY	Governor's Day
MAY 31—MONDAY	Memorial Day holiday
JUNE 6—SUNDAY	Baccalaureate Sunday
JUNE 11—FRIDAY	Instruction ends
JUNE 12—SATURDAY	Commencement

SUMMER QUARTER, 1954

REGISTRATION PERIOD

JUNE 2-JUNE 4 JUNE 14-JUNE 18	Registration for all students. (*Registration appointments for students in residence Spring Quarter, 1954, and for former students not in residence Spring Quarter, 1954, may be obtained from the Registrar's Office beginning April 19. 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 21—MONDAY	Instruction begins
JUNE 22—TUESDAY	Last day to add a course for the first term
JUNE 25—FRIDAY	Last day to add a course for the full quarter
JULY 5—MONDAY	Independence Day holiday
JULY 21—WEDNESDAY	First term ends
JULY 22—THURSDAY	Second term begins
JULY 23—FRIDAY	Last day to add a course for the second term
AUG. 20—FRIDAY	Instruction ends

GENERAL INFORMATION

GENERAL INFORMATION

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.

The pharmacy laboratories consist of rooms for manufacturing pharmacy, prescription practice, pharmaceutical chemistry, pharmacognosy, drug assaying, and toxicology; a pharmacognosy museum; several research laboratories; a stock room; a model prescription pharmacy; and a drug service room.

MEDICINAL PLANT GARDENS

The medicinal plant gardens of the College comprise approximately five and a half acres of garden area, including a laboratory building that contains five green-

houses, 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 and control of food and drug products submitted by the Office of the Director of the State Department of Agriculture. The laboratory also analyzes alcoholic products for the State Liquor Control Board.

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 of Washington alumni. The College of Pharmacy, however, like most colleges in the University, admits out-of-state students and encourages those with good scholastic records to apply.

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

Correspondence concerning requirements for admission or graduation should be addressed to the Registrar.

Since it has become necessary to admit students to the College of Pharmacy on a selective basis, special pharmacy personal information blanks must be filled out by students who desire admission. These blanks and the official application blanks may be obtained from the University Registrar. A high school diploma may not be substituted for the official blank, which must include all credits and grades and a statement that the student has completed his course with a diploma of graduation. Out-of-state students also receive medical questionnaire forms, which must be filled out by a physician and returned to the Registrar.

For admission in Autumn Quarter, applications should be completed and returned to the Registrar after high school graduation and before July 15. At the same time complete credentials must be sent directly to the Registrar by the high school principal or the registrar of the college previously attended.

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

The last day for new students to submit applications for admission in Autumn Quarter, 1953, is August 28. For admission in other quarters, applications and credentials should be received at least thirty days before the beginning of the quarter.

A personal interview is required by the College of Pharmacy Admissions Committee. Appointments must be made for interviews, which will be held from May 1 through June 5 and from July 13 through July 17, 1953. Students whose credentials and personal information blanks have not been received by the Registrar before July 15, 1953, will be accepted only if vacancies exist in the College.

ADMISSION FROM ACCREDITED HIGH SCHOOLS

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

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

SCHOLARSHIP REQUIREMENT. The College of Pharmacy requirement is a 2.2 grade-point average (equivalent to a C+ on the Washington grading system) in high school studies.

Students whose grade-point average is at least 2.0 may apply for admission to the premajor program of the College of Arts and Sciences. After achieving a 2.2 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 2.0 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.

No student will be accepted for admission who would not be officially recommended to the university of his own state. Students from other states who are recommended to their own state universities on different grading systems will find their scholarship averages adjusted to the Washington four-point system.

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 meet all subject requirements for admission to the University and the College of Pharmacy. 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 Pharmacy are urged to pattern their schedules after the curricula of this 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. Applicants must have a 2.0 grade-point average to be considered for admission to the College of Pharmacy. In general, the University will not accept a student who is in scholastic or disciplinary difficulty at his former school.
2. 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."
3. Complete transcripts and letters of honorable dismissal must be sent directly to the University Registrar by the registrar of the former school.
4. 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.
5. 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).
6. 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.

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 his 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

Foreign students must meet the same general requirements as those from American schools and must demonstrate a satisfactory command of the English language. The official record of Canadian students is the matriculation certificate or university admission certificate of their province. A student who 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 arrange to have an official transcript forwarded also (see 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 per-

mits 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.

ADMISSION TO THE GRADUATE SCHOOL

Properly qualified students who are graduates of the University of Washington or of other accredited colleges may be admitted to the Graduate School in one of the following classifications:

FULL STANDING. The requirement for full standing is a grade-point average during the senior year of 2.75, with the necessary prerequisites for work in the chosen graduate field.

PROVISIONAL STANDING. A grade-point average during the senior year of less than 2.75, but not less than 2.5, will, if the student is admitted, result in provisional standing. No student with a grade-point average for the senior year of less than 2.5 may be admitted to the Graduate School except upon the written recommendation of the department concerned and the approval of the Dean of the Graduate School. Graduation from a nonaccredited college, or undergraduate deficiency in preparation for advanced work, will, if the student is admitted, result in provisional standing. Provisional standing may be changed to full standing upon the successful completion of two quarters of acceptable graduate work, and such work is fully applicable toward advanced degrees. Students may not, however, become candidates for advanced degrees while on provisional standing.

Additional information on general admission requirements will be found in the *Graduate School Bulletin.*

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 of 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 AND ACHIEVEMENT TESTS

New freshman students (including transfer students with less than 45 quarter credits) take achievement tests in English, social science, natural science, and mathematics, and a general aptitude test as part of the registration requirements. Test results do not affect admission but are used in advising and in assigning students to appropriate sections of English, mathematics, and other courses. 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 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.

Veterans who are accepted for entrance to the College of Pharmacy 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 two months before registration. Those who do not have certificates at the time they register must pay all charges; they will receive refunds when authorization from the Veterans Administration is received.

Korean veterans entering under the provisions of Public Law 550 should consult a Veterans Administration regional office at least one month before the beginning of the quarter. 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, because allowances are not made until after monthly attendance is established.

Principal fees for each quarter (Autumn, Winter, and Spring) are listed below.

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 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.

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 (for ASUW members, optional), 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 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 to $5 is charged for late registration; $2 for each change of registration; $5 for a late medical examination; and $1 for a late X ray. The fee for a special examination is $1; for an advanced credit examination, $2 per credit; and for removal of an Incomplete, $2.

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.

ESTIMATE OF YEARLY EXPENSES

Tuition, Incidental, and ASUW Membership Fees

Full-time resident student $165.00

Full-time nonresident student 315.00

Athletic Admission Ticket (optional) 5.00

Accident Insurance (optional) 4.95

Special Fees and Deposits 38.50

Military uniform deposit, breakage ticket, and locker fee.

Books and Supplies 75.00

Board and Room

Double room in campus temporary dormitory, with meals in University Commons and Student Union Cafeteria, or double room and meals in Men's Residence Hall 500-585.00

Room and meals in Women's Residence Halls 525-600.00

Room and meals in student cooperative house 435.00

Room and meals in fraternity or sorority house 600.00

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

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.

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 3.0. 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. Each 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, which is scheduled for completion in the fall of 1953, or in University-operated temporary dormitories, 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, Friends' Center, 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 which helps to guard against infectious diseases and incipient ill health. A dispensary is available to students during class hours, and an infirmary receives bed patients at any hour.

The infirmary 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 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 listed below.

JOHN B. QUICK ENDOWMENT SCHOLARSHIP, $625. 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, and money will be provided for the operation of a professional pharmacy by the College.

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.

SEATTLE GRADUATE CHAPTER KAPPA PSI ALUMNI AWARD, $50. Awarded to a junior or senior Kappa Psi member of good scholastic standing who shows inspirational and leadership qualities in his fraternity and profession.

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 $125 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.

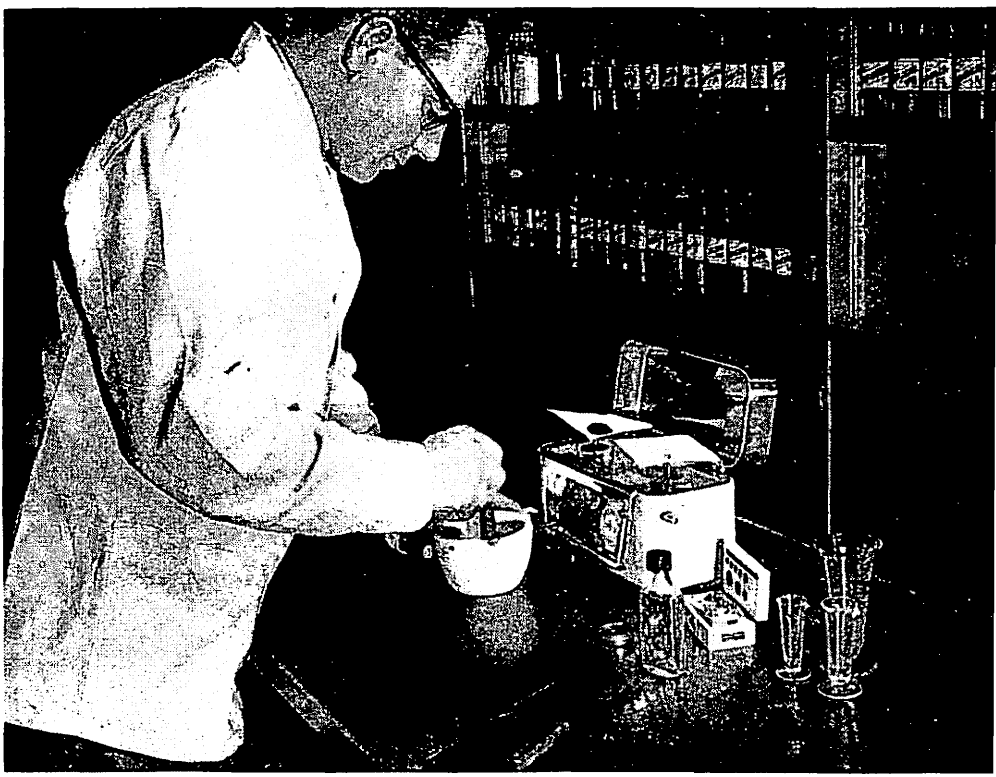
AMERICAN FOUNDATION FOR PHARMACEUTICAL EDUCATION FELLOWSHIPS. Up to $1,500 a year is available upon approval of the foundation to students in the upper 25 per cent of their class who are interested in pharmaceutical education or industry.

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 dermatalogic preparations.

Application forms and further information about undergraduate and graduate awards in pharmacy may be obtained by writing to the Dean of the College of Pharmacy.



THE PROGRAMS IN PHARMACY

THE PROGRAMS IN PHARMACY

THE COLLEGE OF PHARMACY offers courses leading to the degrees of Bachelor of Science in Pharmacy, Master of Science, and Doctor of Philosophy. 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.

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. Every student has the privilege of graduating under the requirements in effect either the year he enters or the year he graduates. An application for a degree will not be accepted until all deficiencies are 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 require-

ment during the first two years they are in residence (that is, registered in regular University classes).

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 at the time of initial entrance.
9. Students who present acceptable credit for military training taken in other colleges. The amount of exemption depends on the amount of previous training.
10. Students who seek exemptions on grounds other than specified above, and whose petitions are first processed by the Office of the Dean of Students.

Those who are exempted under paragraphs 4, 8, and 10 must arrange at the time of initial entrance to substitute equivalent credit in other University courses for the military training requirement.

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.

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.

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 six quarters of residence.

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 Executive Officer of the School of Physical Education and the University Health Officer. Those who are recommended by the Health Officer for exemption, deferral, or registration in special classes of modified physical education activities must report to the School of Physical Education for approval of exemption or deferral or assignment to modified activities courses.
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. No exemption is granted for less than six months of service.

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.

Men students take Physical Education 104 and 105 (Basic Skills and Swimming) in their first and second quarters. In the other four quarters they may choose any four of a variety of gymnastics and sports, or may substitute freshman or varsity sports.

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 required.

HEALTH COURSES. 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.

SCHOLARSHIP AND MINIMUM CREDITS

Students must maintain a grade-point average of at least 2.0 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 2.2 in all courses in pharmacy, pharmaceutical chemistry, pharmacognosy, and pharmacology, and must have an average of 2.0 in each division. To register in any pharmacy course numbered 499, students must have a cumulative average of 2.5.

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 2.0 during any quarter is placed on probation and is allowed one additional quarter to attain a cumulative 2.0. 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 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.

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.

First Year

AUTUMN QUARTER	CREDITS
Pharm. 101 Principles	3
Pharm. 104 Hist. of Pharm.	2
Chem. 108 Gen. Chem.	5
Engl. 101. Composition	3
Phys. Educ. 110 or 175 Health	2
Phys. Educ. Activity	1
ROTC	2- 3
	16-19

WINTER QUARTER	CREDITS
Pharm. 102. Principles	3
Bot. 111. Elementary	5
Chem. 109. Gen. Chem.	5
Engl. 102. Composition	3
Phys. Educ. Activity	1
ROTC	2- 3
	17-20

SPRING QUARTER	CREDITS
Pharm. 103. Principles	3
Chem. 110. Gen. Chem. and Qual. Analysis	5
Engl. 103. Composition	3
Math. 101. Intermediate Algebra	5
Phys. Educ. Activity	1
ROTC	2- 3
	17-20

Second Year

AUTUMN QUARTER	CREDITS
Pharm. 209. Prescriptions	3
Pharmacog. 212. Pharmacog.	3
Chem. 237. Organic Pharmaceutical	5
Physics 101 or 104. General	5
Phys. Educ. Activity	1
ROTC	2- 3
	17-20

WINTER QUARTER	CREDITS
Pharm. 210. Prescriptions	3
Pharmacog. 213. Pharmacog.	3
Chem. 238. Organic Pharmaceutical	5
Physics 102 or 105. General	5
Phys. Educ. Activity	1
ROTC	2- 3
	17-20

SPRING QUARTER	CREDITS
Pharm. 211. Prescriptions	3
Pharmacog. 214. Pharmacog.	3
Chem. 239. Organic Pharmaceutical	5
Zool. 208. Physiol.	5
Phys. Educ. Activity	1
ROTC	2- 3
	17-20

Third Year

AUTUMN QUARTER	CREDITS
Pharmacog. 304. Microscopy	3
Pharm. Chem. 325. Gravimetric	5
Pharmacol. 301. General	3
Econ. 201. Principles	5
	16

WINTER QUARTER	CREDITS
Pharmacog. 411. Hormones	3
Pharm. Chem. 326. Volumetric	5
Pharmacol. 302. General	3
Micro. 301. General Micro.	5
	16

SPRING QUARTER	CREDITS
Phys. Educ. 292. First Aid and Safety	3
Pharmacol. 303. General	3
Electives	10
	16

Fourth Year

AUTUMN QUARTER	CREDITS
Pharm. 313. Advanced	5
Pharm. 382. Modern Pharmaceuticals	5
Pharm. Chem. 340. Organic Med. Prod.	3
Pharm. Chem. 395. Pharm. Chem.	3
	16

WINTER QUARTER	CREDITS
Pharm. 314. Advanced	5
Pharm. 318. Pharm. Acctg.	5
Pharm. Chem. 341. Organic Med. Prod.	2
Pharm. Chem. 396. Pharm. Chem.	3
	15

SPRING QUARTER	CREDITS
Pharm. 315. Advanced	5
Pharmacog. 412. Serums	2
Pharm. Chem. 342. Organic Med. Prod.	2
Pharm. Chem. 497. Pharm. Chem.	5
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*. For graduate study, the approval of both the College of Pharmacy and the Graduate School is necessary.

MASTER OF SCIENCE. Candidates must have the degree of Bachelor of Science in Pharmacy or its equivalent. One year of approved study, with the completion of a research project, leads to the master's degree.

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.

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 and will be arranged with students individually.

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.*

PHARMACY

Courses for Undergraduates

101-102-103 Fundamental Principles and Processes of Pharmacy (3-3-3) **Staff**
Manufacture of U.S.P. and N.F. galenical preparations; development of laboratory technique.

104 History of Pharmacy (2) **Staff**
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 110 or equivalent.

251 Elementary Pharmacy (2) **Staff**
Fundamental theory of dispensing pharmacy and pharmacy arithmetic. For students in the School of Nursing.

261 Pharmacology and Therapeutics for Nurses (3) **Staff**
General study of the action and uses of drugs. For students in the School of Nursing.

313-314-315 Advanced Prescriptions, Professional Pharmacy, Professional Management (5-5-5) **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) **Staff**
Principles of pharmacy; mathematics of pharmacy; pharmacological and therapeutic action of drugs pertaining to dentistry.

382 Modern Pharmaceuticals (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) **Rising, Plein**
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.

604 Research (*, maximum 9 for M.S., 25 for Ph.D.) — **Plein, Rising**

Thesis (*) — **Staff**

PHARMACOGNOSY

Courses for Undergraduates

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 Microscopy (3) — **Staff**
The application of microscopic and microchemical methods in the study of vegetable and animal drug principles. Prerequisites, 214 and Chemistry 239.

405 Advanced Pharmacognosy (3) — **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 insectides 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.

604 Research (*, maximum 9 for M.S., 25 for Ph.D.) — **Goodrich, Youngken**

Thesis (*) — **Staff**

PHARMACEUTICAL CHEMISTRY

Courses for Undergraduates

301 Bibliography Technique (2) — **McCarthy**
Use of scientific literature, preparation of abstracts, and assignments in selected pharmaceutical topics.

325 Gravimetric Quantitative Analysis (5) — **Hall**
Principles of gravimetric analysis, including its application to pharmaceutical compounds. Prerequisite, Chemistry 110.

326 Volumetric Quantitative Analysis (5) — **Hall**
Principles of volumetric analysis, including its application to drugs and preparations of pharmaceutical importance. 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, Hall, 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)
(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)
(Offered every third year; offered 1954-55.)

526, 527, 528 Advanced Organic Medicinal Products Laboratory (2,2,2)
(Offered every third year; offered 1954-55.)

531 Plant Chemistry (3) **Staff**
Alkaloids, including methods of isolation, degradation studies, proof of structure, and synthesis of alkaloids, with emphasis on pharmaceutical compounds.

532 Plant Chemistry (3) **Staff**
Production, isolation, and chemistry of the volatile oils and sterols, with emphasis on pharmaceutical compounds.

533 Plant Chemistry (3) **McCarthy**
Glycosides and related compounds, including methods of isolation, proof of structure, synthesis, and activity, with emphasis on pharmaceutical compounds.

604 Research (*, maximum 9 for M.S., 25 for Ph.D.) **Fischer, Hall, Krupski, McCarthy**
Thesis (*) **Staff**

OTHER COURSES FOR PHARMACY STUDENTS

Botany 111 Elementary Botany (5) **Walker**
Structure, physiology, and reproduction of seed plants.

Chemistry 108, 109, 110 General Chemistry and Qualitative Analysis (5,5,5) **Krupski**
General inorganic chemistry and qualitative analysis. For pharmacy students only.

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 110.

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; alternative economic systems—communism, socialism, fascism, and mixed economies.

English 101, 102, 103 Composition (3,3,3) **Leggett in Charge**
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. Prerequisite, one year of high school algebra.

Microbiology 301 General Microbiology (5) **Klein**
Bacteria and their activities. Prerequisite, 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 104 through 174; 206 through 250 Physical Education Activities (Men) (1 each) **Staff**
104, 105, basic and swimming; 106, 206, handball; 107, 207, basketball; 108, 208, tennis; 109, 209, softball; 110, 210, golf (fee, $3 Autumn and Spring, $1.50 Winter); 111, 211, track; 112, 212, crew (class), prerequisite, swimming; 113, 213, fencing; 114, 214, boxing; 115, 215, tumbling; 117, 217, wrestling; 118, 218, volleyball; 119, 219, swimming; 120, 220, soccer; 121, 221, touch football; 122, 222, badminton; 123, 223, archery; 124, 224, calisthenics; 125, 225, skiing (fee, $15); 126, 226, speedball; 127, 227, bowling (fee, $3); 128, 228, weight lifting; 129, 229, sailing; 133, 233, Pack Forest (for forestry students only); 231, folk and square dancing; 141, freshman, 241, varsity basketball; 142, freshman, 242, varsity crew, prerequisite, swimming; 143, freshman, 243, varsity football; 144, freshman, 244, varsity track; 234, intermediate folk and square dancing; 145, freshman, 245, varsity swimming; 146, freshman, 246, varsity baseball; 147, freshman, 247, varsity tennis; 148, freshman, 248, varsity golf; 149, freshman, 249, varsity skiing; 150, freshman, 250, varsity volleyball; 151, freshman, 251, varsity wrestling; 152, freshman, 252, varsity fencing; 153, freshman, 253, varsity handball.

Physical Education 110 Health Education (Women) (2) **Gunn, Horne, McLellan, Waters**
Health problems of freshman women. Required of all freshmen.

Physical Education 111 through 170; 211 through 270 Physical Education Activities (Women) (1 each) **Staff**
111, adapted activities; 113-114, basic activities; 115, archery; 118, badminton; 121, bowling (fee, $3); 124, fencing; 126, golf (fee, $3 Autumn and Spring, $1.50 Winter); 128, riding (fee); 131, ski conditioning; 132, elementary skiing (fee); 133, stunts and tumbling; 125, 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; 160, adapted swimming; 161, beginning swimming; 162, elementary swimming; 215, intermediate archery; 218, intermediate badminton; 221, intermediate bowling (fee, $3); 222, advanced bowling (fee, $3); 224, intermediate fencing; 228, intermediate riding; 230, intermediate skiing (fee); 231, advanced skiing (fee); 232, ski racing (fee); 235, intermediate tennis; 248, intermediate folk and square dancing; 251, intermediate modern dance; 252, advanced modern dance; 257, intermediate canoeing; 263, intermediate swimming; 264, advanced swimming; 265 rhythmic swimming; 266, diving; 267, lifesaving; 268, water safety instruction.

Physical Education 175 Personal Health (Men) (2) **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.

Physical Education 292 First Aid and Safety (Men and Women) (3)
The student may meet requirements for both standard and advanced American Red Cross first aid certification. Includes safety education in schools.

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, 102.

Physics 104, 105, 106 General Physics (5,5,5) **Staff**
104: mechanics and sound. Prerequisite, plane geometry. 105: electricity and magnetism. Prerequisite, 104. 106: heat and light. Prerequisite 105.

Zoology 208 Elementary Human Physiology (5) **Staff**
Each organ system is described and its functions illustrated in the laboratory. Prerequisite, freshman chemistry.