BULLETIN
UNIVERSITY OF WASHINGTON

GENERAL SERIES NOVEMBER 4, 1939 No. 580

CATALOGUE NUMBER

For 1939-1940 Sessions

SEATTLE, WASHINGTON

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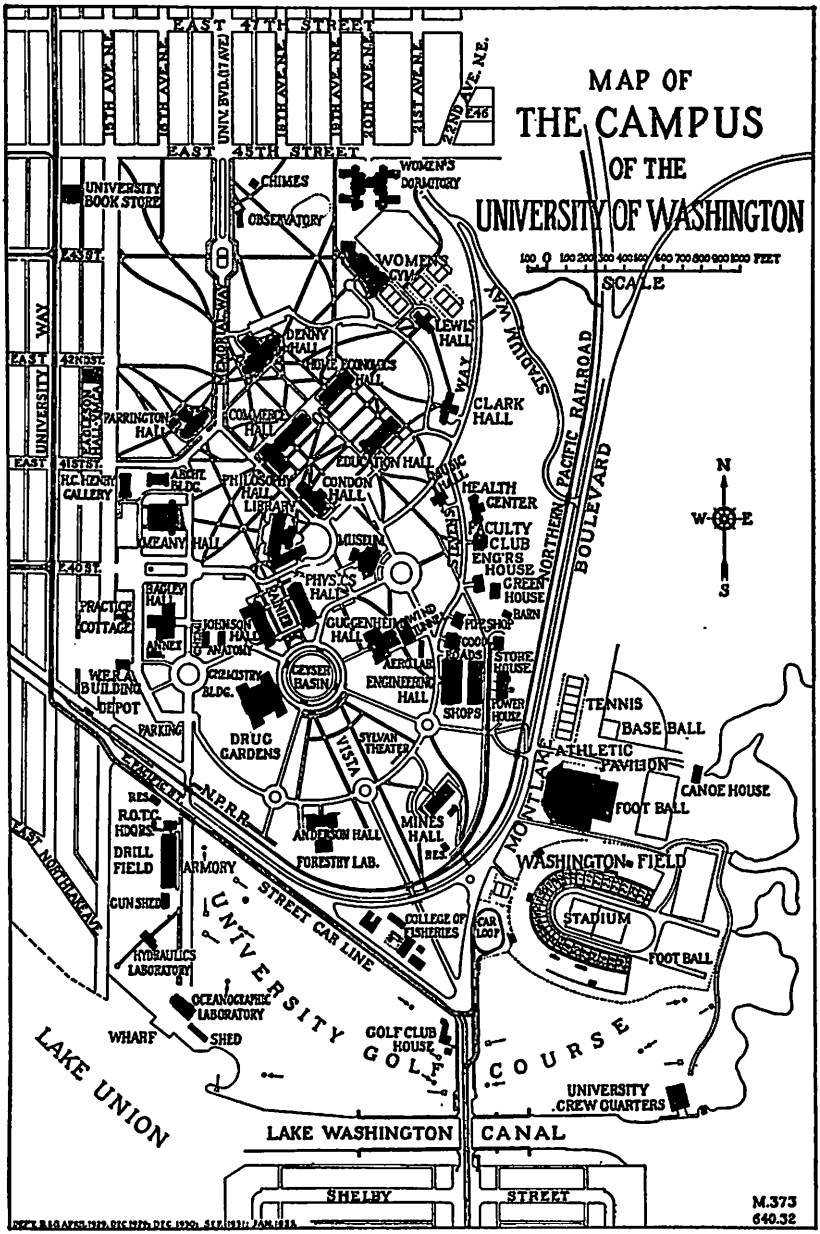

The University campus, comprising 582 acres, lies between Fifteenth Avenue Northeast and Lake Washington, and East Forty-fifth Street and Lake Union. Ravenna, Cowen Park, Broadway, Montlake and Wallingford cars run one block west of the campus. The offices of administration are located in Education Hall and are best reached by leaving the car at East Forty-second Street and University Way.

CATALOGUE NUMBER

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UNIVERSITY OF WASHINGTON

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November, 1939

PUBLISHED BY THE UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON
1939

NOTICE

The University and its various 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 any other regulations affecting the student body. Such regulations shall go into force whenever the proper authorities may determine, and shall apply not only to prospective students, but also to those who may, at such time be matriculated in the University. The University also reserves the right to withdraw courses or change fees.

CONTENTS

CONTENTS—(Continued)

CONTENTS—(Continued)

THE UNIVERSITY CALENDAR FOR 1939-1940

AUTUMN QUARTER

Preferred registration period for students advised in spring..Sept. 5 to Sept. 8, 4:30 p.m.
Fees must be paid in advance of registration.
Registration dates for all students.....September 11 to September 23, 12 m.
Fees must be paid in advance of registration.
Last registration day before beginning of instruction.....Saturday, September 23, 12 m.
Special instruction for new freshmen....Begins 9 a.m., September 22; ends September 23
College Aptitude Test (Room 233 Philosophy Hall).....September 23, 8 a.m.
Instruction begins.....Monday, September 25, 8 a.m.
President's annual address.....Friday, September 29, 11 a.m.
Last day to register with late fee, and to add a course....Saturday, September 30, 12 m.
President's reception to new members of the faculty.....Thursday, October 19, 8 p.m.
Last day to withdraw and receive a "W" without grade.....Saturday, November 4, 12 m.
Armistice and Admission Day (Holiday).....Saturday, November 11
President's reception to parents of new freshmen....Wednesday, November 15, 7:30 p.m.
Thanksgiving recess begins.....Wednesday, November 22, 6 p.m.
Thanksgiving recess ends.....Monday, November 27, 8 a.m.
Instruction ends.....Wednesday, December 13, 6 p.m.

WINTER QUARTER

Preferred registration period for students advised in the spring..Nov. 15 to 21, 4:30 p.m.
Registration dates for all students.....November 23 to December 8, 4:30 p.m.
Section reservations cancelled if tuition is not paid by....Wednesday, Dec. 13, 4:30 p.m.
Registration dates for students not previously registered....Dec. 26 to Dec. 29, 4:30 p.m.
During this period, fees must be paid in advance of registration.
Students may not register December 9 to 25.
Last registration day before the beginning of instruction.....Friday, December 29
Instruction begins.....Tuesday, January 2, 8 a.m.
Last day to register with late fee, and to add a course.....Monday, January 8, 4:30 p.m.
College Aptitude Test (233 Phil. Hall)..Monday, Jan. 8, 12 m. or Tuesday, Jan. 9, 8 a.m.
Last day to withdraw and receive a "W" without grade..Monday, February 12, 4:30 p.m.
Washington's Birthday (Founder's Day and Legal Holiday).....Thursday, February 22
Instruction ends.....Friday, March 15, 6 p.m.

SPRING QUARTER

Preferred registration for students advised in the spring.....February 14 to 20, 4:30 p.m.
Registration dates for all students.....February 23 to March 8, 4:30 p.m.
Section reservations cancelled if tuition is not paid by.....Friday, March 15, 4:30 p.m.
Registration dates for students not previously registered.....March 20 to March 23, 12 m.
During this period, fees must be paid in advance of registration.
Students may not register March 9 to 19.
Last registration day before beginning of instruction.....Saturday, March 23, 12 m.
Instruction begins.....Monday, March 25, 8 a.m.
Last day to register with late fee, and to add a course.....Saturday, March 30, 12 m.
College Aptitude Test (233 Phil. Hall), Monday, Apr. 1, 12 m., or Tuesday, Apr. 2, 8 a.m
Last day to withdraw and receive a "W" without grade.....Saturday, May 4, 12 m.
Honors Convocation.....Wednesday, May 15, 10 a.m.
Governor's Day.....Thursday, May 16
Memorial Day (holiday).....Thursday, May 30
Baccalaureate Sunday.....Sunday, June 2
Instruction ends.....Friday, June 7, 6 p.m.
Class Day and Alumni Day.....Saturday, June 8
Commencement.....Saturday, June 8

SUMMER QUARTER, 1940

For dates, see 1940 Summer Quarter Bulletin.

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Term ends March, 1941

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Term ends March, 1945

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Term ends March, 1944

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Term ends March, 1941

EDWARD P. RYAN.....Spokane
Term ends March, 1940

ALFRED SHEMANSKI.....Seattle
Term ends March, 1944

(VACANCY NOT FILLED).....———

HERBERT T. CONDON, Secretary

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Vice President.....Harold Hartman, '15
Treasurer.....Martin Nelson, '33
Secretary.....R. Bronsdon Harris, '31

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EDWARD HENRY LAUER, Ph.D.....Dean of the College of Arts and Sciences
DAVID THOMSON, B.A., LL.D.....Vice President Emeritus; Vice Dean of the College of Arts and Sciences
HARVEY BRUCE DENSMORE, B.A.....Chairman, General Studies
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VERNON McKENZIE, M.A.....Director of the School of Journalism
EFFIE I. RAITT, M.A.....Director of the School of Home Economics
ELIZABETH S. SOULE, M.A.....Director of the School of Nursing Education
HARLAN THOMAS, B.S.....Director of the School of Architecture
WILLIAM F. THOMPSON, Ph.D.....Acting Director of the School of Fisheries
CARL PAIGE WOOD, M.A.....Director of the School of Music
RUTH WORDEN, B.A.....Director of the School of Librarianship

THE PROFESSIONAL AND GRADUATE SCHOOLS AND COLLEGES

JUDSON F. FALKNOR, B.S., LL.B.....Dean of the School of Law
CHARLES WILLIS JOHNSON, Ph.C., Ph.D.....Dean of the College of Pharmacy
EDGAR ALLEN LOEW, E.E.....Dean of the College of Engineering
CARL EDWARD MAGNUSSON, E.E., Ph.D.....Dean Emeritus of the College of Engineering
FREDERICK MORGAN PADELFORD, Ph.D., LL.D.....Dean of the Graduate School
ERNEST F. WITTE, Ph.D.....Director of the Graduate School of Social Work
FRANCIS FOUNTAIN POWERS, Ph.D.....Acting Dean of the College of Education
FREDERICK ELMER BOLTON, Ph.D.....Dean Emeritus of the College of Education
HOWARD HALL PRESTON, Ph.D.....Dean of the College of Economics and Business
MILNOR ROBERTS, B.A.....Dean of the College of Mines
HUGO WINKENWERDER, M.F.....Dean of the College of Forestry

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MAY DUNN WARD, M.A.....Acting Dean of Women
C. KEN WEIDNER.....Assistant Superintendent of Buildings and Grounds
LOIS J. WENTWORTH, B.A.....Assistant to the Dean of the Graduate School

LIBRARY STAFF

Smith, Charles Wesley, B.A., B.L.S. ..... *Librarian*
Richards, John Stewart, B.A.(L.S.), M.A. ..... *Executive Assistant*
Christoffers, Ethel Margaret, Ph.B., B.S.(L.S.) ..... *Reference Librarian*
Johns, Helen, B.A., Cert.(L.S.) ..... *Circulation Librarian*
Moseley, Maud, B.A., B.S.(L.S.) ..... *Catalogue Librarian*
Putnam, Marguerite Eleanor, B.A., B.S.(L.S.) ..... *Acquisitions Librarian*
Appleton, Marion Brymner, B.A., B.S.(L.S.) ..... *Senior Assistant, Circulation Division*
Arkley, Cecilia, B.A., B.S.(L.S.) ..... *Senior Assistant, Circulation Division*
Asheim, Lester Eugene, B.A., B.A. in Librarianship ..... *Junior Librarian, Reference Division*
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Conklin, Roberta, B.A., B.A. in Librarianship ..... *Junior Librarian, Acquisitions Division*
Cooper, Dorothy Margaret, B.A., B.S.(L.S.) ..... *Junior Librarian, Circulation Division*
d'Urbal, Madeleine M., B.A., B.S.(L.S.) .. *Junior Librarian, Catalogue Division*
Ferguson, Elizabeth Margaret, B.S., B.A. in Librarianship ... *Senior Assistant, Reference Division*
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Heathcote, Lesley Muriel, B.S.(L.S.), M.A. ..... *Senior Librarian, Acquisitions Division*
Jones, Elinor Smiley, B.S., B.A. in Librarianship ..... *Senior Assistant, Reference Division*
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Keefer, Mary, B.A., B.A. in Librarianship ..... *Junior Librarian Catalogue Division*
Kelly, Clara J., B.S., B.S.(L.S.) ..... *Senior Librarian, Reference Division*
Lyons, Hermiena Marion, B.A., B.S.(L.S.) ..... *Senior Assistant, Circulation Division*
McCutchen, Lydia May, B.A., Cert.(L.S.) ..... *Senior Librarian, Acquisitions Division*
Norman, Elizabeth, B.A., B.S.(L.S.) .... *Senior Librarian, Circulation Division*
Shorrock, Bernice F., B.A., B.A. in Librarianship ..... *Junior Librarian, Reference Division*
Sluth, Mildry Helena, B.A. in Librarianship, M.A. ..... *Junior Librarian, Catalogue Division*
Smith, Marjorie D., B.A., B.S.(L.S.) ..... *Junior Librarian, Catalogue Division*
Swain, Olive, B.S., B.S.(L.S.) ..... *Senior Librarian, Catalogue Division*
Todd, Ronald, B.A., B.S.(L.S.) ..... *Senior Librarian, Reference Division*
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Wright, Joyce, B.A., B.A. in Librarianship ..... *Junior Librarian, Reference Division*

Law Library

Beardsley, Arthur Sydney, LL.B., B.S.(L.S.), Ph.D. ..... *Law Librarian*
Gould, Marian, B.A., LL.B., B.A.(L.S.) ..... *Assistant Law Librarian*
Hoard, Mary, B.A., LL.M., B.S.(L.S.) ..... *Catalogue Librarian*

UNITED STATES ARMY RESERVE OFFICERS' TRAINING CORPS

Ottosen, Peter H., B.C.E. — *Colonel, C.A.C.*
Quesenberry, Marshall H., B.S. — *Lieutenant Colonel, Infantry*
Thebaud, Delphin E., B.A. — *Lieutenant Colonel, Infantry*
Pierce, Harry R., B.S. — *Major, C.A.C.*
Parker, Thomas R. — *Major, C.A.C.*
Owens, Charles H., LL.B. — *Major, Infantry*
Wetherby, Loren A., LL.B. — *Major, Infantry*
Ames, George W., B.A. — *Major, C.A.C.*
Spoerry, Gottfried W., B.Pd.,M.Pd. — *Major, Infantry*
Wilson, Auston M., Jr., B.S. — *Captain, C.A.C.*
Hogwood, Joseph L. — *Staff Sergeant*
Collins, Floyd — *Staff Sergeant*
Hoffman, Franklin A. — *Sergeant*
Moore, Maurice L. — *Sergeant*
Chandler, Charles H. — *Sergeant*
Kimbrough, Harold F. — *Sergeant*
Whitchurch, Roy B. — *Sergeant*
Roberts, John O. — *Sergeant*
Gage, Hazen T. — *Sergeant*
Freeman, Charles E. — *Sergeant*
Dragneff, Nicholas W. — *Sergeant*
Harrison, Thomas L. — *Sergeant*

UNITED STATES NAVAL RESERVE OFFICERS' TRAINING CORPS

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Kelly, Laurence E. — *Commander, U.S. Navy*
Iverson, Louis — *Commander (M.C.), U.S. Navy*
Menocal, George L. — *Lieutenant-Commander, U.S. Navy*
Nelson, Frederick J. — *Lieutenant Commander, U.S. Navy*
Birtwell, Daniel T., Jr. — *Lieutenant, U.S. Navy*
Weigle, Claude L. — *Lieutenant, U.S. Navy*
Hamilton, Malcolm — *Chief Gunner's Mate, U.S.N.R.*
Zerbe, Lawrence L. — *Chief Turret Captain, U.S.N.R.*
Harmony, Rufus A. — *Chief Quartermaster, U.S.N.R.*
Campbell, Redden — *Chief Yeoman, U.S.N.R.*

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Davis, Raymond C. — *Comptroller*
Wahlstrom, Nelson, B.B.A. — *Assistant Comptroller*
May, Charles C., B.S.(C.E.) — *Superintendent of Buildings and Grounds*
Weidner, C. Ken — *Assistant Superintendent of Buildings and Grounds*
Hipkoe, Max — *Purchasing Agent*
McDonnell, Pearl, B.A. — *Student Personnel Director of Women's Residence Halls*
Terrell, Margaret E., M.A. — *Business Director of Dining Halls and Residences*
Rolff, Everett I., B.A. — *Director of Publications*
Thomas, Irene E., B.A. — *Manager of the Mimeographing Department*

OFFICE OF THE REGISTRAR

Newhouse, Dean, B.A. — *Registrar*
Toner, Ethelyn, B.A. — *Assistant to the Registrar*
Higgins, Wilma R., B.B.A. — *Secretary*
Willard, Frances, B.A. — *Credentials*
Brugger, Minnie Kraus, B.A. — *Graduation*
Saunders, Virginia, B.A. — *Recording*
Pape, Eva Gene — *Registration*
Burnett, Helen I., B.S. — *Room Assignments*
Tate, Frances E. — *Transcripts*

THE MUSEUM

Gunther, Erna, Ph.D. ..... *Director*
Rathbun, Samuel F. ..... *Honorary Curator of Birds*
Flahaut, Martha Reekie, B.A. ..... *Museum Assistant*
Ray, Verne F., Ph.D. ..... *Instructor in Anthropology*
Ernesti, Roger, B.A. ..... *Docent*

THE HENRY ART GALLERY

Isaacs, Walter F., B.S.(F.A.) ..... *Director*
Savery, Halley ..... *Curator*

ENGINEERING EXPERIMENT STATION

Magnusson, Carl Edward, Ph.D., E.E. ..... *Director*
Kirsten, Frederick Kurt, B.S., E.E. ..... *Aeronautical Engineering*
Benson, Henry Kreitzer, Ph.D. ..... *Chemical Engineering*
Harris, Charles William, B.S., C.E. ..... *Civil Engineering*
Loew, Edgar Allen, B.S., E.E. ..... *Electrical Engineering*
Grondal, Bror Leonard, B.A., M.S.F. ..... *Forest Products*
Goodspeed, George Edward, B.S. (Min.E.) ..... *Geology*
Wilson, George Samuel, B.S. ..... *Mechanical Engineering*
Roberts, Milnor, B.A. ..... *Mining and Metallurgy*
Osborn, Frederick Arthur, Ph.D. ..... *Physics Standards and Tests*

OCEANOGRAPHIC LABORATORIES

Thompson, Thomas Gordon, Ph.D. ..... *Director*

OFFICE OF STATE CHEMIST

Johnson, Charles Willis, Ph.C., Ph.D. ..... *Director*
Ellegood, John A., M.S. ..... *Assistant State Chemist*

NORTHWEST EXPERIMENT STATION, UNITED STATES BUREAU OF MINES

Yancey, Harry Fagan, Ph.D. ..... *Supervising Engineer*
Johnson, Kenneth Alexander, B.S. ..... *Junior Chemist*
Westfield, James, Jr. ..... *Principal Safety Instructor, Mine Safety Station*
Geer, M. R., M.S. in Min.E. ..... *Scientific Aid, Mining Engineering*
Skinner, Kenneth G., M.S. in Cer.E. ..... *Scientific Aid, Ceramics*
Zane, R. E., M.S. in Met.E. ..... *Junior Chemical Engineer*
Keating, Henry T. ..... *Principal Clerk*
Towle, Harriett E. ..... *Clerk*
Lance, William E. ..... *Mill Mechanic*

UNIVERSITY HEALTH SERVICE

Hall, David Connolly, M.D. ..... *University Health Officer*
Neumayr, George H., M.D. ..... *Assistant Health Officer*
Rice, Myrtle Alley, M.D. ..... *Assistant Health Officer*
Lester, Charles N., M.D. ..... *Assistant Health Officer*
Bogue, Willis J., M.D. ..... *Assistant Health Officer*

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1938-1939

Administrative

Admissions.....Dean of the College or School concerned, and Registrar
Board of Deans.....Lauer, Condon, Falknor, Johnson, Loew, Padelford, Powers, Preston, Roberts, Thomson, Ward, Winkenwerder, and Registrar
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Traffic Judge.....Richards

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Rules.....Chairman, O'Bryan; Goodrich, Lawson, Thomson, Tyler; Registrar, ex-officio
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Student Affairs and Student Welfare.....Chairman, Butterbaugh; Bash, Condon, Lucy W. Davidson, E. M. Draper, Dresslar, McMinn
Student Campus Organizations.....Chairman, Farwell; Bash, Blankenship, Butterbaugh, M. Fish, A. L. Miller, Read, Seeman, Zillman
Student Discipline.....Chairman, ———; Sholley, Soule, Williams, W. R. Wilson, ———

*The President is ex-officio member of all University boards and committees.

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Graduate Publications.....Padelford, Carpenter, Goodspeed, Griffith, Gundlach, Gunther, Lucas, Rigg, C. W. Smith; Director of Publications, ex-officio

University Research..Magnusson, Carpenter, Lauer, Padelford, Preston, Weaver

UNIVERSITY SENATE FOR 1939-1940

A. Humanities

I. Letters

For three-year term:

1. Read (Classics)
2. Benson (Journalism)
3. Garcia-Prada (Rom. Lang.)
4. Zillman (English)

For two-year term:

1. Griffith (English)
2. Harrison (English)
3. Densmore (Classics)
4. Stirling (English)

For one-year term:

1. Benham (English)
2. Cornu (English)
3. Umphrey (Romanic Languages)
4. McKenzie (Journalism)

II. Art

For three-year term:

1. Munro (Music)
2. Benson (Art)

For two-year term:

1. Isaacs (Art)
2. Dickey (Music)*

For one-year term:

1. Wood (Music)
2. Thomas (Architecture)

B. Science

III. General

For three-year term:

1. Osborn (Physics)
2. Henry (Bacteriology)

For two-year term:

1. Tartar (Chemistry)
2. Goodspeed (Geology)

For one-year term:

1. Winger (Mathematics)
2. Rigg (Botany)

IV. Technology

For three-year term:

1. Eastman (Elec. Engineering)
2. Smith (Civil Engineering)
3. Barr (Naval Science)
4. Kirsten (Aero. Engineering)

For two-year term:

1. Eastwood (A.&M. Eng.)
2. Van Horn (Civil Engin.)
3. Magnusson (Elec. Engin.)
4. Wilcox (General Engin.)

For one-year term:

1. Daniels (Mines)
2. Beuschlein (Chemical Engineering)
3. Goodrich (Pharmacy)
4. Grondal (Forestry)

*Died July, 1939.

C. Social Studies

V. General

For three-year term:

1. Mander (Political Science)
2. Rader (Philosophy)

For two-year term:

1. Guthrie (Psychology)
2. Quainton (History)

For one-year term:

1. Steiner (Sociology)
2. Smith (Psychology)

VI. Applied

For three-year term:

1. Rowntree (Home Economics)
2. Corbally (Education)
3. Denny (Home Economics)
4. Hall (Econ. & Business)

For two-year term:

1. Burd (Econ. & Business)
2. Ayer (Law)
3. Soule (Nursing Educ.)
4. Raitt (Home Economics)

For one-year term:

1. Dakan (Econ. & Business)
2. Cox (Econ. & Business)
3. Cole (Education)
4. Hutchinson (P.E., Women)

ALPHABETICAL LIST OF THE UNIVERSITY FACULTY

1939-1940

Lee Paul Sieg, 1934.....President of the University
Ph.D., Iowa, 1910; LL.D., Pittsburgh, 1934

Adams, Henrietta M., 1929 (1937)..Associate Professor of Nursing Education; Director of Nursing Education, Hospital Divisions
R.N., Seattle General Hospital; M.S., Washington, 1934

Alden, Charles, 1928.....Lecturer in Architecture
B.S., Massachusetts Institute of Technology, 1890

Alderman, Bissell, 1939.....Instructor in Architecture
M.A., Massachusetts Institute of Technology, 1937

Alfonso, Marie, 1920 (1936).....Associate Professor of Librarianship
B.A., B.S.(L.S.), Washington, 1921

Ames, George W., Captain, C.A.C., 1937.....Assistant Professor of Military Science and Tactics
B.A., Washington, 1902; Graduate, Coast Artillery School, 1929

Anderson, Sylvia Finlay, 1920.....Associate in English
M.A., Washington, 1923

Anderson, Victoria, 1937.....Associate in English
M.A., Washington, 1917

Andrews, Siri, 1929 (1937).....Assistant Professor of Librarianship
B.S.(L.S.), Washington, 1930

Ankele, Felice Charlotte, 1926 (1936).....Instructor in Germanic Languages
Ph.D., Washington, 1936

Arestad, Sverre, 1937.....Associate in Scandinavian Languages and Literature
Ph.D., Washington, 1938

Auernheimer, August A., 1937.....Assistant Professor of Physical Education for Men
M.A., Columbia, 1932

Ayer, Leslie James, 1916.....Professor of Law
J.D., Chicago, 1906

Bailey, Alan James, 1939.....Assistant Professor and Acting Director of Lignin and Cellulose Research
Ph.D., Washington, 1936

Ballantine, John Perry, 1926 (1937).....Professor of Mathematics
Ph.D., Chicago, 1923

Ballard, Arthur C., 1929.....Research Associate in Anthropology
B.A., Washington, 1899

Barksdale, Julian D., 1936.....Assistant Professor of Geology
Ph.D., Yale, 1936

A single date following a name indicates the beginning of service in the University. When two dates are given, the first indicates the beginning of service in the University; the second, in parentheses, is the date of appointment to present rank. Dates of appointment of deans are not shown.

Barnaby, Joseph Thomas, 1934.....Lecturer in Fisheries
M.S., Stanford, 1932

Barr, Eric L., Commander, U.S.N., 1936 (1938)....Professor of Naval Science and Tactics; Executive Officer, Department of Naval Science and Tactics
Graduate, U.S. Naval Academy, 1911; Ph.D., Washington, 1938

Bartels, Robert D. W., 1938.....Acting Instructor in Marketing
M.B.A., Northwestern, 1935

Bash, Mary Iola, 1925.....Associate Dean of Women
B.A., Washington, 1914

Baugh, Vera, 1938.....Instructor in Nursing Education
R.N., Seattle General Hospital, 1929; B.S., Washington, 1936

Beal, Maude L., 1926 (1933).....Associate in English
M.A., Washington, 1929

Beardsley, Arthur Sydney, 1922 (1937).....Law Librarian; Professor of Law
LL.B., Washington, 1918; Ph.D., Washington, 1928

Beck, Eleanor N., 1932.....Associate in Music
Pupil of Marcel Grandjany, Harpist, American School at Fontainebleau, Paris

Bell, F. Heward, 1931.....Lecturer in Fisheries
B.A., British Columbia, 1924

Belshaw, Roland, 1930 (1937).....Associate Professor of Physical Education for Men
M.A., Columbia, 1930

Benham, Allen Rogers, 1905 (1916).....Professor of English
Ph.D., Yale, 1905

Benson, Edna, 1927 (1936).....Associate Professor of Design
M.A., Columbia, 1923

Benson, Henry Kreitzer, 1904 (1912).....Professor of Chemical Engineering
Executive Officer, Departments of Chemistry and Chemical Engineering
Ph.D., Columbia, 1907

Benson, Merritt E., 1931 (1937).....Associate Professor of Journalism
LL.B., Minnesota, 1930

Berens, Sylvester N., 1936.....Lecturer in Nursing Education
M.D., Creighton, 1928

Berry, James Alexander, 1938.....Lecturer in Bacteriology
M.S., Michigan State, 1917

Beuschlein, Warren Lord, 1922 (1937).....Professor of Chemical Engineering
Ch.E., Washington, 1930

Bird, Winfred W., 1928 (1930).....Instructor in English
Ph.D., Iowa, 1938

Birnbaum, William Zygmunt, 1939..Acting Assistant Professor of Mathematics
Ph.D., University of Lwow

Birtwell, Daniel Thomas, Lieutenant, U.S.N., 1939.....Assistant Professor of Naval Science and Tactics
B.S., U.S. Naval Academy, 1926

Bixby, Mary, 1937.....Associate in English
M.A., Washington, 1937

Blankenship, Russell, 1932 (1937).....Associate Professor of English
Ph.D., Washington, 1935

Bliss, Jeannette, 1922 (1937).....Associate Professor of Home Economics
M.A., Columbia, 1917

Boehmer, Herbert, 1937.....Instructor in General Engineering
M.S., Washington, 1934; Dipl. Ing. Braunschweig, 1928, Germany

Bolton, Frederick Elmer, 1912.....Professor of Education; Dean Emeritus of the College of Education
Ph.D., Clark, 1898

Bostwick, Irene Neilson, 1930.....Instructor in Music
B.M., Washington, 1922

Botzer, William H., 1938.....Assistant Dean of Men
LL.B., Washington, 1935

Bowles, Albert J., 1935.....Lecturer in Nursing Education
M.D., Oregon, 1923

Bradshaw, Harriet, 1938.....Instructor in Nursing Education
B.S., Washington, 1933; B.N., Yale, 1933

Brandt, Edna J., 1939.....Instructor in Nursing Education
R.N., Seattle General Hospital, 1931; B.S., Washington, 1939

Brakel, Henry Louis, 1905 (1936).....Professor of Engineering Physics; Executive Officer of the Department of Physics
Ph.D., Cornell, 1912

Braun, Katherine, 1937.....Supervisor of Field Work, Graduate School of Social Work
M.A., California, 1931; M.A. in Social Service Administration, Chicago, 1936

Brokaw, Bettie, 1939.....Instructor in Pharmacy
B.S., Washington, 1936

Brookbank, Earl Bruce, 1938.....Lecturer in Nursing Education
M.D., Oregon, 1912

Brown, Lois Eula, 1923 (1925).....Associate in English
M.A., Washington, 1925

Brown, Robert Quixote, 1919 (1932).....Assistant Professor of General Engineering
B.S.(E.E.), Washington, 1916

Brown, Stephen Darden, 1930 (1937).....Associate Professor of Business Law
B.A., Washington, 1933; LL.M., Stanford, 1938

Bruenner, Bertram F., 1935.....Lecturer in Nursing Education
M.D., Minnesota, 1929

Burd, Henry Alfred, 1924 (1927).....Professor of Marketing; Director of the Summer Quarter
Ph.D., Illinois, 1915

Burgess, Janna P., 1937.....Associate in English
M.A., Washington, 1928

Burnett, Bonnie May Heath, 1937.....Associate in English
B.A., Washington, 1935

Burns, Harry, 1934 (1936).....Instructor in English
Ph.D., Washington, 1935

Butterbaugh, Grant I., 1922 (1937).....Associate Professor of Accounting
M.B.A., Washington, 1923

Butterworth, Joseph, 1929.....Associate in English
M.A., Brown, 1921

Byers, Jean, 1939.....Instructor in Nursing Education
R.N., Evanston Hospital, 1930; M.A., Columbia, 1939

Cady, George H., 1938.....Assistant Professor of Chemistry
Ph.D., California, 1931

Canfield, Iris, 1931.....Instructor in Music
B.M., Washington, 1922

Carpenter, Allen Fuller, 1909 (1926).....Professor of Mathematics; Executive Officer of the Department of Mathematics
Ph.D., Chicago, 1915; D.Sc., Hastings College, 1937

Carrell, James Aubrey, 1939.....Assistant Professor of English
Ph.D., Northwestern, 1936

Chapman, Wilbert M., 1938.....Lecturer in Fisheries
Ph.D., Washington, 1937

Chertkov, Morris, 1934 (1937).....Assistant Professor of Business Law
J.D., Chicago, 1933

Chessex, Jean Charles William, 1928 (1934).....Associate Professor of Romanic Languages
M.A., Lausanne (Switzerland), 1925

Chittenden, Hiram Martin, 1923 (1936).....Assistant Professor of Civil Engineering
C.E., Washington, 1935

Christian, Byron Hunter, 1926 (1936).....Associate Professor of Journalism
M.A., Washington, 1929

Church, Phil E., 1935 (1937).Assistant Professor of Geography & Meteorology
Ph.D., Clark, 1937

Clark, Earl F., 1935.....Associate in Physical Education for Men

Clein, Norman W., 1935.....Lecturer in Nursing Education
M.D., Northwestern, 1925

Cochran, Lyall Baker, 1934 (1937).....Assistant Professor of Electrical Engineering
E.E., Washington, 1936

Coe, Herbert E., 1935.....Lecturer in Nursing Education
M.D., Michigan, 1906

Cohen, Joseph, 1932 (1936).....Instructor in Sociology
Ph.D., Michigan, 1935

Cole, Kenneth C., 1924 (1936).....Professor of Political Science
Ph.D., Harvard, 1930

Cole, Thomas Raymond, 1930.....Professor of Education
Ph.B., DePauw; LL.D., Upper Iowa, 1931

Collier, Ira Leonard, 1919.....Assistant Professor of Civil Engineering
C.E., Washington, 1917

Compton, Arthur H., 1940*.....Walker-Ames Professor of Physics

Condon, Herbert T., 1903.....Dean of Men
B.A., Oregon; LL.B., Michigan, 1894

Cook, Thomas I., 1939.....Associate Professor of Political Science
Ph.D., Columbia, 1938

Cooper, Lemuel Browning, 1939.....Instructor in General Engineering
B.S.(M.E.), Washington, 1931

Conway, John Ashby, 1927 (1930).....Assistant Professor of English
B.A., Carnegie Institute of Technology, 1927

Coombs, Howard A., 1935 (1937).....Assistant Professor of Geology
Ph.D., Washington, 1935

Corbally, John E., 1927 (1936).....Associate Professor of Education
Ph.D., Washington, 1929

Corey, Clarence Raymond, 1907 (1929).....Associate Professor of Mining Engineering and Metallurgy
E.M., Montana State School of Mines; M.A., Columbia, 1915

Cornu, Donald, 1928 (1932).....Assistant Professor of English
Ph.D., Washington, 1928

Cory, Herbert Ellsworth, 1923.....Professor of Liberal Arts; Executive Officer of the Department of Liberal Arts
Ph.D., Harvard, 1910

Costigan, Giovanni, 1934.....Assistant Professor of History
Ph.D., Wisconsin, 1930

Cox, Edward Godfrey, 1911 (1926).....Professor of English
Ph.D., Cornell, 1906

Cox, William Edward, 1919 (1923)....Professor of Economics and Accounting
M.A., Texas, 1910

Craig, Joseph A., 1931.....Lecturer in Fisheries
M.A., Stanford, 1931

Crain, Richard W., 1936.....Instructor in Mechanical Engineering
B.S.(M.E.), Colorado State College, 1930

Cramlet, Clyde Myron, 1920 (1934).....Associate Professor of Mathematics
Ph.D., Washington, 1926

*On Spring, 1940, only.

Cross, Harriet, 1939.....Instructor in Nursing Education
R.N., Columbia Hospital, Wisconsin, 1921; B.S., Minnesota, 1925

Crounse, Dorothy, 1937.....Assistant Professor of Social Work; Supervisor of Field Work, Graduate School of Social Work
M.S.S., Smith College of Social Work, 1933

Curtis, Elizabeth, 1930.....Associate in Art
M.F.A., Washington, 1933

Dahlgren, Edwin Harold, 1934.....Lecturer in Fisheries
B.S., Washington, 1931

Dakan, Carl Spencer, 1919 (1923).....Professor of Corporation Finance and Investments
B.S., Missouri, 1909

Daniels, Joseph, 1911 (1923)..Professor of Mining Engineering and Metallurgy
M.S., Lehigh, 1908; E.M., Lehigh, 1933

David, Jean Ferdinand, 1936.....Assistant Professor of Romanic Languages
Ph.D., Johns Hopkins, 1936

Davidson, Frederick A., 1931.....Lecturer in Fisheries
Ph.D., Chicago, 1927

Davidson, Lucy W., 1924 (1930).....Assistant Professor of Physical Education for Women
M.A., Columbia, 1923

Davis, Erma Nelson, 1928.....Associate in History
M.A., Utah, 1924

Dehn, William Maurice, 1907 (1919).....Professor of Organic Chemistry
Ph.D., Illinois, 1903

Demmery, Joseph, 1928 (1934).....Professor of Business Fluctuations and Real Estate
M.A., Chicago, 1924

Denny, Grace Goldena, 1913 (1934).....Professor of Home Economics
M.A., Columbia, 1919

Densmore, Harvey Bruce, 1907 (1933).....Professor of Greek; Chairman, General Studies
B.A., Oxford, 1907

deVries, Mary Aid, 1921 (1939).....Associate Professor of Physical Education for Women
B.A., Wisconsin, 1920

Diehl, Helmut Charles, 1938.....Lecturer in Chemistry
B.S., Michigan State, 1918

Dille, James M., 1936.....Associate Professor of Pharmacology
Ph.D., Georgetown, 1935

Dobie, Edith, 1925 (1937).....Associate Professor of History
Ph.D., Stanford, 1925

Doltz, Henrietta M., 1938.....Instructor in Nursing Education
R.N., Presbyterian, New York, 1931; M.N., Washington, 1938

Donaldson, Lauren R., 1935 (1939).....Assistant Professor of Fisheries
Ph.D., Washington, 1939

Dorman, Helen Thompson, 1933 (1936).....Instructor in Social Work and Supervisor of Field Work, Graduate School of Social Work
B.A., Washington, 1928

Dorrance, Margaret, 1936.....Instructor in Home Economics
M.S., Chicago, 1935

Douglass, Clarence Eader, 1939.....Instructor in General Engineering
B.S. in C.E., Washington State, 1927

Draper, Edgar Marion, 1925 (1936).....Professor of Education
Ph.D., Washington, 1927

Draper, Oscar Eldridge, 1920 (1923).....Lecturer in Accounting
M.Acct., Vories Business College, 1902

Dresslar, Martha Estella, 1918 (1937).Associate Professor of Home Economics
M.S., Columbia, 1918

Dunlop, Harry A., 1931.....Lecturer in Fisheries
M.A., British Columbia, 1922

Dutton, Harry H., 1938.....Lecturer in Nursing Education
M.D., Vermont, 1914

Dvorak, August, 1922 (1937).....Professor of Education
Ph.D., Minnesota, 1923

Earle, Frances M., 1931.....Assistant Professor of Geography
Ph.D., George Washington, 1929

Eastman, Austin Vitruvius, 1924 (1937).....Associate Professor of Electrical Engineering
M.S., Washington, 1929

Eastman, Fred S., 1927 (1939).....Associate Professor of Aeronautical Engineering
M.S., Massachusetts Institute of Technology, 1929

Eastwood, Everett Owen, 1905.....Professor of Mechanical Engineering; Executive Officer of the Departments of Aeronautical and Mechanical Engineering; Director of Guggenheim Laboratories
C.E., M.A., Virginia, 1899

Eby, Edwin Harold, 1926 (1930).....Assistant Professor of English
Ph.D., Washington, 1927

Eckelman, Ernest Otto, 1911 (1934).....Professor of Germanic Languages
Ph.D., Heidelberg (Germany), 1906

Eckmann, Ray L., 1936.....Director of Student Activities; Administrative Director of the School of Physical Education
B.B.A., Washington, 1922

Eckrem, Dagrun, 1936.....Associate in Art
B.F.A. Washington, 1926

Edmonds, Robert Harold Gray, 1920 (1933).....Associate Professor of Mechanical Engineering
M.E., Washington, 1931

Edmundson, Clarence, 1920.....Associate in Physical Education for Men
B.S., Idaho, 1910

Egtvet, Percy, 1939.....Associate in Physical Education for Men

Eichinger, Walter A., 1936, (1939).....Instructor in Music
M.M., Northwestern, 1933

Emery, Donald William, 1934.....Associate in English
M.A., Iowa, 1928

Engel, Ernest Dirck, 1934.....Instructor in General Engineering
B.S.(E.E.), Washington, 1930

Esper, Erwin Allen, 1927 (1934).....Professor of Psychology
Ph.D., Ohio State, 1923

Ethel, Garland, 1927.....Instructor in English
Ph.D., Washington, 1928

Falknor, Judson F., 1936.....Professor of Law; Dean of the School of Law
LL.B., Washington, 1919

Farquharson, Frederick Burt, 1925 (1937).....Associate Professor of Civil Engineering
M.E., Washington, 1927

Farwell, Raymond Forrest, 1921 (1936)..Associate Professor of Transportation
M.A., Washington, 1926

Ferrall, Michael, 1938.....Associate in English
B.D.A., Goodman Theatre, Art Institute, Chicago, 1935

Fischer, Louis, 1935 (1937)...Assistant Professor of Pharmaceutical Chemistry
Ph.D., Washington, 1933

Fish, Frederic F., 1934.....Lecturer in Fisheries
Sc.D., Johns Hopkins, 1931

Fish, Marion, 1937.....Associate Professor of Home Economics
Ph.D., Cornell, 1932

Foote, Hope Lucile, 1923 (1937).....Associate Professor of Interior Design
M.A., Columbia, 1923

Forman, Marie L., 1935.....Instructor in Nursing Education
R.N., Methodist State Hospital, South Dakota; B.S., Washington, 1935

Forrest, Jack, 1937.....Associate in English
LL.B., Washington, 1928

Foster, Frederic John, 1935.....Lecturer in Fisheries

Foster, Henry Melville, 1927 (1936).....Professor of Physical Education for Men; Executive Officer, Department of Physical Education for Men
M.A., Columbia, 1926

Franzke, Albert L., 1936 (1939).....Associate Professor of English
M.A., Lawrence, 1933

Frein, Pierre Joseph, 1903.....Professor of Romanic Languages
Ph.D., Johns Hopkins, 1899

Friedman, Harry J., 1935.....Lecturer in Nursing Education
M.D., Jefferson, 1929

Frisbee, Margaretta, 1930.....Supervisor of Field Work
M.A., Iowa, 1931

Frye, Theodore Christian, 1903.....Professor of Botany; Executive Officer of the Department of Botany
Ph.D., Chicago, 1902

Fuller, Richard E., 1930 (1933)....Associate Professor of Geology in Research
Ph.D., Washington, 1930

Garcia-Prada, Carlos, 1925 (1939).....Professor of Spanish
Ph.D., Bogota (South America), 1929

Garfield, Viola, 1937.....Associate in Anthropology
Ph.D., Columbia, 1939

Gates, Charles M., 1936 (1939).....Assistant Professor of History
Ph.D., Minnesota, 1934

Gavett, George Irving, 1907 (1937).....Professor of Mathematics
B.S.(C.E.), Michigan, 1893

George, Frances Lucille 1939.....Instructor in Nursing Education
R.N., Ohio State School of Nursing, 1935; M.A., Ohio State, 1937

Geyer, Bradford Pearson, 1939.....Associate in Chemistry
B.S., Northwestern, 1935

Gillette, Alletta Maria, 1912.....Instructor in English
M.A., Washington, 1911

Goggio, Charles, 1920 (1936).....Professor of Romanic Languages
Ph.D., Wisconsin, 1919

Goodrich, Forest Jackson, 1914 (1934).....Professor of Pharmacognosy
Ph.D., Washington, 1926

Goodsell, Julia, 1928 (1937).....Instructor in Physiology
Ph.D., Washington, 1937

Goodspeed, George Edward, 1919 (1934).....Professor of Geology; Executive Officer of the Department of Geology
B.S.(Min.E.), Massachusetts Institute of Technology, 1910

Goss, H. Leroy, 1935.....Lecturer in Nursing Education
M.D., Minnesota, 1917

Gould, James Edward, 1920.....Professor of Maritime Commerce
M.A., Harvard, 1907

Gowen, Herbert Henry, 1909 (1914).....Professor of Oriental Studies
St. Augustine's College (Canterbury); D.D., Whitman College, 1912

Gowen, Lancelot, 1924 (1937).....Professor of Architecture
M.A.(Arch.), California, 1921

Graf, A. O., 1936.....Associate in Music
Theoretical work with H. J. Williams, London, England; Enrico Tramonti, Chicago; Graduate, Holy Names Academy

Graves, Dorsett, 1922.....Associate in Physical Education for Men

*Gray, Donald, 1935 (1939).....Assistant Professor of Anatomy
Ph.D., Washington, 1937

Gray, Robert Simpson, 1939.....Associate in English
M.A., Washington, 1938

Greer, Helen Josephine, 1939.....Acting Instructor in Nursing Education
R.N., Stanford Hospital, 1928; M.S., Columbia, 1938

Gregory, Homer Ewart, 1919 (1933).....Professor of Management and Accounting
M.A., Chicago, 1917

Griffith, Dudley David, 1924 (1927).....Professor of English; Executive Officer of the Department of English
Ph.D., Chicago, 1916

Grondal, Bror Leonard, 1913 (1929).....Professor of Forestry
B.A., Bethany; M.S.F., Washington, 1913

Groth, Miriam Terry, 1930 (1937).....Assistant Professor of Music
B.M., Washington, 1926

Guberlet, John Earl, 1923 (1930).....Professor of Zoology
Ph.D., Illinois, 1914

Gundlach, Ralph, 1927 (1937).....Associate Professor of Psychology
Ph.D., Illinois, 1927

Gunther, Erna, 1923 (1937).....Associate Professor of Anthropology; Director of the Museum; Executive Officer, Department of Anthropology
Ph.D., Columbia, 1928

Guthrie, Edwin Ray, 1914 (1928).....Professor of Psychology
Ph.D., Pennsylvania, 1912

Guthrie, Elton, 1929 (1932).....Instructor in Sociology
Ph.D., Washington, 1933

Haendler, Helmut Max, 1939.....Associate in Chemistry
B.S., Northwestern, 1935

Hall, Amy Violet, 1923 (1931).....Instructor in English
M.A., Washington, 1923

Hall, David Connolly, 1908....Professor of Hygiene; University Health Officer
Sc.M., Chicago; M.D., Rush Medical College, 1907

Hall, Helen, 1931 (1934).....Assistant Professor of Music
B.M., Washington, 1925

Hall, James Kendall, 1930 (1934).....Professor of Public Utilities and Public Finance
Ph.D., Stanford, 1929

Hall, John F., 1931.....Lecturer in Social Work
M.A., Yale, 1915

Haller, Mary E., 1931 (1935).....Instructor in Mathematics
Ph.D., Washington, 1934

*On leave, 1939-1940.

Halvorsen, Clifford, 1935.....Lecturer in Nursing Education
M.D., Colorado, 1932

Hamack, Frank Hartmond, 1921.....Associate in Accounting
LL.B., Georgetown, 1916

Hamilton, Rachel Elizabeth, 1920 (1937).....Instructor in French
M.A., Washington, 1924

Hanley, John H., 1939.....Assistant Professor of Forestry and Botany; Acting Director of the Arboretum
Ph.D., Illinois, 1937

Harrington, Donal Francis, 1938.....Instructor in English
M.A., Columbia, 1933

Harris, Charles William, 1906 (1924).....Professor of Hydraulic Engineering
C.E., Cornell, 1905

Harrison, Joseph Barlow, 1913 (1933).....Professor of English
B.A., Oxford, 1913

Harrison, Roger W., 1933.....Lecturer in Fisheries
M.S., George Washington, 1928

Harsch, Alfred E., 1930 (1938).....Associate Professor of Law
LL.B., Washington, 1928

Harvey, Cleda, 1938.....Instructor in Nursing Education
B.S., Washington, 1935

Hatch, Melville H., 1927 (1934).....Associate Professor of Zoology
Ph.D., Michigan, 1925

Hauan, Merlin James, 1928.....Lecturer in Civil Engineering
B.S.(E.E.), Washington, 1925

Hawthorn, George Edward, 1924 (1937).....Associate Professor of Civil Engineering
C.E., Washington, 1926

Hayner, Norman Sylvester, 1925 (1937).....Professor of Sociology
Ph.D., Chicago, 1923

Heffner, Ray, 1938 (1939).....Professor of English
Ph.D., Johns Hopkins, 1928

Helmlingé, Charles Louis, 1911 (1929).....Associate Professor of Romanic Languages
M.A., Washington, 1915

Henderson, Joseph E., 1929 (1936).....Associate Professor of Physics
Ph.D., Yale, 1928

Hennes, Robert G., 1934 (1937).....Assistant Professor of Civil Engineering
M.S.(C.E.), Massachusetts Institute of Technology, 1928

Henry, Bernard S., 1931 (1937).....Associate Professor of Bacteriology; Executive Officer of the Department of Bacteriology
Ph.D., California, 1931

Henry, Dora Priaulx, 1932...Research Associate in Oceanography and Zoology
Ph.D., California, 1931

Hermans, Thomas G., 1926 (1929).....Associate in Psychology
M.A., Washington, 1927

Herrman, Arthur Philip, 1921 (1937).....Professor of Architecture
B.A.(Arch.), Carnegie Institute of Technology, 1920

Hicken, James, 1936.....Associate in English
B.S., Washington, 1933

Higgs, Paul McClellan, 1919 (1939).....Assistant Professor of Physics
B.S., Washington, 1919

Higman, Chester, 1938.....Associate in Economics and Business
B.B.A., Washington, 1933

Hill, Naomi H., 1937.....Associate in English
M.A., Washington, 1934

Hill, Raymond L., 1927 (1934).....Associate Professor of Painting
Rhode Island School of Design; California School of Fine Arts, 1915

Hiltner, Walter Frederick, 1939.....Associate in General Engineering
B.S. in C.E., Washington, 1934

Hiscox, Ethel, 1939.....Assistant Professor in Public School Music
M.A., New York, 1936

Hitchcock, C. Leo, 1937.....Assistant Professor of Botany
Ph.D., Washington University (Missouri), 1931

Hoard, George Lisle, 1920 (1933).Associate Professor of Electrical Engineering
M.S.(E.E.), Washington, 1926

Hoedemaker, Edward D., 1935.....Lecturer in Psychiatry; Lecturer in Nursing Education
M.D., Michigan, 1929

Hoffstadt, Rachel Emilie, 1923 (1939).....Professor of Bacteriology
Ph.D., Chicago, 1915; D.Sc., Johns Hopkins, 1921

Horsfall, Frank, 1935.....Associate in Music

Horton, George P., 1934 (1939).....Assistant Professor of Psychology
Ph.D., Princeton, 1932

Hotson, John William, 1911 (1936).....Professor of Botany
Ph.D., Harvard, 1913

Huber, John Richard, 1939.....Assistant Professor of Economics
Ph.D., Princeton, 1937

Hughes, Glenn, 1919 (1930).....Professor of English
M.A., Washington, 1921

Hutchinson, Mary Gross, 1919 (1936).....Professor of Physical Education for Women; Executive Officer, Department of Physical Education for Women
M.A., Columbia, 1915

Iglehart, Robert L., 1938.....Associate in Art
Graduate Maryland Institute of Art, Baltimore, 1934

Ingalls, Ida, 1936.....Assistant Professor of Home Economics
M.A., Columbia, 1924

Irvine, Demar B., 1937 (1938).....Assistant Professor of Music
Ph.D., Harvard, 1937

Isaacs, Walter F., 1922 (1929).....Professor of Fine Arts; Director of the School of Art
B.S.(F.A.), James Millikin, 1909

Iverson, Louis, Commander, U.S.N., 1938.....Lecturer in Naval Science and Tactics
B.S., M.D., Illinois, 1917

Jacobs, Melville, 1928 (1937).....Assistant Professor of Anthropology
Ph.D., Columbia, 1931

Jacobsen, Philip A., 1927 (1939)...Assistant Professor of General Engineering
B.S., Washington, 1926

Jacobsen, Theodore Siegumteldt, 1928.....Assistant Professor of Astronomy and Mathematics; Executive Officer of the Department of Astronomy
B.S., Washington, 1926

Jacobson, Berthe P., 1937 (1939).....Associate Professor of Music
Graduate, Conservatory of Geneva; Diploma Schola Cantorum, Paris; Diploma Dalcroze Institute of Geneva

Jenkins, Helen, 1939.....Acting Instructor in History
Ph.D., Pennsylvania, 1933

Jensen, Alfred, 1930 (1939).....Assistant Professor of General Engineering
M.S. in C.E., Washington, 1937

Jensen, Clyde R., 1936.....Lecturer in Nursing Education
M.D., Rush, 1925

Jensen, Merrill Monroe, 1935 (1937).....Assistant Professor of History
Ph.D., Wisconsin, 1934

Jerbert, Arthur Rudolph, 1921 (1937).....Associate Professor of Mathematics
Ph.D., Washington, 1928

Jessup, John H., 1926 (1927).....Associate Professor of Education
M.A., Iowa, 1924

Johnson, Charles Willis, 1903 (1904).....Professor of Pharmaceutical Chemistry; Dean of the College of Pharmacy; State Chemist
Ph.C., Ph.D., Michigan, 1903

Johnson, Richard, 1938.....Associate in Physical Education for Men
B.A., Washington, 1938

Johnson, Sylvia, 1939.....Instructor in Nursing Education
R.N., City Hospital, New York, 1936; B.S., Washington, 1939

Johnstone, Harry William, 1939.....Associate in Political Science
B.A., Washington, 1935

Jones, Robert William, 1920 (1934).....Professor of Journalism
LL.B., Missouri, 1913; M.A., South Dakota, 1918

Jones, George R., 1939.....Instructor in Pharmacy
Ph.D., Florida, 1938

Jones, W. Ray, 1938.....Lecturer in Nursing Education
M.D., Illinois, 1912

Kahin, Helen, 1930 (1936).....Instructor in English
Ph.D., Washington, 1934

Kambe, Charles Shinji, 1939.....Associate in Anatomy
B.S., Washington, 1938

Kask, John L., 1935.....Lecturer in Fisheries
B.A., British Columbia, 1928

Katz, Solomon, 1936 (1939).....Assistant Professor of History
Ph.D., Cornell, 1933

Keith, Wendell Paisley, 1939.....Instructor in Ceramic Engineering
B.S. in Ceramics, Illinois, 1934

Kelez, George Bothwell, 1934.....Lecturer in Fisheries
M.A., Stanford, 1932

Kelley, Clinton Monroe, 1939.....Associate in Chemistry
B.S., Oregon State, 1934

Kelly, Edgar Andrew, 1937...Assistant Professor of Pharmaceutical Chemistry
Ph.D., Washington, 1933

Kelly, Laurence E., Commander, U.S.N., 1939.....Associate Professor of Naval Science and Tactics
B.S., U.S. Naval Academy, 1917

Kennedy, Fred Washington, 1909 (1938)....Associate Professor of Journalism; Director of Journalism Laboratories

Kent, Marian G., 1939.....Instructor in Nursing Education
R.N., Staten Island Hospital, 1921; B.S., Washington, 1939

Kenworthy, Ray W., 1929 (1939).....Assistant Professor of Physics
Ph.D., Washington, 1938

Kimmel, Edward, 1932 (1939).....Lecturer in History
M.A., Washington State College, 1907

Kincaid, Trevor, 1895 (1901).....Professor of Zoology; Executive Officer of the Department of Zoology and Physiology
M.A., Washington, 1901

Kirchner, George, 1919 (1939).....Assistant Professor of Music
Leipzig

Kirsten, Frederick Kurt, 1915 (1923)....Professor of Aeronautical Engineering
B.S., E.E., Washington, 1914

Kobe, Kenneth Albert, 1931 (1939).....Associate Professor of Chemical Engineering
Ph.D., Minnesota, 1930

Kocher, Paul, 1938.....Instructor in English
Ph.D., Stanford, 1936

Kunde, Norman Frederich, 1930 (1937).....Assistant Professor of Physical Education for Men
M.A., Washington, 1932

Lauer, Edward Henry, 1934.....Professor of German; Dean of the College of Arts and Sciences
Ph.D., Michigan, 1916

LaViolette, Forrest E., 1936 (1939).....Instructor in Sociology
M.A., Chicago, 1934

Lawrence, Charles Wilson, 1926 (1934).....Associate Professor of Music
M.A.(Music), Washington, 1930

Lawson, Jane Sorrie, 1922 (1939).....Associate Professor of English
M.A., St. Andrews (Scotland), 1906

Leahy, Kathleen M., 1935.....Assistant Professor of Nursing Education; Director of Public Health Nursing Field Work
R.N., Stanford Hospital; M.S., Washington, 1932

*Lester, Richard A., 1938.....Assistant Professor of Labor
Ph.D., Princeton, 1936

Levy, Ernst, 1936.....Professor of History, Law and Political Science
LL.D., Berlin, 1906

Lindblom, Roy Eric, 1924 (1937).....Associate Professor of Electrical Engineering
M.S.(E.E.), Washington, 1929

Lingafelter, Edward Clay, 1939.....Associate in Physical Chemistry
Ph.D., California, 1939

Little, Walter B., 1935.....Instructor in General Engineering
B.A., Stanford, 1933

Lockling, William Bruce, 1939.....Assistant Professor of Economics
Ph.D., Illinois, 1933

Loew, Edgar Allen, 1909 (1923).....Professor of Electrical Engineering Dean of the College of Engineering
E.E., Wisconsin, 1922

Lorig, Arthur N., 1934 (1936).....Assistant Professor of Accounting
C.P.A., 1927; Ph.D., Chicago, 1936

Loucks, Roger B., 1936 (1939).....Assistant Professor of Psychology
Ph.D., Minnesota, 1930

Loughridge, Donald H., 1931 (1936).....Associate Professor of Physics
Ph.D., California Institute of Technology, 1927

*Lucas, Henry Stephen, 1921 (1934).....Professor of History
Ph.D., Michigan, 1921

Luccock, Eugene C., 1937 (1939).....Acting Professor of Law
LL.M., Stanford, 1937

Lutey, William Glen, 1934.....Associate in Liberal Arts
M.A., Washington, 1931

Lynch, James E., 1931.....Associate Professor of Fisheries
Ph.D., California, 1929

*McAllister, Breck P., 1934 (1939).....Professor of Law
LL.B.; Ph.D., Brookings, 1929

*On leave, 1939-1940.

McConahey, James, 1921.....Lecturer in Accounting
M.S., LL.B., Northwestern; C.P.A., 1916

McCreery, Ruth Allen, 1924 (1927).....Instructor in Music
B.M., Washington, 1924

McFarlan, Lee Horace, 1927 (1934).....Associate Professor of Mathematics
Ph.D., Missouri, 1924

McGownd, Jane, 1923 (1928).....Assistant Professor of Physical Education for Women
M.A., Columbia, 1923

McIntyre, Harry John, 1919 (1930).....Associate Professor of Mechanical Engineering
B.S.(M.E.); M.B.A., Washington, 1923

McKay, George F., 1927 (1934).....Associate Professor of Music
B.Mus., Rochester, 1923

McKenzie, Vernon, 1928.....Professor of Journalism; Director of the School of Journalism
M.A., Harvard, 1914

McKinlay, Florence, 1937.....Associate in English
M.A., Washington, 1932

McLellan, Helen, 1937.....Instructor in Physical Education for Women
M.A., Columbia, 1931

McMahon, Edward, 1908 (1927).....Professor of American History; Executive Officer of the Department of History
M.A., Wisconsin, 1907

McMahon, Theresa Schmid, 1911 (1929).....Professor Emeritus of Economics and Labor
Ph.D., Wisconsin, 1909

McMinn, Bryan Towne, 1920 (1939).....Professor of Mechanical Engineering
M.E., Washington, 1931

Mackenzie, Donald H., 1929 (1933).....Assistant Professor of Management and Accounting
M.B.A., Washington, 1925; C.P.A.

Mackin, J. Hoover, 1934.....Assistant Professor of Geology
Ph.D., Columbia, 1937

MacLean, Dorothy, 1936 (1939)..Instructor in Physical Education for Women
B.A., Oregon, 1933

Magnusson, Carl Edward, 1904 (1906)....Professor of Electrical Engineering; Executive Officer, Department of Electrical Engineering; Dean Emeritus, College of Engineering; Director, Engineering Experiment Station
E.E., Ph.D., Wisconsin, 1900

Mander, Linden A., 1928 (1937).....Professor of Political Science
M.A., Adelaide (Australia), 1921

Mansfield, Robert S., 1932 (1937).....Assistant Professor of Journalism
M.A., Michigan, 1931

Marckworth, Gordon Dotter, 1939.....Professor of Forest Management
M.F., Yale, 1917

Mark, Sara N., 1937.....Associate in English
M.A., Washington, 1928

Martin, Arthur W., 1937 (1938).....Assistant Professor of Physiology
Ph.D., Stanford, 1936

Martin, Charles Emanuel, 1924.....Professor of Political Science; Executive Officer of the Department of Political Science
Ph.D., Columbia, 1917

Martin, Howard Hanna, 1930.....Associate Professor of Geography; Executive Officer of the Department of Geography
Ph.D., George Washington, 1929; ScD., Monmouth, 1937

Martin, John K., 1935.....Lecturer in Nursing Education
M.D., Nebraska, 1928

Martin, Victor J., 1937 (1939).Assistant Professor of Aeronautical Engineering
M.S. in Aeronautics, California Institute of Technology, 1936

May, Charles Culbertson, 1912 (1929).....Professor of Civil Engineering and Architecture; Superintendent of Buildings and Grounds
B.S.(C.E.), Washington, 1910

Meisnest, Frederick William, 1906.....Professor of German
Ph.D., Wisconsin, 1904

Menocal, George Lawrence, Lieutenant Commander, U.S.N., 1939....Assistant Professor of Naval Science and Tactics
B.S., U.S. Naval Academy, 1922

Meyer, Herman Carl H., 1934 (1937).....Assistant Professor of German
Ph.D., Chicago, 1936

Mikesell, Raymond, 1937.....Instructor in Economics and Business
Ph.D., Ohio State, 1938

Miller, Alfred Lawrence, 1923 (1937)..Professor of Mechanics and Structures
C.E., Washington, 1926

Miller, Charles John, 1927 (1936).....Associate Professor of Marketing
M.B.A., Washington, 1927

Molzahn, Johannes (1938).....Acting Assistant Professor of Design
Breslau (Germany)

More, Charles Church, 1900 (1912).....Professor of Structural Engineering
M.S., C.E., Lafayette; M.C.E., Cornell, 1899

Moritz, Harold Kennedy, 1928 (1939).Associate Professor of Civil Engineering
B.S.(M.E.), Massachusetts Institute of Technology, 1921

Moritz, Robert Edouard, 1904.....Professor of Mathematics
Ph.D., Nebraska; Ph.N.D, Strassburg, 1902

Mullemeister, Hermance, 1918 (1928).....Assistant Professor of Mathematics
Ph.D., Royal University of Utrecht (Holland), 1913

Mund, Vernon A., 1932 (1937).....Professor of Economics
Ph.D., Princeton, 1932

Munro, Kathleen, 1929 (1936).....Associate Professor of Music
Ph.D., Washington, 1937

Neikirk, Lewis Irving, 1911 (1914).....Assistant Professor of Mathematics
Ph.D., Pennsylvania, 1903

*Nelson, Everett, 1930 (1934).....Associate Professor of Philosophy
Ph.D., Harvard, 1929

Nelson, Frederick Jens, Lieutenant Commander, U.S.N., 1939.....Assistant Professor of Naval Science and Tactics
B.S., U.S. Naval Academy, 1923

Nelson, John E., 1936.....Lecturer in Nursing Education
M.D., Northwestern, 1910

Newsom, Bryan, 1936.....Lecturer in Nursing Education
M.D., Northwestern, 1929; Ph.C., Johns Hopkins, 1934

Nix, Martha J., 1926 (1928).....Associate in English
M.A., Washington, 1925

Nixon, Edwin A., 1935.....Lecturer in Nursing Education
M.D., Iowa, 1928

Norlin, Agnes, 1934.....Associate in English
M.A., Washington, 1931

Norris Anna Church, 1938.....Research Associate in Oceanography
Ph.D., Washington, 1931

Norris, Earl R., 1927 (1934).....Associate Professor of Chemistry
Ph.D., Columbia, 1924

Northrup, Mary W., 1931.....Instructor in Nursing Education
M.S., Columbia, 1923

Nostrand, Howard Lee, 1939.....Professor of Romanic Languages; Acting Executive Officer of the Department of Romanic Languages
Ph.D., University of Paris, 1934

Nottelmann, Rudolph H., 1927.....Professor of Law
M.A., Illinois; LL.B., Yale, 1922

O'Brien, Robert William, 1939.....Associate in Sociology
M.A., Oberlin, 1931

O'Bryan, Joseph Grattan, 1914 (1927).....Professor of Law
B.A., Jesuit College (Denver); LL.D., Regis College, 1928

Oddy, LaVon Marie, 1939.....Associate in Physical Education for Women
B.S., Oregon, 1938

Olcott, Virginia, 1931 (1939).....Assistant Professor of Nursing Education
R.N., Peter Brent Brigham Hospital; M.S., Washington, 1931

Oliver, Louise Benton, 1920 (1929).....Instructor in Music
B.M., Washington, 1919

Olschewsky, Henry, 1931 (1939).....Assistant Professor of Architecture
B.Arch., Washington, 1931

*On leave, 1939-1940.

Ordal, Erling J., 1937 (1938).....Assistant Professor of Bacteriology
Ph.D., Minnesota, 1936

Orr, Frederick Wesley, 1925 (1928).....Professor of English
G.C.D., Boston School of Expression; M.A., Lawrence College, 1925

Osborn, Frederick Arthur, 1902.....Professor of Physics
Ph.D., Michigan, 1907

Osburn, Worth J., 1936.....Professor of Education
Ph.D., Columbia, 1921

Ottosen, Peter H., Colonel, C.A.C., 1936 (1938).....Professor of Military Science and Tactics
B.C.E., Iowa State College of Agriculture and Mechanical Arts, 1908

Owens, Charles H., Major, Infantry, 1938.....Assistant Professor of Military Science and Tactics
LL.B., Idaho, 1917

Padelford, Frederick Morgan, 1901.....Professor of English; Dean of the Graduate School
Ph.D., Yale, 1899; LL.D., Colby, 1934

Parker, Thomas R., Major, C.A.C., 1938.....Assistant Professor of Military Science and Tactics
Coast Artillery School, 1928; Command and General Staff School, 1933

Patterson, Ambrose, 1919 (1939).....Professor of Painting
Melbourne National Gallery, Victoria, Australia; Julien, Colorossi and Delocluse Academies, Europe

Pauly, Gene, 1935.....Associate in Music
Brussels Conservatory of Music

Pautzke, Clarence, 1937.....Lecturer in Fisheries
B.S., Washington, 1932

Payne, Blanche, 1927 (1937).....Associate Professor of Home Economics
M.A., Columbia, 1924

Pearce, John Kenneth, 1934.....Associate Professor of Forestry
B.S.F., Washington, 1921

Peek, Clifford, 1938.....Assistant Professor of Physical Education for Men
M.A., Columbia, 1931

Pellegrini, Angelo, 1930.....Associate in English
B.A., Washington, 1927

Penington, Ruth, 1928 (1937).....Assistant Professor of Design
M.F.A., Washington, 1929

Person, Henry, 1937.....Associate in English
B.A., Washington, 1927

Petersen, Evald, 1939.....Associate in Accounting and Statistics
B.S., Denver, 1937

Peterson, Dean F., Jr., 1939.....Instructor in General Engineering
M.S.(C.E.), Rensselaar Polytechnic Institute, 1939

Phelan, James, 1930.....Associate in Physical Education for Men
B.A., Notre Dame, 1917

Phifer, Lyman D., 1928 (1939).....Associate Professor of Oceanography; Assistant Director of Oceanographic Laboratories
Ph.D., Washington, 1932

Phillips, Herbert Joseph, 1923 (1934).....Assistant Professor of Philosophy
Ph.D., Washington, 1933

Phillips, Ronald, 1935.....Associate in Music

Pierce, Harry R., Major, C.A.C., 1937.....Assistant Professor of Military Science and Tactics
Graduate, U.S. Military Academy and Coast Artillery School

Pierson, William E., 1937 (1938).....Instructor in Geography
M.S., Washington, 1934

Plein, Elmer M., 1938.....Instructor in Pharmacy
Ph.D., Colorado, 1936

Posell, Edward A., 1936.....Lecturer in Nursing Education
M.D., Boston, 1927

Powell, Sargent, 1919 (1934).....Associate Professor of Chemistry
Ph.D., Illinois, 1919

Powers, Francis Fountain, 1928 (1939).....Professor of Education; Acting Dean of the College of Education
Ph.D., Washington, 1928

Pratt, Dudley, 1925.....Assistant Professor of Sculpture
B.A., Yale, 1919

Preston, Howard Hall, 1920 (1922).....Professor of Money and Banking; Dean of the College of Economics and Business
Ph.D., Iowa, 1920; LL.D., Coe College, Iowa, 1938

Price, George E., 1935.....Lecturer in Nursing Education
M.D., Pennsylvania, 1898

Pries, Lionel Henry, 1928 (1938).....Associate Professor of Architecture
M.Arch., Pennsylvania, 1921

Proctor, Oscar S., 1937.....Lecturer in Nursing Education
M.D., Northwestern, 1919; M.S., Minnesota, 1925

Quainton, Cecil Eden, 1924 (1936).....Associate Professor of History
B.A., Cambridge, 1924

Quesenberry, Marshall H., Lieutenant Colonel, Infantry, 1939.....Associate Professor of Military Science and Tactics
B.S., U.S. Military Academy, 1915

Rader, Melvin Miller, 1930.....Assistant Professor of Philosophy
Ph.D., Washington, 1929

Radford, Ethel Sanderson, 1919.....Associate in Chemistry
B.A., McGill, 1895

Rahskopf, Horace G., 1928 (1936).....Associate Professor of English
Ph.D., Iowa, 1935

Raitt, Effie Isabel, 1912 (1914).....Professor of Home Economics; Director of the School of Home Economics
M.A., Columbia, 1919

Ranson, Herbert, 1937.....Associate in English
Ph.D., Washington, 1935

Ray, Verne, 1933 (1937).....Instructor in Anthropology
Ph.D., Yale, 1937

Read, William Merritt, 1927 (1936).....Associate Professor of Classical Languages
Ph.D., Michigan, 1926

Reeves, George Spencer, 1935 (1939).....Assistant Professor of Physical Education for Men
M.S., Oregon, 1938

Rembe, Armin, 1935.....Lecturer in Nursing Education
M.D., Northwestern, 1925

Rhodes, Fred H., Jr., 1927 (1936)....Assistant Professor of Civil Engineering
C.E., Washington, 1935

Richards, John Stewart, 1934 (1938).....Lecturer in Librarianship; Executive Assistant, Library
M.A., California, 1932

Richards, John W., 1931 (1937).....Professor of Law
S.J.D., Harvard, 1931

Rigg, George Burton, 1909 (1928).....Professor of Botany
Ph.D., Chicago, 1914

Riley, Herbert P., 1938.....Assistant Professor of Botany
Ph.D., Princeton, 1931

Rising, Louis Wait, 1934 (1936).....Professor of Pharmacy
Ph.C., Ph.D., Washington, 1929

Roberts, Milnor, 1901.....Professor of Mining and Metallurgy; Dean of the College of Mines
B.A., Stanford, 1899

Robinson, Rex J., 1929 (1937).....Associate Professor of Chemistry
Ph.D., Wisconsin, 1929

Rosen, Moritz, 1909 (1928).....Professor of Music
Graduate, Warsaw Conservatory, Russia

Rowlands, Thomas McKie, 1928 (1934).....Assistant Professor of General Engineering
B.S.(Nav. Arch. and Marine Engr.) Massachusetts Institute of Technology, 1926

Rowntree, Jennie Irene, 1925 (1932).....Professor of Home Economics
Ph.D., Iowa, 1929

Ruge, Edward C., 1935.....Lecturer in Nursing Education
M.D., College of Physicians and Surgeons, Chicago, 1901

Rulifson, Leone Helmich, 1923 (1937).....Assistant Professor of Physical Education for Women
M.A., Washington, 1935

Samson, Victor J., 1937.....Lecturer in Fisheries
B.S., Washington, 1930

Sanderman, Llewellyn Arthur, 1928 (1936).....Instructor in Physics
M.S., Washington, 1931

Savage, George Milton, Jr., 1935 (1936).....Instructor in English
Ph.D., Washington, 1935

Savery, William, 1902.....Professor of Philosophy; Executive Officer of the Department of Philosophy
Ph.D., Harvard, 1899

Schaefer, Milner B., 1937.....Lecturer in Fisheries
B.S., Washington, 1935

Schaller, Gilbert Simon, 1922 (1937).....Professor of Mechanical Engineering
M.B.A., Washington, 1925

Scheffer, Victor B., 1938.....Lecturer in Forestry
Ph.D., Washington, 1936

Schertel, Max, 1931 (1938).....Instructor in German
Ph.D., Washington, 1938

Schmid, Calvin F., 1937.....Associate Professor of Sociology
Ph.D., Pittsburgh, 1930

Schmoe, Floyd, 1935.....Instructor in Forestry
M.S. in Forestry, Washington, 1937

**Schrader, O. H., Jr., 1936.....Instructor in Forestry
M.S., Wisconsin, 1932

Schultheis, Frederick, 1938 (1939).....Assistant Professor of Oriental Studies
M.A., Columbia, 1931

Scott, Lucile, 1937.....Instructor in Nursing Education
R.N., Providence Hospital, 1931; B.S., Washington, 1933

Seelye, Walter B., 1935.....Lecturer in Nursing Education
M.D., Harvard, 1926

Seeman, Albert L., 1928 (1939).....Associate Professor of Geography
Ph.D., Washington, 1930

**Absent 1939-1940.

Sergev, Sergius V., 1923 (1939).....Associate Professor of Civil Engineering
M.E., Washington, 1931

Shattuck, Warren L., 1935 (1939).....Associate Professor of Law
J.S.D., Yale, 1936

Shefelman, S. Harold, 1930.....Lecturer in Law
LL.B., Yale, 1925

Sholley, John Burrill, 1932 (1939).....Professor of Law
LL.B., Washington, 1932; J.S.D., Chicago, 1937

Shuck, Gordon Russell, 1918 (1937).....Professor of Electrical Engineering
E.E., Minnesota, 1906

Sidey, Thomas Kay, 1903 (1927).....Professor of Latin and Greek
Ph.D., Chicago, 1900

Simpson, Lurline Violet, 1922 (1934).....Assistant Professor of French
Ph.D., Washington, 1928

Sivertz, Victorian, 1926 (1936).....Assistant Professor of Chemistry
Ph.D., McGill, 1926

Skinner, John W., 1935.....Lecturer in Nursing Education
M.D., Colorado, 1931

Skinner, Macy Millmore, 1916 (1928).....Professor of Foreign Trade
Ph.D., Harvard, 1897

Smith, Charles Wesley, 1905 (1926).....Librarian; Professor of Librarianship
B.A., B.L.S., Illinois, 1905

Smith, Edward H., Commander, 1936.....Lecturer in Oceanography
Graduate, Coast Guard School

Smith, Eli Victor, 1911 (1936).....Professor of Physiology
Ph.D., Northwestern, 1911

Smith, Frederick Charnley, 1926 (1933).....Assistant Professor of Civil Engineering
C.E., Washington, 1929

Smith, George McPhail, 1919.....Professor of Inorganic Chemistry
Ph.D., Freiburg (Germany), 1903

Smith, George Sherman, 1921 (1933).....Associate Professor of Electrical Engineering
E.E., Washington, 1924

Smith, Harriet H., 1931.....Assistant Professor of Nursing Education; Director of Nursing Service, King County Hospital
R.N., Seattle General Hospital; B.A., Mount Holyoke, 1918

Smith, Harriet R., 1938.....Associate in Physiology
B.S., Washington, 1934

Smith, Harry Edwin, 1914 (1929).....Professor of Insurance; Director of the Extension Service
Ph.D., Cornell, 1912

Smith, Stevenson, 1911 (1916).....Professor of Psychology; Executive Officer, Department of Psychology; Director of the Gatzert Foundation
Ph.D., Pennsylvania, 1909

Soule, Elizabeth, 1920 (1934).....Professor of Nursing Education; Director of the School of Nursing Education
R.N., Malden Hospital, Massachusetts; M.A., Washington, 1931

Spector, Ivar, 1931 (1936).....Assistant Professor of Oriental Studies
Ph.D., Chicago, 1928

*Spellacy, Edmond, 1935 (1936).....Associate Professor of Political Science
Ph.D., Harvard, 1935

Sperlin, Ottis Bedney, 1921 (1923).....Lecturer in English
Ph.M., Chicago, 1908

Spoerry, Gottfried W., Major, Infantry, 1939.....Assistant Professor of Military Science and Tactics
B.S., U.S. Military Academy, 1915

Stansby, Maurice, 1938.....Lecturer in Fisheries
M.S., Minnesota, 1933

Starr, Mary Elizabeth, 1935.....Instructor in Home Economics
M.A., Washington, 1935

St. Clair, Laura, 1937.....Associate in English
M.A., Adrian College, Michigan, 1917

Steiner, Jesse Frederick, 1931.....Professor of Sociology and Social Work; Executive Officer of the Department of Sociology
Ph.D., Chicago, 1915; Litt. D., Heidelberg College, 1937

Stevens, Belle, 1932.....Research Associate in Oceanography and Zoology
Ph.D., Washington, 1931

Stevens, Edwin B., 1910 (1936).....Professor of Education
A.M.(Educ.), Harvard, 1899

Stevens, Leonard, 1937.....Associate in Physical Education for Men
B.S., Washington, 1934

Stewart, Robert, 1936.....Lecturer in Nursing Education
M.D., Oregon, 1927

Stirling, Brents, 1932 (1937).....Assistant Professor of English
Ph.D., Washington, 1934

Stone, Clarence Dillon, 1939.....Associate in Forestry
Ph.D., Washington, 1939

Stone, Edward Noble, 1910 (1927).....Associate Professor of Classical Languages
M.A., Olivet, 1893

Sullivan, C. L., 1918 (1935).....Instructor in Mechanical Engineering

Suomela, Arnie J., 1935.....Lecturer in Fisheries
M.S., Washington, 1931

Svihla, Arthur, 1938.....Associate Professor of Zoology
Ph.D., Michigan, 1931

*On leave, 1939-1940.

Tartar, Herman Vance, 1917 (1927).....Professor of Chemistry
Ph.D., Chicago, 1920

Taub, Abraham H., 1936 (1939).....Assistant Professor of Mathematics
Ph.D., Princeton, 1935

Taylor, George Edward, 1939.....Assistant Professor of Oriental Studies; Acting Executive Officer of the Department of Oriental Studies
A.M., Birmingham, England

Tatsumi, Henry S., 1935 (1939).....Assistant Professor of Oriental Studies
M.A., Washington, 1935

Taylor, Edward Ayres, 1929.....Professor of English
Ph.D., Chicago, 1925

Terrell, Margaret Elma, 1928 (1936).Assistant Professor of Home Economics; Director of Commons; Business Director of Dining Halls and Residences
M.A., Chicago, 1927

Thebaud, Delphin E., Lieutenant Colonel, Infantry, 1936...Assistant Professor of Military Science and Tactics
B.A., Rock Hill College, 1911; Infantry School, 1926

Thomas, Harlan, 1926.....Professor of Architecture; Director of the School of Architecture
B.S., Colorado State College, 1894

Thompson, Thomas Gordon, 1919 (1929).....Professor of Chemistry; Director of Oceanographic Laboratories
Ph.D., Washington, 1918

Thompson, William F., 1930.....Professor of Fisheries; Acting Director of the School of Fisheries
Ph.D., Stanford, 1931

Thomson, David, 1902.....Professor of Latin; Vice Dean of College of Arts and Sciences; Vice President Emeritus; Executive Officer of the Department of Classical Languages and Literature
B.A., Toronto, 1892; LL.D., British Columbia, 1936

Thorgrimson, O. B., 1937.....Lecturer in Law
LL.B., Nebraska, 1901

Tilden, Dorothy May, 1936 (1937)....Assistant Professor of Home Economics
M.A., Cornell, 1934

Tomkins, Margaret, 1939.....Acting Assistant Professor of Art
M.F.A., Southern California, 1939

Torney, John A., 1930 (1937).....Assistant Professor of Physical Education for Men
M.A., Columbia, 1930

Truax, Arthur, 1924.....Lecturer in Finance

Tustin, Whitney, 1935.....Associate in Music

Tyler, Richard G., 1929.....Professor of Sanitary Engineering
C.E., Texas, 1908

Tymstra, Sybren Ruurd, 1929 (1934).....Assistant Professor of Mechanical Engineering
M.E., Zwickau (Germany), 1906

Uehling, Edwin A., 1936.....Assistant Professor of Physics
Ph.D., Michigan, 1932

Uhl, Willis Lemon, 1928.....Professor of Education
Ph.D., Chicago, 1921

Ulbrickson, Alvin, 1927;.....Associate in Physical Education for Men
B.B.A., Washington, 1927

Umphrey, George Wallace, 1911 (1922).....Professor of Romanic Languages
Ph.D., Harvard, 1905

Utterback, Clinton Louis, 1918 (1934).....Professor of Physics
Ph.D., Wisconsin, 1926

Vail, Curtis C. D., 1939.....Professor of German; Executive Officer of the Department of German
Ph.D., Columbia, 1936

Van Cleve, Richard, 1932.....Lecturer in Fisheries
B.S., Washington, 1927

Van Horn, Robert B., 1925 (1938).....Professor of Hydraulic Engineering; Executive Officer of the Department of Civil Engineering
C.E., Washington, 1926

Van Norman, Karl H., 1932.....Director of Medical Instruction, King County Hospital
M.D., Toronto, 1904

Van Ogle, Louise, 1915 (1932).....Associate Professor of Music
Theoretical work, with Dr. Bridge, Chester, England; Richter, Leipzig; Piano, Godowsky, Lhevinne, Berlin; Harold Bauer, Paris

Venino, Albert Franz, 1913 (1928).....Professor of Music
Stuttgart Conservatory, Germany; Pupil of Leschetizky

Vickner, Bertha Almen, 1920.....Associate in English
M.A., Washington, 1917

Vickner, Edwin John, 1912.....Professor of Scandinavian Languages; Executive Officer of the Department of Scandinavian Languages
Ph.D., Minnesota, 1905

von Brevern, Maxim, 1934 (1937)....Assistant Professor of Political Science; Executive Secretary of the Bureau of International Relations
Ph.D., Washington, 1936; Graduate, Imperial and Royal Maria Theresian Military Academy, Wienerneustadt, 1907

Wade, Arthur E., 1928.....Lecturer in Home Economics
B.S., Cornell College; M.D., Sioux City College of Medicine, 1905

Wagenknecht, Edward Charles, 1925 (1932)....Assistant Professor of English
Ph.D., Washington, 1932

Walters, Margaret C., 1929.....Associate in English
M.A., Yale, 1919

Wangaard, Frederick, 1936 (1939).....Assistant Professor of Forestry
Ph.D., New York State College of Forestry, 1939

Ward, May Dunn, 1918 (1933).....Acting Dean of Women
M.A., Columbia, 1921

Warner, Frank Melville, 1925 (1937).....Professor of Engineering Drawing
B.S.(M.E.), Wisconsin, 1907

Weaver, Charles Edwin, 1907 (1921).....Professor of Paleontology
Ph.D., California, 1907

Weber, Julius A., 1938.....Lecturer in Nursing Education
M.D., Nebraska, 1925

Webster, Donald H., 1939.....Associate Professor of Political Science; Executive Secretary, Bureau of Governmental Research
Ph.D., Washington, 1935

Weigle, Claude L., Lieutenant, U.S.N., 1939.....Assistant Professor of Naval Science
B.S., U.S. Naval Academy, 1927

Weiser, Russell S., 1935 (1938).....Assistant Professor of Bacteriology
Ph.D., Washington, 1934

Welander, Arthur D., 1937.....Associate in Fisheries
B.S., Washington, 1934

Welke, Walter, 1929 (1936).....Assistant Professor of Music
B.M., Michigan, 1927

Werner, August, 1931.....Professor of Music
B.S., College of Agriculture, Stend, Norway, 1913

Wesner, Elenora, 1924.....Associate in German
M.A., Northwestern, 1923

West, Frank Beach, 1939.....Instructor in Chemical Engineering
Ph.D., Minnesota, 1939

Westerman, Beulah Dorothea, 1939....Assistant Professor of Home Economics
Ph.D., Illinois, 1928

Wetherby, Loren A., Major, Infantry, 1936.....Assistant Professor of Military Science and Tactics
LL.B., Washington, 1915; Infantry School, 1928 and 1933

White, Roland J., 1938.....Instructor in Aeronautical Engineering
M.S.(M.E. and A.E.), California Institute of Technology, 1935

Whittlesey, Walter Bell, 1907 (1929).....Assistant Professor of French
M.A., Washington, 1909

Wick, Oswald Justin, 1937.....Associate in Mining, Metallurgical and Ceramic Engineering
M.S., Montana School of Mines, 1937

Wilcox, Chester, 1939.....Associate in Physical Education for Men

Wilcox, Elgin Roscoe, 1920 (1936).....Professor of General Engineering; Executive Officer of the Department of General Engineering
B.S., Met.E., Washington, 1919

Wiley, Frances Evans, 1939.....Instructor in Home Economics
M.A., Washington, 1929

Wilkie, Richard Francis, 1937.....Associate in German
M.A., Washington, 1936

Williams, Curtis Talmadge, 1920 (1936).....Professor of Education
Ph.D., Clark, 1917

Wilson, Auston M., Jr., Captain, C.A.C., 1938..Assistant Professor of Military Science and Tactics
B.S., U.S. Military Academy, 1918

Wilson, Clotilde, 1929 (1937).....Assistant Professor of Romanic Languages
Ph.D., Washington, 1931

Wilson, Florence Bergh, 1919 (1930).....Assistant Professor of Music
M.A., Columbia, 1925

Wilson, George Samuel, 1906 (1924)....Professor of Mechanical Engineering; Consulting Engineer
B.S., Nebraska, 1906

*Wilson, Hewitt, 1919 (1927).....Professor of Ceramics
Cer. Engr., Ohio State, 1913; D.Sc., Montana School of Mines, 1937

Wilson, Ruth, 1936.....Instructor in Physical Education for Women
M.S., Wisconsin, 1936

Wilson, William Charles Eade, 1926 (1930).....Assistant Professor of Spanish
Ph.D., Washington, 1928

Wilson, William R., 1919 (1929).....Professor of Psychology
Ph.D., Washington, 1925

Winger, Roy Martin, 1918 (1925).....Professor of Mathematics
Ph.D., Johns Hopkins, 1912

Winkenwerder, Hugo, 1909 (1912).....Professor of Forestry; Dean of the College of Forestry
M.F., Yale, 1907

Winslow, Arthur Melvin, 1918 (1927)....Professor of Mechanical Engineering
Ph.B., Brown; B.S., Massachusetts Institute of Technology, 1906

Winther, Sophus Keith, 1923 (1934).....Associate Professor of English
Ph.D., Washington, 1926

Witte, Ernest F., 1939.....Professor of Social Work; Director of the Graduate School of Social Work
Ph.D., Chicago, 1932

**Wolfard, John Addison, 1939.....Acting Instructor in Labor
M.A., Washington, 1937

Wolfe, Charles Morgan, 1937.....Instructor in Electrical Engineering
Ph.D., California Institute of Technology, 1932

Wood, Carl Paige, 1918 (1928).....Professor of Music
M.A., Harvard, 1907

Woodcock, Edith, 1930 (1933).....Assistant Professor of Music
B.M., Rochester, 1925

Woolston, Howard B., 1919.....Professor of Sociology
Ph.D., Columbia, 1909

Worcester, John Locke, 1917 (1922).....Professor of Anatomy; Executive Officer of the Department of Anatomy
M.D., Birmingham School of Medicine, Alabama, 1900

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*On leave 1939-1940.
**On Autumn, 1939, only.

Worden, Ruth, 1926 (1937).....Professor of Librarianship; Director of the School of Librarianship
B.A., Wellesley, 1911

Worman, Eugenie, 1919.....Associate in Design
B.A.(Educ.), Washington, 1928

Wright, Howard Wilson, 1939.....Acting Instructor in Accounting
B.S.C., Temple, 1937

Wyckoff, Hewlett J., 1938.....Lecturer in Nursing Education
M.D., Northwestern, 1916

Zeusler, F. A., Commander, 1937.....Lecturer in Oceanography
Graduate, Coast Guard School

Zillman, Lawrence J., 1930 (1937).....Assistant Professor of English
Ph.D., Washington, 1936

Zuckerman, Herbert Samuel, 1939.....Instructor in Mathematics
Ph.D., California, 1936

Zumwalt, Eugene V., 1936.....Instructor in Forestry
M.S.F., Washington, 1938

Zwermann, Carl Henry, 1939.....Acting Assistant Professor of Ceramics
Ph.D., Illinois, 1939

THE UNIVERSITY OF WASHINGTON

History

The University was established at Seattle by the territorial legislature in January, 1861, and classes were opened on November 4 of that year in a building erected on a ten-acre tract which now lies in the heart of Seattle's metropolitan district. The University was moved to its present location on the shores of Lakes Washington and Union in 1895.

Government

Under the constitution and laws of the State, the government of the University is vested in a Board of Regents, consisting of seven members appointed by the Governor by and with the advice and consent of the Senate. Each regent is appointed for a term of six years.

Endowment and Support

The University derives its support from legislative appropriation, student fees, endowments, and the income from real estate owned by the University.

EQUIPMENT

Grounds

The campus contains 582 acres within the city limits of Seattle between Lakes Washington and Union, with a shore line of more than one mile on Lake Washington and about a quarter mile on Lake Union.

Buildings

The buildings now in use on the campus include the Aerodynamics Laboratory, the Anatomy Laboratory, Anderson Hall, the Armory, Bagley Hall, the Barn, Canoe House, Central Store House, Chief Engineer's Residence, Chimes Tower, Clark Hall, Commerce Hall, Condon Hall, Denny Hall, Education Hall, Engineering Hall, Engineering Shops and Foundry, Faculty Club, Fisheries Halls, Forest Products Laboratory, Garage, Golf Club, Greenhouses, Guggenheim Hall, Head Janitor's Residence, Health Center, Henry Art Gallery, Home Economics Hall, Home Management Cottage, Hydraulics Laboratory, Johnson Hall, King County Welfare, Zone 4, Marshal's Residence, Meany Hall, Men's Athletic Pavilion and Swimming Pool, Military Science Annex, Military Science Headquarters Buildings, Mines Laboratory, Museum, Naval Science Hall (Good Roads Building), Nursing Education Building, Observatory, Oceanographic Laboratory, Parrington Hall, Philosophy Hall, Physics Hall, Physiology Hall, Plant Laboratory and Greenhouse, Plumbing and Machine Shop, Power Plant, Sanitary Engineering Building, Shell House, Show Boat Theater, Stadium, W.P.A. Office Building, Wind Tunnel, Women's Physical Education Building and Swimming Pool, Women's Residence Halls.

Libraries

The University Library contains 349,814 (June, 1939) bound volumes and receives currently about 6,900 serial publications. The Henry Suzzallo Library building houses the basic collection of books and provides facilities for students and faculty. Specialization is provided in the fields of science, the social studies and Pacific Northwest Americana. A branch in Parrington Hall gives reference

service in the field of English language and literature. There are several departmental collections on the campus.

Two libraries are separately administered: the Law School Library with 84,759 volumes and the Drama Library with 12,753 volumes. The libraries of the University, together with the Seattle Public Library and other Seattle library agencies, provide more than a million volumes for the use of students and research workers.

The service offered by the University Library staff includes instruction in the use of the Library and of its more specialized materials. Orientation tours are conducted for freshmen each fall and a printed guide to the Library is supplied to new students.

Museum

The museum of the University of Washington was created the State Museum by law in 1899. Its collections are representative of the history, ethnology, geology and natural history of the state and adjacent regions, and of those countries with which the state has special relations.

Horace C. Henry Gallery

The Horace C. Henry Gallery, with its collection representing the work of some 200 representative nineteenth century painters, was the gift of the late Horace C. Henry of Seattle. To supplement the permanent collections, travelling exhibitions are shown during the college year.

Laboratories

The University has laboratories fully equipped for work in all fields of study included in the curriculum.

United States Bureau of Mines Northwest Experiment Station

The Department of Commerce maintains at the College of Mines its Northwest Experiment Station, which serves the Pacific Northwest and the coast regions of Alaska. The Mine Safety Station of the United States Bureau of Mines is also located on the campus.

Engineering Experiment Station

The Engineering Experiment Station was organized in 1917 to co-ordinate the engineering investigations in progress and to facilitate development of industrial research in the University.

The Gatzert Foundation for Child Development

The foundation was established in 1910 by means of a gift from Sigmund Schwabacher and the executor of the will of Abraham Schwabacher and is under the administrative control of the Department of Child Welfare.

Alice McDermott Foundation

The Alice McDermott Memorial foundation was established in 1924 through the will of the late Mrs. Josephine McDermott, for research and study in the fields of tuberculosis and cancer.

Oceanographic Laboratories

The University has fully equipped Oceanographic Laboratories, one being situated on the campus on the shore of Lake Union with ready access to Puget Sound via the Lake Washington ship canal. Field laboratories are maintained at Friday Harbor, in the San Juan Islands, where there are six laboratory buildings and residences for staff and students. The Department of Oceanography has a sea-going research boat, the *Catalyst,* for investigations at sea.

Pack Demonstration Forest

For the use of the College of Forestry, the University has a tract of approximately 2,000 acres of forest land near La Grande, Washington, on the Rainier National Park Highway. This is the Pack Demonstration Forest, the gift of the Charles Lathrop Pack Forestry Trust. The tract contains approximately 25,000,000 feet of timber and is used as a field laboratory for student instruction, for experimental purposes, and for public demonstration.

BULLETINS AVAILABLE

School of Architecture
School of Art
College of Arts and Sciences
College of Economics and Business
College of Education
College of Engineering
Departments of Instruction
Extension Classes
Extension (Correspondence)
Extension Saturday Classes
School of Fisheries
College of Forestry
General Information
Freshman Manual
Graduate School of Social Work
Graduate School
School of Home Economics
School of Journalism
School of Law
School of Librarianship
Military Science
College of Mines
School of Music
School of Nursing Education
Oceanographic Laboratories
College of Pharmacy
School of Physical Education and Hygiene
Summer Quarter
Summer Quarter Time Schedule

Mail request for bulletins to Director of Publications, University of Washington, Seattle.

THE UNIVERSITY ORGANIZATION

The University of Washington is one of five institutions of higher education which compose the state's system of public education, the others being the state college and the three state colleges of education. To the University is given exclusive authority to instruct in the following major lines: aeronautical engineering, architecture, commerce, fisheries, forestry, journalism, law, librarianship, marine engineering, and medicine.

The University has concurrent authority with the state college to instruct in the following major lines: chemical engineering, civil engineering, electrical engineering, home economics, liberal arts, mechanical engineering, mining, pharmacy, professional training of high school teachers, school supervisors and school superintendents, and pure science.

The Colleges and Schools. The University includes the following colleges and schools:

A. *The College of Arts and Sciences,* composed of the departments in liberal arts and pure science and the following semi-professional schools:

   The School of Architecture; the School of Art; the School of Fisheries; the School of Home Economics; the School of Journalism; the School of Librarianship; the School of Music; the School of Nursing Education; the School of Physical Education; and General Studies—for students with no major.

B. *The College of Economics and Business.*

C. *The College of Education.*

D. *The College of Engineering.*

E. *The College of Forestry.*

F. *The Graduate School,* including the Graduate School of Social Work.

G. *The School of Law.*

H. *The College of Mines.*

I. *The College of Pharmacy.*

Definitions and Explanations. In all statements relating to the University the word *course* refers to a single study pursued for a definite period, for which credit may be given toward University requirements for graduation in accordance with the number of hours taken. A *curriculum* is a group of courses arranged to be followed consecutively or concurrently. A *department* is the unit of instructional organization in a particular science or art, as the department of geology. A *college* gives full curricula, beginning with the freshman year, or, in the College of Education, with the sophomore year, and covering 12 quarters. The work of a *school* is preceded by two or more years of college work.

The four-year program of the college is divided into the *lower division* (freshman and sophomore) and *upper division* (junior and senior).

The term *unit* is applied to work taken in high school; a *credit* to work taken in college. A university credit is given for one hour of recitation a week throughout one quarter. Thus a quarter course in which there are five recitations a week is a five-credit course.

The term *major* is applied to the department or subject in which a student elects to specialize.

Special Curricula within the Schools. Certain semi-professional curricula are given for which no special school or college is provided. Such is the curriculum in chemistry in the College of Arts and Sciences.

The University does not give a medical course, but offers a pre-medical curriculum especially planned as a foundation for study in a medical school. This may be two years in length for schools not requiring college graduation, or four years for schools requiring that amount of preparation.

Under provisions of the National Defense Act, students in the University may attain commissions as reserve officers in the United States Army by meeting the requirements for advanced work in military science. This can be done without interference with the student's regular academic work. Likewise, students completing the course in naval science may receive commissions in the Naval Reserve.

The Four-Quarter System. The University is operated on the four-quarter system, each quarter having approximately 12 working weeks. (For dates, see University Calendar, page 8.

ADMISSION TO THE UNIVERSITY

How to Obtain Information

Correspondence regarding admission to any college or school of the University and requirements for graduation should be addressed to the Registrar. Such correspondence should indicate the college and department or the field of study in which the student is interested, in order that the proper bulletins may be sent without delay. (See page 48 for bulletins available.)

How to Secure Admission to the University

Before a student may register for University classes he must place on file with the Registrar complete credentials of all his previous secondary and college education. Credentials accepted toward admission to the University are kept on permanent file. For admission to the autumn quarter, the required credentials should be on file by July 15. Prompt answer cannot be guaranteed to correspondence and credentials received less than thirty days before the opening of the session for which admission is sought. (See calendar, page 8, for opening dates.)

Admission Requirements

Any prospective student will find that one of the eight following classifications fits his case. He should examine them carefully to determine which one refers to him and then study the requirements listed thereunder to ascertain how he may be admitted to the University.

1. Beginning freshmen who have been graduated from an accredited* four-year high school or secondary school in the State of Washington or in Alaska must:

   a. Submit an official application for admission blank. (May be obtained from any high school principal or from the Registrar.)

   b. Have completed at least 12 units** in the 10th, 11th, and 12th grades,† including two units of English, with passing grades. As part of the 12-unit requirement, the academic subjects (English,

*Accredited high schools in Washington are those accredited by the State Department of Education; in Alaska, by the Northwest Accrediting Association; in other states, by the state university or the regional accrediting association.

**To count as a unit, a subject must be taught five times a week, in periods of not less than 45 minutes, for a high school year of 36 weeks. In satisfying entrance requirements with college courses, a minimum of ten quarter credits is counted as the equivalent of the entrance unit.

†The University will not accept any student who has applied toward his diploma from high school grades which are of lower value than the minimum passing grades of that high school. Such grades will be considered failures for purposes of admission to the University.

Minimum Unit[1] Requirements of Colleges Accepting Students with Freshman Standing

For other recommendations, see bulletin of the college concerned.

College	English	Mathematics	Foreign Language	Lab. Sci.	Soc. Sci.	Other Academic Subjects[2]	Free Electives
1. Arts & Sciences[3] (University Col.)	2	1 (Pl. Geom. or 2nd year Alg.)	2nd Unit* of one	1*	1	0	6
2. Economics and Business.....	2	1 (Pl. Geom. or 2nd year Alg.)	0	0	1 (U. S. Hist. and Civics)	Minimum of 2	6
3. Engineering.....	2	2 (Pl. and Sol. Geom. & Adv. Alg.)	0	1 (Chem.)[4] 1 (Physics)	0	0	6
4. Forestry.....	2	1½ (Pl. Geom. and Adv. Alg.)	2nd Unit* of a mod. foreign language	**	0	Minimum of 1½	6
5. Mines.....	2	2 (Pl. and Sol. Geom. & Adv. Alg.)	0	1 (Chem.)[4] 1 (Physics)	0	0	6
6. Pharmacy.....	2	1 (Pl. Geom. or 2nd year Alg.)[5]	0	**	0	Minimum of 3	6
7. Comprehensive (Admit to any college).....	2	2 (Pl. and Sol. Geom. & Adv. Alg.)	2nd Unit* of a mod. foreign language	1 (Chem.)[4] 1 (Physics)	0	0	4

[1] A unit equals 2 high school semester credits.
[2] Typical academic subjects are: English, foreign language, mathematics, science, history, economics. Some non-academic subjects are: Commercial courses, manual training, home economics, band.
[3] Includes also Schools of Art, Architecture, Fisheries, Home Economics, Journalism, Librarianship, Music, and Nursing Education.
[4] In Engineering and Mines, a student who is deficient in chemistry will be expected to earn 15 hours of chemistry credit in his freshman year instead of the usual twelve.
[5] To go into effect Autumn Quarter of 1940.
*The first unit of a foreign language may be completed in the ninth grade. Latin and Greek will not satisfy the Forestry College requirement. Foreign language and laboratory science deficiencies are the only ones which may be made up in college with college credit.
**Pharmacy recommends one unit of a laboratory science. Forestry recommends one unit of physics.

mathematics, natural science, social science, and foreign language) must total at least six units. Less than one unit will not be counted in a foreign language.

c. Have completed the subject requirements of the college to which he seeks admission. (See chart, page 51.)

d. *Probation Rule.* Students entering with a grade point average of 2.0 or above earned during the last three years of high school enter as regular students. All other graduates of high schools satisfying the subject requirements of the University and its respective colleges will be admitted on probation. If, at the end of the first quarter, the work of any entering student is not satisfactory, he shall be subject to the action of the Admissions and Scholarship Board.

2. Beginning freshmen who have been graduated from an unaccredited high school in the State of Washington or in Alaska must:

a. Submit an official application for admission blank. (May be obtained from any high school principal or from the Registrar.)

b. Have completed at least 12 units** in the 10th, 11th, and 12th grades,* including two units of English, with passing grades. As part of the 12-unit requirement, the academic subjects (English, mathematics, natural science, social science, and foreign language) must total at least six units. Less than one unit will not be counted in a foreign language.

c. Have completed the subject requirements of the college to which he seeks admission. (See chart, page 51.)

d. Have a scholastic standing which ranks him in the highest 25 per cent of his graduating class. (Students of lower rank see section 4, below.)

3. Beginning freshmen who have been graduated from an accredited high school or secondary school not located in the State of Washington or Alaska must:

a. Submit an official application for admission blank. (May be obtained from any high school principal or from the Registrar.)

b. Have completed at least 12 units** in the 10th, 11th, and 12th grades,* including two units of English, with passing grades. As part of the 12-unit requirement, the academic subjects (English, mathematics, natural science, social science, and foreign language) must total at least six units. Less than one unit will not be counted in a foreign language.

c. Have completed the subject requirements of the college to which he seeks admission. (See chart, page 51.)

d. Have earned a grade average of 2.0 (straight "C").

e. Be eligible for admission to the University of their own state.

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*The University will not accept any student who has applied toward his diploma from high school, grades which are of lower value than the minimum passing grade of that high school. Such grades will be considered failures for purposes of admission to the University.

**To count as a unit, a subject must be taught five times a week, in periods of not less than 45 minutes, for a high school year of 36 weeks. In satisfying entrance requirements with college courses, a minimum of ten quarter credits is counted as the equivalent of the entrance unit.

4. Beginning freshmen who have not graduated from any secondary school in the United States must meet requirements without deficiency by passing College Entrance Board Examinations. (Foreign students see Section 7.)

a. Complete information concerning the examinations may be obtained by writing to the College Entrance Examination Board, 431 West 117th Street, New York City, N. Y.

5. Advanced undergraduate students who have attended some other college or university must:

a. Submit complete official credentials covering both preparatory and college credits, together with a statement of honorable dismissal from the institution last attended. If the applicant has attended college for less than one year he shall be required to submit a credential from his high school in addition to his college transcript. If his high school record is unsatisfactory, he shall not be admitted until at least one year of college work has been completed with satisfactory grades.

b. Have earned over his total college record, and also in the last term, a grade average of 2.0 (straight "C").

c. Be in no scholastic difficulty at the institution last attended.

Allowance of Advanced Credit:

(1) Students who have done college work before being admitted to the University (entering under classifications 5, 6, 7, or 8) will be allowed whatever credit is acceptable† to the University. In no case will more than three years' credit (135 quarter credits) be accepted toward a bachelor's degree requiring four years of college study. In other words, the entire last year's work (45 quarter credits) must be done at the University of Washington.

(2) Transfer of credit from normal schools, junior colleges, and other institutions accredited for less than four years will not be accepted in excess of the accreditation of the individual school concerned. For example, no student will be permitted credit earned in a junior college accredited for two years after he has earned a total of 90 quarter hours (60 semester hours) of college credit.

(3) Credits earned in unaccredited schools or by private teachers are accepted only after certification by the departmental examiner, the executive officer of the department, the dean of the college concerned, and the Registrar. The fee for such certification is $5.00. Students seeking such certification must secure the proper forms in the Registrar's office.

(4) For work done at institutions whose standing is unknown, advanced credit will be granted only upon examination. (See page 55 for regulations.

(5) For information concerning admission to the College of Education, the School of Law, or the School of Librarianship, see pages 151, 198 or 132.

6. Graduate Students—those who have earned a bachelor's degree in another institution. (See Graduate School section, page 191.)

†In general, acceptable credit is that earned with satisfactory grades at colleges and universities of recognized rank.

7. Foreign Students:

   a. Must satisfy the same general requirements as those from American schools.

   b. Must demonstrate sufficient working knowledge of English and acquaintance with American methods of instruction to enable them to carry regular college work successfully. Students from foreign schools whose standing is not known to be the equivalent of accredited American schools may be required to pass College Entrance Board examinations in representative subjects. A student graduating from a school system which provides for less than twelve years of instruction may be held for additional high school work.

8. Special Students—mature individuals (21 years of age or over) who are not eligible for admission as regular students. To be accepted as special students, they must:

   a. Submit all available credentials and records of previous work in secondary schools and colleges, together with the Application for Special Admission secured from the Registrar.

   b. Secure the consent of the Board of Admissions of the University.

   c. Be classified as residents of the State of Washington.

A Special Student may:

   (1) Take such regular courses as the dean of his college may approve.

   (2) Become a regular student by fulfilling the admission requirements of the college and department in which he is enrolled.

A Special Student may not:

   (1) Earn a degree.

   (2) Participate in student activities.

Admission As An Auditor

A student eligible for regular or for special standing may enroll as an auditor, after securing the consent of his college dean and the instructor of the course, and paying the auditor's fee of $12.* An auditor may listen to lectures without doing the required work of the course. He may not participate in class discussion, or in laboratory work, and under no circumstances will he be allowed credit in the course. He may, in a subsequent quarter, take the course as a regular student and receive credit by fulfilling all the requirements of the course. No person may attend any course in which he has not been registered as a student or enrolled as an auditor.

Freshman Days

Freshman Days is an introductory period for new students. Attendance is expected of all freshmen. The purpose is to give pleasant first impressions of the University from the faculty and from student representatives. The period is designed to give new students vocational, scholastic and personal advice, to promote friendships, and to introduce campus activities.

The period opens September 22, 1939 at 9:00 a.m., with the "Welcome Assembly" in Meany Auditorium, at which time the President of the University will deliver his Address of Welcome to the Class of 1943.

*During the summer quarter, tuition is the same as for regular students.

Advanced Credit by Examination

Advanced Credit by Examination is governed by the following regulations:

1. The work of preparation for the examination must have been done by private study or in class work for which no credit has been granted toward graduation by any institution.

2. A student may not take an advanced credit examination in a course which he has audited, or for which he has been registered in an accredited institution.

3. Only a student enrolled for the current quarter in the University of Washington may apply for advanced credit examination.

4. A student may not apply for advanced credit examination in more hours of credit than he would be permitted to take in regular courses.

5. A student may not earn by advanced credit examination more than one-half the number of credits required for graduation. At least one-half the number of credits required for graduation must be residence credit (not home study, extension classes, or by examination).

6. A student must follow exactly this procedure in applying for and taking an Advanced Credit Examination:

   a. Obtain an application form at the Information Window, fill it in completely, and secure the approval of the clerk at the Information Window.

   b. Secure the approving signatures of the examiner, the executive officer of the department, and the dean of the college concerned.

   c. Return the application to the Information Window for assessment of fee.

   d. Pay to the Comptroller a fee of $2.00 per credit.

   e. Present his receipt for fee to the Information Window and obtain a card authorizing the department to give the examination.

   f. Present the authorization card to the examiner when he takes his examination.

7. The examiner will fill in the back of the authorization card and mail it to the Registrar's Office, where the grade will be recorded.

8. If the examination for advanced credit is not a comprehensive written one, the dean of the college shall require that a statement of the procedure by which the student was tested be submitted for filing.

The Extension Service

The Extension Service provides means for persons to earn college credit by attending Saturday or evening classes in Seattle and other cities in the State, or by home study. Such credit may be applied toward a degree only when all other requirements for the degree have been met and after the student has satisfactorily completed one year in residence at the University of Washington. (For additional information, see Extension bulletins.)

Credits earned in Extension, like credits earned by Advanced Credit Examination, are not resident credits. A maximum of ninety non-resident credits may be counted toward the requirements for a bachelor's degree. Of the

forty-five credits required in the senior year, not more than ten may be non-resident credits.

Beginning in October 1939, the Extension Service will offer Saturday classes. These courses will all meet on the campus and will carry resident credit, but may not be used for an advanced degree.

No resident student may take an extension course without the consent of his dean, the Registrar, and the Director of the Extension Service, properly indicated on forms provided by the Registrar for the purpose.

Registration

At the beginning of each quarter, the student arranges his schedule of studies with the advice and assistance of his college registration officer or adviser. A regular course consists of 15 or 16 credits of recitation per week.

Autumn Quarter. Students who followed the Spring Advisory Program may take advantage of a preferred registration period designed to assure them of the courses they have selected. This period extends from September 5 to 4:30 p.m. September 8. Students who do not take advantage of the preferred registration period may register from September 11 to 12 m. September 23, along with students who did not secure advice in the spring and with new students. In all cases, fees must be paid in advance. During the preferred period, registration must be in person, total fees must be paid in advance, and any change on the Yearly Program of Studies must be approved by the adviser.

Winter Quarter:

Preferred registration period.....8 a.m. Nov. 15 to 4:30 p.m. Nov. 21
(For students advised in the spring)

General registration period.....8 a.m. Nov. 23 to 4:30 p.m. Dec. 8
(Sections reservations will be cancelled if fees are not paid by 4:30 p.m. December 13)

General registration period.....8 a.m. Dec. 26 to 4:30 p.m. Dec. 29
(Fees must be paid in advance)

Spring Quarter:

Preferred registration period.....8 a.m. Feb. 14 to 4:30 p.m. Feb. 20
(For students advised in the spring)

General registration period.....8 a.m. Feb. 23 to 4:30 p.m. March 8
(Sections reservations will be cancelled if fees are not paid by 4:30 p.m. March 15)

General registration period.....8 a.m. March 20 to 12 m. March 23
(Fees must be paid in advance)

Registration is complete when fees are paid, when the election blank has been signed by all required officers, and when approved by Sections. Registration by proxy is not permitted.

Mail Registration. Due to its obvious disadvantages the University does not encourage mail registration. All new students and the greater majority of old students need to consult their adviser in arranging a course of study. It is impossible to secure such advice when registering by mail.

Information regarding mail registration for the Summer Quarter may be obtained from the Summer Quarter bulletin.

Registration Regulations

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

2. *Deficiencies.* Any student having an entrance deficiency shall register for it each quarter until it is removed. In special cases, permission to postpone the removal may be granted by the dean of the proper college.

3. In satisfying entrance requirements by college courses, a minimum of ten college credits is equivalent to one entrance unit.

4. Work taken in non-credit courses or to remove entrance deficiencies shall count as part of the schedule allowed.

5. *Credits allowed each quarter.* Except with the consent of his dean:

a. No student shall register for less than twelve credits of work.

b. No student shall be registered for more than sixteen credits of work, or the number called for in the prescribed curriculum, exclusive of required military or naval science and physical education activity courses.

c. No student engaged in outside work for more than fifteen hours a week may register for a full schedule.

6. An undergraduate student who has not completed his registration, including the payment of fees, before the first day of instruction, will be charged a late registration fee. (See Late Registration Fine—for autumn, winter, spring quarters, page 65; for Summer Quarter, page 64.)

7. *Registration changes:* After a student's schedule of courses for a given quarter has been accepted in the Registrar's office, he may not make any changes therein except by permission of his dean. For each change, or number of changes made at the same time, he is required to pay a fee of $1.00 at the comptroller's office, except that no fee is charged when the change is made on the initiative of the University. Dropping a course is not considered a change of registration.

8. No change in registration involving entrance into a new course is permitted after the first week (seven days) following the beginning of instruction and no withdrawal from the course will be permitted during the last two weeks of a quarter.

9. *Change of College.* Students desiring to transfer from one college to another shall secure the proper forms from the Registrar's office and obtain approval from the deans of the two colleges concerned.

Medical Examinations

All regular undergraduate students entering the University for the first time are required to pass a medical examination as a part of their registration requirements. Men will report to the Pavilion and women to the Gymnasium at the date and hour designated when they register. This appointment takes precedence over all others scheduled for that hour. Students failing to appear for the medical examination at the appointed time will be excluded from classes on notice to the Registrar. For a second appointment, to compensate the University for the additional expense thereby necessitated, a special fee of $5.00 must be paid.

Aptitude Test

All undergraduate students who have not previously done so must take a College Aptitude Test at a time to be announced each quarter.

EXPENSES

Autumn, Winter and Spring Quarters

(See pages 62, 63, 64 for information concerning the Summer Quarter.)

NOTICE: *The right is reserved to change any or all fees without notice to present or future students.*

(Important: Consult University Calendar for fee payment dates.)

Resident Tuition Fee. A general tuition fee of fifteen dollars ($15) each quarter is charged each *regular* student (except as noted under *Exemptions*) who has been domiciled in this state or the territory of Alaska for a period of one year prior to registration. Children of persons engaged in the military, naval, lighthouse, or national park service of the United States within the State of Washington are considered as domiciled within the meaning of this section and are not subject to the time limit of such domicile.

Deserving resident students who, after a quarter in school have shown a marked capacity for the work done by them, in lieu of paying the resident tuition fee, may give their promissory notes bearing satisfactory indorsements, with interest at the rate of 4 per cent per annum. Applications for this privilege must be presented to the Comptroller's office at least ten days prior to the beginning of a quarter.

Non-Resident Tuition Fee. A general tuition fee of fifty dollars ($50) each quarter is charged each *regular student* (except as noted under *Exemptions*) who has not been domiciled in the State of Washington or the Territory of Alaska for a period of one year immediately prior to registration or who is not the child of a person engaged in military, naval, lighthouse, or national park service within the state.

Prospective students are advised that, when credentials for entrance are presented from a high school or educational institution not located in the State of Washington, the student will in the first instance be classified as a non-resident. Upon being so advised by the Registrar he should, if he believes himself domiciled within the state, file a petition with the non-resident office (203 John Condon Hall) for a change of classification to resident status.

The following rules govern the determination of the legal domicile of a student:

(a) The legal words *domicile* and *residence* are not equivalent terms, domicile requires more than mere residence.

(b) No one can acquire a domicile by residence in the State of Washington when such residence is merely for the purpose of attending the University.

(c) The domicile of a minor is that of his father; in the event of the death of his father, that of his mother; in the event of the death of both parents, that of the last deceased parent. Letters of guardianship are not conclusive but will be recognized when consistent with other facts showing a bona fide domicile.

Incidental Fee. In addition to the state tuition fee (resident or non-resident), an incidental fee of twelve dollars and fifty cents ($12.50) each quarter is charged all *regular* students (except as noted under *Exemptions*).

Associated Students' Fee. A fee for membership in the Associated Students of the University of Washington (A.S.U.W.) is collected from all *regularly* enrolled undergraduate students, as follows: autumn quarter, five dol-

lars ($5); winter quarter, two dollars and fifty cents ($2.50); spring quarter, two dollars and fifty cents ($2.50); summer quarter, one dollar ($1). A.S.U.W membership is optional for graduate students, except during the summer. It is optional for members of the teaching staff of the University, part-time students, and auditors during all quarters. Extension students and nurses in residence at approved hospitals are not extended the privilege of A.S.U.W. membership. (See page 79 for information relative to the Associated Students.)

Part-Time Fee. The regular tuition fee (resident or non-resident) and an incidental fee of $2.50 is charged all students, graduate or undergraduate, registering for six credit hours or less. The A.S.U.W. fee is optional. The part-time fee is not applicable to the summer quarter.

Auditor's Fee. Twelve dollars ($12) each quarter except summer quarter; A.S.U.W. membership optional. (See page 54 for the rules pertaining to auditors.)

Nurses in Residence at Approved Hospitals (must be certified by the School of Nursing Education). Tuition fee, undergraduates, five dollars ($5) each quarter; graduates, ten dollars ($10) each quarter. A.S.U.W. membership not extended.

Persons Registered for Thesis Only (must be certified by the Dean of the Graduate School). Candidates for the master's degree who have paid the appropriate fee charges for at least three quarters of graduate work at the University of Washington, and who have completed their course work, and candidates for the doctorate who have paid the appropriate fee charges for at least nine quarters of graduate work at the University of Washington, and who have completed their course work, are permitted to continue their work in residence for the completion of their theses upon payment of the incidental fee of twelve dollars and fifty cents ($12.50) and any laboratory breakage charge incident thereto. A.S.U.W. membership fee optional.

Law Library Fee. In addition to all other fees which may be applicable, students enrolled in the Law School (including auditors) are required to pay a Law Library fee of ten dollars ($10) per quarter.

Music, Riding and Golf Fees. In addition to all other fees which may be applicable, students enrolled in applied music, riding or golf courses, are subject to the following:

Instruction in vocal or instrumental music:	
Individual instruction—one lesson each week..... (Not governed by refund provisions noted below if withdrawal is made after the beginning of instruction.)	$25.00 ea. quarter
Group instruction..... (Not governed by refund provisions noted below if withdrawal is made after the beginning of instruction.)	10.00 ea. quarter
Piano practice room—one hour a day.....	3.00 ea. quarter*
Organ practice room—one hour a day.....	12.50 ea. quarter*
Violin practice room—one hour a day.....	No charge**
Riding instruction fee (payable to riding academy)	12.00 ea. quarter
Golf instruction fee (payable to golf club).....	3.00 ea. quarter

Locker Fee (Men). In addition to all other fees which may be applicable, a fee of one dollar ($1) per quarter is charged all men taking physical

*Available only to students registered in the School of Music or to other University students registered for applied music in the School of Music.

**Available only to University students registered for violin lessons in the School of Music.

RESIDENT STUDENTS

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

(IMPORTANT: Consult University Calendar for fee payment dates.)

Types of Registration For Resident Students	Tuition Fee	Incidental Fee	Law Library Fee	A.S.U.W. Fee			Total Fees		
				Autumn Quarter	Winter Quarter	Spring Quarter	Autumn Quarter	Winter Quarter	Spring Quarter
Undergraduate.....	$15	$12.50		$5	$2.50	$2.50	$32.50	$30.00	$30.00
Graduate.....	15	12.50		*Optional	*Optional	*Optional	27.50	27.50	27.50
Law School.....	15	12.50	10	5	2.50	2.50	42.50	40.00	40.00
Auditors.....	12			*Optional	*Optional	*Optional	12.00	12.00	12.00
Ex-service men or women.....		12.50		5	2.50	2.50	17.50	15.00	15.00
Undergraduate nurses while in residence in a hospital.....	5			**	**	**	5.00	5.00	5.00
Graduate nurses in residence in hospital....	10			**	**	**	10.00	10.00	10.00
Part time.....	15	2.50		*Optional	*Optional	*Optional	17.50	17.50	17.50
Persons registered for thesis only.....		12.50		*Optional	*Optional	*Optional	12.50	12.50	12.50

*If membership in A.S.U.W. is desired, the A.S.U.W. fee should be added to the total fee as shown for this type of registration.

**Privilege of A.S.U.W. membership not extended to off-campus students.

NOTE: Music, riding, golf and locker fees, listed on page 59 should be added to the above when applicable.

NON-RESIDENT STUDENTS

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

(IMPORTANT: Consult University Calendar for fee payment dates.)

Types of Registration For Non-Resident Students	Tuition Fee	Incidental Fee	Law Library Fee	A.S.U.W. Fee			Total Fees		
				Autumn Quarter	Winter Quarter	Spring Quarter	Autumn Quarter	Winter Quarter	Spring Quarter
Undergraduate.....	$50	$12.50		$5	$2.50	$2.50	$67.50	$65.00	$65.00
Graduate.....	50	12.50		*Optional	*Optional	*Optional	62.50	62.50	62.50
Law School.....	50	12.50	10	5	2.50	2.50	77.50	75.00	75.00
Auditors.....	12			*Optional	*Optional	*Optional	12.00	12.00	12.00
Ex-service men or women.....	25	12.50		5	2.50	2.50	42.50	40.00	40.00
Undergraduate nurses while in residence in a hospital.....	5			**	**	**	5.00	5.00	5.00
Graduate nurses in residence in hospital....	10			**	**	**	10.00	10.00	10.00
Part time.....	50	2.50		*Optional	*Optional	*Optional	52.50	52.50	52.50
Persons registered for thesis only.....		12.50		*Optional	*Optional	*Optional	12.50	12.50	12.50

*If membership in A.S.U.W. is desired, the A.S.U.W. fee should be added to the total fee as shown for this type of registration.

**Privilege of A.S.U.W. membership not extended to off-campus students.

NOTE: Music, riding, golf and locker fees, listed on page 59 should be added to the above when applicable.

education courses which require lockers and towel service. Locker tickets may be obtained at the office of the Associated Students.

Late Registration Fine. See Late Registration, page 65.

NOTICE: *The right is reserved to change any or all fees without notice to present or future students.*

Exemptions

Members of the teaching staff of the University are exempt from the tuition and incidental fees.

Persons to whom cadet exemption certificates have been issued are exempt from the tuition fee only.

All honorably discharged service men or women who served in the military or naval service of the United States during the late World War; and all honorably discharged service men who served in the military or naval services of any of the governments associated with the United States during the said war, provided they were citizens of the United States at the time of their enlistment and who are again citizens at the time of their registration in the University, and who are classified as residents, are exempt from the payment of the tuition fee. Ex-service men and women who are classified as non-residents, are exempt from the payment of one-half of the non-resident tuition fee. (This exemption not granted during the summer quarter.)

Payment of Fees

All fees are payable in advance of registration, except in the case of pre-registered students who may pay fees any time prior to the date set for cancellation of classes. If cancelled, fees must be paid before classes can be re-established.

Fees of pre-registered students may be paid by mail. The remittance should be for the *exact* amount due and show the fee statement number.

Refund of Fees

Autumn, Winter, and Spring Quarters

All fees noted on the foregoing pages (except those indicated as not subject to refund) will be refunded in full if complete withdrawal is made during the first three days; one-half of said fees will be refunded if withdrawal is made during the first thirty days. Ten days must elapse between the date application for refund is received by the Comptroller's office and issuance of refund check.

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

Applications for refund may be refused unless requested during the quarter in which the fees apply.

Summer Quarter Fees

(*Important: Consult Summer Quarter Calendar for fee payment dates.*)

Fees are charged Summer Quarter students as follows (except as noted below under *Exemptions*):

AT SEATTLE

Regular Students. For the full quarter: Tuition fee, thirty-one dollars ($31); A.S.U.W. membership fee, one dollar ($1); total for the quarter, thirty-two dollars ($32). For either term separately: Tuition fee, twenty-

one dollars ($21); A.S.U.W. membership fee, one dollar ($1); total for one term only, twenty-two dollars ($22).

Law Students. Tuition fee, thirty-one dollars ($31); law library fee, ten dollars ($10); A.S.U.W. membership fee, one dollar ($1). The total is forty-two dollars ($42) for the quarter.

Auditors. Tuition the same as for regular students; A.S.U.W. membership fee optional.

A law library fee of ten dollars ($10) per quarter is required of auditors in Law.

Nurses in Residence at Approved Hospitals (must be certified by the School of Nursing Education). Tuition fee, undergraduates, five dollars ($5); graduates, ten dollars ($10), for either term or for both terms; A.S.U.W. membership not extended.

Persons Employed in Social Agencies (must be certified by the office of the Graduate School of Social Work and registered for one course only in the Graduate School of Social Work). Tuition fee, ten dollars ($10) per term; A.S.U.W. membership not extended.

Persons Registered for Thesis Only. Same as for academic year. See paragraph by same title, page 59.

Persons Registered for Botany 126 or Accompanying Field Trip (must be certified by Department of Botany). Tuition fee, thirty-six dollars ($36); A.S.U.W. membership fee optional.

Persons Registered for Music 175 (must be certified by School of Music). Tuition fee, thirty dollars ($30); A.S.U.W. membership fee optional.

Persons Registered for Education 199Ea—Progressive Education Workshop at Reed College, Portland (must be approved by the Dean of the College of Education). Tuition fee, twenty-one dollars ($21) to University and fourteen dollars ($14) to Reed College, completing workshop fee of thirty-five dollars ($35); A.S.U.W. membership optional. Persons may add the second term at the U. of W. upon payment of ten dollars ($10) tuition and one dollar ($1) A.S.U.W. membership fee.

Members of the University Teaching Staff. No tuition fee; A.S.U.W. membership optional.

Persons Holding Cadet Exemption Certificates. No tuition fee; A.S.U.W. membership fee, one dollar ($1).

Music, Riding and Golf Fees. In addition to all other fees which may be applicable, students enrolled in applied music, riding or golf courses, are subject to the following:

Individual instruction in applied music, one lesson a week (full quarter)	$25.00
(Not governed by refund provisions noted below if withdrawal is made after the beginning of instruction.)	
Group instruction in applied music (full quarter)	10.00
(Not governed by refund provisions noted below if withdrawal is made after the beginning of instruction.)	
Piano practice room, one hour a day (each term)	1.50*
Organ practice room, one hour a day (each term)	6.25*
Violin practice room, one hour a day (each term)	No charge**
Golf instruction fee (payable to golf club) (each term)	1.50

*Available only to students registered in the School of Music or to other University students registered for applied music in the School of Music.

**Available only to University students registered for violin lessons in the School of Music.

Late Registration. Unless delay in registering is occasioned by officials of the University, *undergraduate* students and *graduate students in the Law School* registering late will be charged a fine of two dollars ($2) on the first day of instruction and three dollars ($3) on the second day of instruction; *graduate* students registering after the second day of instruction will be charged two dollars ($2) on the third day and three dollars ($3) on the fourth day. Not subject to refund.

Addition of Second Term. Students registered for the *first term only* may register for the second term on payment of an additional $10, thus making the tuition fee for the entire quarter $31, plus the A.S.U.W. fee of $1.

AT FRIDAY HARBOR

Graduate Students. Tuition fee, thirty-one dollars ($31); A.S.U.W. membership optional.

Non-Resident Students

There is no additional tuition for out-of-state students during the Summer Quarter.

Summer Quarter Exemptions

Members of the University teaching staff and persons to whom cadet teacher exemption certificates are issued are exempt from payment of the tuition fee.

Ex-service exemptions are not granted during the summer session.

Refund of Summer Quarter Fees

Students who withdraw from the Summer Quarter for satisfactory reasons may, on application made at the time of withdrawal, receive a refund of fees (except as noted above) as follows:

1. If registered for the full quarter or for either term alone, but withdrawing during the first two calendar days, refund: entire tuition fee.
2. If registered for either term alone, but withdrawing between the third and tenth calendar days, refund: $10.
3. If registered for the full quarter, but withdrawing from the *second term only* after the tenth calendar day in the first term and previous to the third calendar day in the second term, refund: $10.
4. If registered for the full quarter, but withdrawing from *both terms* between the third and tenth calendar days, refund: $20.
5. If registered for the full quarter, but withdrawing between the third and tenth calendar days in the *second term,* refund: $5.

Refunds of special fees will be at the discretion of the comptroller's office but, as nearly as is practical, the rule governing the refund of tuition fees will be applied.

Ten days must elapse between the date application for refund is received by the comptroller's office and issuance of refund check.

Miscellaneous Charges Applicable Only in Special Cases

Late Registration Fine. Unless delay in registering is occasioned by officials of the University, *undergraduate* students and *graduate students in the Law School* registering late will be charged a fine of two dollars ($2) on the first day of instruction and a further cumulative fee of one dollar ($1) for each day thereafter up to a total of four dollars ($4). After the first week of instruction, no student shall be permitted to register except with the consent of his dean and payment of a late registration fee of five dollars ($5). *Graduate students not in the Law School* may register without penalty during the first week of the quarter. (See page 64 for Summer Quarter fines.)

Change of Registration Fee. A fee of one dollar ($1) is charged for each change of registration or number of changes which are made simultaneously, except that no charge is made for dropping a course. (See page 57.)

Breakage Ticket Deposit. In certain laboratory courses a breakage ticket is required. This is used by the student to pay for laboratory supplies and breakage of equipment. The price ranges from three dollars ($3) to five dollars ($5). Tickets may be purchased at the comptroller's office.

Special Examination Fee. A fee of one dollar ($1) will be charged for each examination outside the regular schedule, including the examination for foreign language reading. In the case of examinations for *advanced credit,* a fee of two dollars ($2) per credit hour is charged. (See page 55.)

A fee of two dollars and fifty cents ($2.50), payable to the Extension Service, is charged for removal of incompletes in absentia.

Locker Fee (Men). A fee of one dollar ($1) per quarter during the regular academic year, and fifty cents ($.50) per term during the summer quarter, is charged faculty members and students who are not registered for physical education but who desire a locker. Locker tickets may be obtained at the office of the Associated Students.

Grade Sheet Fee. One grade sheet is furnished each quarter without charge; a fee of twenty-five cents ($.25) is charged for each additional sheet.

Graduation Fee. Each graduate receiving a baccalaureate or higher degree is required to pay a graduation fee of five dollars ($5). The fee for a three-year normal or life diploma is two dollars and fifty cents ($2.50). The fee for other professional certificates is one dollar ($1). The three-year normal or life diploma fee does not include the legal registration fee of one dollar ($1) which must be paid to the county school superintendent who first registers a teacher's diploma.

Printing and Thesis Binding Fees. Each recipient of a higher degree pays a fee of two dollars ($2) for the binding of one copy of his thesis. In addition, each recipient of a master's degree contributes five dollars ($5) and each recipient of a doctorate fifty dollars ($50) to the publishing fund, which contribution is applied to the cost of printing an annual volume of digests of theses.

Transcript Fee. One transcript of a student's record is furnished without charge. Fifty cents ($.50) is charged for each additional transcript, with a minimum charge of one dollar ($1).

Medical Examination Fee. A five dollar ($5) fee must be paid by all students who fail to keep their appointment for medical examination. (See page 57.

Certification of Credits from Unaccredited Schools. Credits based on credentials from unaccredited schools or private teachers are accepted only after

certification by the departmental examiner, the executive officer of the department, the dean of the college or school concerned, and the Registrar. The fee for such certification shall be five dollars ($5).

Military and Naval Uniforms. See pages 84, 85 for details.

Refund of Above Miscellaneous Charges

The unused portion of breakage tickets will be refunded in full. The other charges noted above are not subject to refund, except when payment is made in error.

Living Costs

Board and room expense varies according to the type of accommodation desired. The Students' Cooperative Association provides room and three meals a day for about $80 per quarter. Membership is open to both men and women upon payment of an initial membership fee of $15. Boarding houses will average from $90 to $100 per quarter for double room and two meals. Except in the summer quarter, cost in the women's residence halls is $110* per quarter for room and three meals. All rooms are single. The charge for room and board (three meals a day) for the summer quarter is $95, payable in advance. Living cost, exclusive of dues, in fraternity and sorority houses averages about the same as that of the residence halls. Single rooms in private homes rent from $10 to $20 per month. Both The Commons and The Coffee Shop located on the campus serve excellent meals at reasonable prices. (See section on Housing, page 77.)

Financial Delinquencies

The Comptroller and Registrar are instructed to attach credits of a student who, in their joint judgment, has been delinquent in meeting his financial obligations to the University.

SCHOLASTIC REGULATIONS

Degrees—Requirements

It is not the policy of the University to grant honorary degrees. (See Honor Awards, page 77.)

1. *Grade Points Required.* To be graduated from the University of Washington with the bachelor's degree, the candidate must have received twice as many grade points as the number of credits recorded for graduation, in no case less than 180 academic credits, and the required credits in Military or Naval Science and in Physical Education activities.

Any college may make additional requirements for graduation.

See senior scholarship for the last quarter in residence, (8) under "Scholarship Rules," page 71.

For rule regarding repetition of courses in which grades of "D" or "E" were obtained, see "System of Grades," page 72.

2. *Senior Year Residence.* The work of the senior year (a minimum of 35 credits earned in three quarters) must be done in residence.

NOTE: Senior standing is attained when 135 credits and the required credits in Military or Naval Science and Physical Education have been earned.

*The right is reserved to change the residence hall fee without notice to present or future occupants.

3. *Applications for Degrees.* A student shall, during the first quarter of his senior year, file with the Registrar a written application for his degree. Each application shall be checked by the Graduation Committee at least six months before the date at which the student expects to be graduated and notice shall be sent to the student by the Registrar of the acceptance or rejection of his application. The accepted list for each quarter shall be submitted at the regular meeting of the faculty for the quarter and, if approved by the faculty, with or without modification, shall constitute the list of candidates to be recommended for graduation upon the completion of the work requisite for their respective degrees. (No change shall be made in this list unless ordered by a two-thirds vote of the members of the faculty present.)

NOTE: Applicants who are late in filing their applications cannot be assured of recommendations to the faculty, or of consideration of petitions for modification of requirements. Consideration of late applications is a privilege, which may be withheld at the discretion of the officials concerned.

Details concerning issuance of the normal diploma may be obtained from the College of Education bulletin.

4. *Degrees—Entrance and Graduation Requirements.* A student shall have the option of being held to the graduation requirements of the catalogue under which he enters, or those of the catalogue under which he expects to graduate. All responsibility for fulfilling the requirements for graduation is thrown upon the student concerned.

5. *Degrees—Two at Same Time.* A baccalaureate degree and a master's degree, or two different bachelor's degrees, may be granted at the same time, but a minimum of fifteen quarters must have been occupied in the work for the two degrees, and the total number of academic credits must have reached a minimum of 225.

6. *A Second Bachelor's Degree.* A second bachelor's degree may be granted, but a minimum of three additional quarters in residence must have been occupied in the work for this second degree, and the total number of additional credits must have reached a minimum of 45, and the number of additional grade points, a minimum of 90. Not more than ten extension credits and no credits gained by advanced credit examinations shall constitute any part of the added program.

7. *Degrees—Financial Obligations.* In determining the fitness of a candidate for a degree, his attitude toward his financial obligations to the University shall be taken into consideration.

8. *Degrees with Honors.* Degrees with honors may be conferred upon recommendation of the Honors Committee.

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

Commencement Exercises

1. Formal Commencement exercises shall be held only at the close of the spring quarter.

2. Diplomas shall be issued at the end of each quarter to such candidates as have completed requirements at that time.

Military Science Requirements

1. Two years of military science are required of all male undergraduate students except the following:

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

b. Men entering as juniors or seniors.

c. Special students.

d. Men registered for six credits or less.

e. Men registered in Naval R.O.T.C.

f. Men who are not citizens of the United States.

g. Men who are active members in the Army, Navy, or Marine Corps of the United States, or commissioned officers of the National Guard or Naval Militia, or reserve officers of the military or naval forces of the United States, or members of the Naval or Marine Corps Reserve.

h. Entering students who present credits for military science received prior to matriculation. (Such students shall be allowed an exemption from military science up to the value of said credits, but shall be held for physical education.)

i. Men who, because of physical condition, are exempted by the University Health Officer.

j. Men whose petitions for exemption on other grounds than those listed above have been approved by the Department of Military Science and Tactics.

2. Students, other than those listed under a, b, c, d, e, or f above, must register for the proper course and must attend classes until their requests for exemption have been granted.

3. The Military Science requirement shall normally be satisfied in the first six quarters of residence.

4. Men who are not citizens of the United States and those exempted by petition are required to earn equivalent credits in other courses of the University. This must be done in accordance with the rules governing excess hours.

5. All male students who register for advanced military science in their freshman and/or sophomore years may substitute credits in excess of twelve hours for activity credits in physical education.

Naval Science Requirements

1. Naval Science is a four-year course, and no students are accepted unless they contemplate completion of the course, are citizens of the United States, have passed a rigorous health examination, and have satisfied the following subject requirements:

a. High School: Advanced algebra, plane and solid geometry, physics.

b. High School or College: Plane trigonometry, college algebra.

2. The first two years of naval science normally satisfy the requirement of military science and the requirement of physical education activity courses.

Physical Education Requirements

1. All undergraduate students are required to complete six quarters in physical education, five quarters of which shall be activity courses, and one quarter of which shall be a health or hygiene course carrying academic credit.

2. The requirement of activity courses shall not apply to the following:

a. Students who are twenty-three years of age or over at the time of original entrance to the University.

b. Students who enter as juniors or seniors.

c. Special students.

Final Examinations

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

2. The regular class exercises shall end at four o'clock on the fourth day before the end of each quarter. The remaining time of the quarter shall be set aside for two-hour examinations in the several courses as scheduled by the Committee on Schedule and Registration. Examinations in Law School courses will be scheduled by the dean of the school.

3. The scheduled examination period shall be the last meeting of the class. If, however, an instructor holds an examination at some time previous to that regularly scheduled, he nevertheless shall meet his class during the scheduled examination time and shall hold it for the full two-hour period.

4. A student absent from a scheduled final examination either by permission of his dean or through sickness or other unavoidable cause shall be given a grade of Incomplete and he may take another examination in the manner provided for removing Incomplete grades. (See rule governing Incompletes, page 72.) In all other cases of absence from examination, a student shall be given the appropriate grade of "E" or "UW."

5. Reports of all examinations of seniors and of all candidates for graduate degrees shall be in the Registrar's office by 12:00 noon of the Saturday preceding Commencement Day.

Honorable Dismissal and Withdrawal Regulations

Honorable Dismissal. To be entitled to honorable dismissal, a student must have satisfied all financial obligations to the University, and must have a satisfactory record of conduct.

Application for honorable dismissal shall be made at the Registrar's office. (See withdrawal regulations, below.)

Withdrawals. 1. Withdrawal *from the University* is voluntary severance by a student of his connection with the University. It must be approved by the Dean of Men or Dean of Women.

2. Withdrawal *from a course* is voluntary severance by a student of his connection with the course; it must be approved by the dean of his college.

3. In either case, withdrawal is indicated on the student's record as follows:

a. Official withdrawal within the first six weeks of the quarter—"W."

b. Official withdrawal after the sixth week:

(1) If the student's work in the course is satisfactory—"W."

(2) If the student's work in the course is unsatisfactory—"E."

4. Dropping a course without officially withdrawing, at any time in the quarter, is indicated on the students record as follows:

a. If the student's work in the course is satisfactory—"UW."

b. If the student's work in the course is unsatisfactory—"E."

5. A grade of "UW" or "W" shall not be considered in computing grade point averages.

Leaves of Absence

A leave of absence from the University involving excuses from classes may be granted by the dean concerned, except as hereinafter provided:

1. Excuses for absence on account of sickness shall be granted by the University Health Service, and shall be taken by the student personally to the instructors concerned. Students absent on account of sickness shall not be readmitted to classes without this written excuse.

2. Leaves of absence issued by the health officer for illness during the third week from the end of the quarter must be approved by the dean of the college concerned, if grades of Incomplete are desired.

3. Leaves of absence for recognized student activities are issued for women and men students respectively at the discretion of the Dean of Women and the Dean of Men.

Scholarship Rules

1. A value in points is assigned to the several grades as follows: For each hour of grade "A," 4 points; for each hour of grade "B," 3 points; for each hour of grade "C," 2 points; for each hour of grade "D," 1 point; and for each hour of grade "E," no points. An "I" (Incomplete), a "UW" (unofficial withdrawal), and a "W" (Withdrawn) count neither as registered hours nor as grade points.

2. A student who, at any time in a quarter, is reported to the Registrar as doing work below passing grade in any subject shall be so advised.

3. At the end of any quarter in residence, a student who has not made satisfactory progress toward meeting graduation standards shall be reported to the dean of his college. The dean will take appropriate action, which may be to place him on probation or to require him to withdraw from the college. Satisfactory progress will normally be interpreted as a cumulative grade point average of 1.8 for the freshman year, and a 2.0 average thereafter.

Any student in the *Law School* whose grade point average at the end of an academic year is between 1.5 and 1.8 shall be permitted to continue in the Law School for three additional quarters on probation. A student who at the end of his first year is placed on probation shall be required to repeat all courses in

which he received a grade lower than "C." A student placed on probation shall be required to attain at the end of his succeeding three quarters a cumulative average of 2.0, and in the event he does not do so, he shall be dropped.

4. *Reinstatement* of a student disqualified under the provisions of paragraph (3) above, shall be allowed only by the Admissions and Scholarship Board. In general, a student who has been required to withdraw, is not permitted to re-enter the same college until one or more quarters have elapsed, during which time he shall have successfully engaged in work or study justifying the belief that he is now prepared to make a satisfactory showing in the University.

5. *Probation* is the status of a student who has been reported to his dean in conformity with paragraph (3) and allowed to remain in or to return to the University. Such student shall remain on probation until his grade point average for any subsequent quarter is 2.0 or better.

6. In the administration of these rules, required military science and physical education activity courses shall be on the same basis as the academic subjects except as provided for in (7).

7. Colleges and schools may require higher standards of scholarship than those above stated. (See section on the college, school, or department concerned.)

8. *Senior Scholarship rule for the last quarter in residence.* Any senior who has completed the required number of credits for graduation but who has been dropped for low scholarship at the end of his last quarter of residence or who is on probation shall not receive his degree until restored to good standing. In general, he will not receive his degree until one or more quarters have elapsed.

System of Grades

1. The following is the system of grades:

A ..... Honor	E ..... Failed
B ..... Good	I ..... Incomplete
C ..... Medium	N ..... Satisfactory without grade
D ..... Poor (low pass)	W ..... Withdrawn
UW .....Unofficial Withdrawal	

2. Passing grades for advanced degrees are "A" and "B."

3. The grade "E" is final and a student receiving a grade of "E" in a course can obtain credit for that course only by re-registering for and repeating it.

4. "N" is given in hyphenated courses in which the grade is dependent upon the work of a final quarter; it indicates that work has been completed to that point but gives no credit or grade until the entire course is completed. (The use of this symbol is optional.)

5. A grade of "W" can be given only in case of regular withdrawal in good standing. (See withdrawal regulations, page 69.)

Incompletes

1. An Incomplete is given only in case the student has been in attendance and has done satisfactory work to a time within two weeks of the close of the quarter. Except in the case of one-term summer courses, the two weeks' limit may be extended to three weeks upon the approval of the dean of the college.

2. A student who has received an Incomplete in a course must, to obtain credit, convert it into a passing grade within his next four quarters of residence; otherwise, he must re-register for the course. If the course is not offered in any one of the four quarters referred to, the Incomplete may be converted when the course is next offered, provided that if it is not again offered prior to the time at which the student expects to graduate, he shall have the right to convert it by taking a special examination.

Change of Grade

Except in cases of error, no instructor may change a grade which he has turned in to the Registrar.

Repeating a Course

Students who have received grades of "D" or "E" may repeat the courses in which these grades were obtained, or may with the approval of the dean of their college substitute other courses in their place, and in such cases the grade received the second time, either in the repeated or the substituted course, shall be the one counted in computing the average required for graduation. The provision for substitute courses does not apply to fixed curricula. For the purpose of determining University honors, only the grade received the first time shall be counted.

FELLOWSHIPS, SCHOLARSHIPS, PRIZES, AND HONOR AWARDS

(*All awards hereunder that involve the payment of money are subject to receipt of the necessary funds by the University.*)

Fellowships

Loretta Denny Fellowships. Three fellowships are open to graduate students in any department of the University. Not to be awarded for 1939-1940.

National Research Fellowships. Fellowships in physics and chemistry, offered by the National Research Council, are open to promising research students, who have already taken the doctor's degree or have equivalent qualifications. A successful candidate can pursue his research at any university or research institute chosen by him which is acceptable to the appointing board. The salary will ordinarily be $1800 for the first year. Fellows are eligible for successive reappointments ordinarily with increase in salary. For details address the dean of the Graduate School or the heads of the departments.

University Honorary Fellowships. Three honorary fellowships have been established by the University. These, like the Loretta Denny fellowships, are open to students in any department of the University. They carry no stipend, and are designed to furnish recognition of exceptional scholastic excellence in the case of graduate students who are not eligible for the Loretta Denny or the Arthur A. Denny fellowships, either because they do not need financial assistance or because they are not giving their entire time to their work in the University.

Research Fellowships. The College of Mines offers four fellowships for research in coal and clay in cooperative work with the U. S. Bureau of Mines. The fellowships are open to graduates of universities and technical colleges who are properly qualified to undertake research investigations. The value of each fellowship is $720 to the holder, for the 12 months beginning July 1. The recipients register as graduate students and become candidates for the degree of master of science in the proper subject, unless an equivalent degree has previously been earned.

Each applicant should send a copy of his collegiate record from the Registrar of the college where he has graduated, or will graduate in June. He should also send a photograph and a detailed statement of his professional experience, if any, and give the names and addresses of at least three persons who are familiar with his character, training and ability. Applications should be submitted if possible by April 20 in order to allow ample time for consideration, and should be addressed to the dean, College of Mines, University of Washington, Seattle, Washington.

The Bon Marche Industrial Fellowship. The Bon Marche of Seattle offers an annual fellowship of $500 to a graduate student in home economics for research work in textiles. The recipient of this fellowship is required to give one-fourth of her time for 11 months to the testing of textiles for the Bon Marche.

The Agnes Healy Anderson Research Fellowships in Forestry. The income from the Agnes Healy Anderson Research Fellowship Fund is available for graduate research fellowships to be awarded on a competitive basis. The terms of the fund allow some leeway in the number of fellowships and the amount of each.

University Fellowships. The University each year provides a number of teaching fellowships in various departments. The graduate student receiving such a fellowship divides his time equally between his studies and assistance in the teaching work of the department in which he is enrolled. These fellowships range from $450 to $630.

Scholarships

The E. C. Neufelder Scholarship. The E. C. Neufelder scholarship, established by the will of Lily C. Neufelder, is open to any graduate student who has already completed at least one quarter of graduate work in residence or who has finished his undergraduate work at the University of Washington. Award is made on the basis of excellent scholarship and financial need.

The Seattle Branch of the American Association of University Women Scholarship. This scholarship of $100 is awarded annually to a deserving woman student enrolled in some department of the Graduate School, preferably in her second year of graduate enrollment. Award is made on the basis of scholastic ability, character, financial need, and promise.

Graduate Scholarships. A number of graduate scholarships are open to students who perform service as laboratory assistants, assistants in charge of quiz sections, or readers. The remuneration is proportioned to the service, and ranges from $135 to $300.

The Iota Sigma Pi Scholarship. The Oxygen Chapter of Iota Sigma Pi has established a scholarship for $100 a year to be given to a woman majoring in chemistry, with sophomore standing or above, who has a meritorious academic record and other qualifications.

The Phi Beta Kappa Scholarship. This scholarship of $100 is awarded annually in the spring quarter to a student returning to the University the following year as a senior. Award is made on the basis of high scholarship, character and promise, and payment is made in two installments of $50 each at the beginning of the autumn and winter quarters.

The Rhodes Scholarship. A scholarship of £400 a year is granted by Oxford University to a student between 18 and 25 years of age who has at least junior standing.

Isabella Austin Scholarship. The Isabella Austin scholarship of $100 for freshmen women is awarded annually at the end of the autumn quarter, to a young woman of promise, on the basis of scholarship and financial need.

The Kappa Alpha Theta Alumnae Scholarship. The Seattle Alumnae of Kappa Alpha Theta offer an annual scholarship of $100 to the woman student who has to complete one more year in college to receive the degree of Bachelor of Science in Home Economics. She must be a student of high scholastic attainments, must be wholly or partially self-supporting, and must have a character and personality which show unusual promise.

The Delta Delta Delta Alumnae Scholarship. The Alumnae of Delta Delta Delta offer an annual scholarship of $50 to a sophomore, junior or senior woman of character and personality, on the basis of high scholarship, participation in activities and financial need.

The University of Washington Alumnae Association Scholarship. The Alumnae Association of the University of Washington offers an annual scholarship of $100 to a woman student entering her senior year. She must be a student of promising character and personality, must have an outstanding record for high scholarship and participation in activities, and must be partially or wholly self-supporting.

The City Panhellenic Scholarship. The City Panhellenic Scholarship of $100 is awarded annually to a senior or fifth-year student of fine personality and excellent scholarship, on the basis of outstanding contribution to the student community and of financial need.

The Gamma Phi Beta Scholarship. The Seattle Alumnae of Gamma Phi Beta offer an annual scholarship of $100 to that woman among the English major students who most nearly fulfills the following conditions: partial or complete financial self-dependence, high scholarship, strength of personality, wholesomeness of influence and promise.

Beecher Kiefer Memorial Scholarship. This scholarship is awarded annually to the most talented man student of violin. This award is subject to competition before a committee from the School of Music. Application should be made before June 1.

Mu Phi Epsilon Scholarship. Mu Phi Epsilon, national honorary musical sorority, offers to a woman student a scholarship of one lesson a week for a school year, in either voice, violin, cello or organ. (See School of Music bulletin.)

The Fontainebleau Scholarship. A scholarship of $1000 is awarded to a junior in the School of Architecture for study at the Fontainebleau School of Fine Arts, and travel in Europe.

The Paul Karshner Memorial Scholarships. Scholarships of $100 each, given by W. M. Karshner, M.D., and Ella H. Karshner, awarded to a boy and to a girl who are graduates of the Puyallup high school.

The William Mackay Scholarship in Mining. From William Mackay of Roslyn, Washington, a scholarship of $250 is to be awarded to a junior or senior student in the College of Mines on the basis of character, scholarship, and need of assistance. Applications to the dean of the College of Mines are due in March.

The Harold Shefelman Scholarship. The Harold Shefelman cash scholarship of one hundred dollars is awarded annually by the Law Faculty to a student in the Law School on the basis of high scholarship and financial need.

The McKesson-Robbins Drug Company Scholarship. The McKesson-Robbins Drug Company of Portland, Seattle and Spokane has established a $50 cash scholarship for a worthy senior of the College of Pharmacy. The award is based on the scholastic record of the student during his freshman, sophomore and junior years.

The Women's Auxiliary of the Washington State Pharmaceutical Association Scholarship. This organization gives a cash award of $25 to a worthy student selected by the faculty of the College of Pharmacy. Selection is made on the basis of good scholarship and of financial need.

The Pio de Cano Scholarships. Four scholarships for $25 each are open to a Filipino freshman, sophomore, junior, and senior student for excellence in scholarship combined with financial need.

The Advertising Club Scholarship. An annual scholarship of $25 to a student majoring in advertising either in journalism, economics and business or the College of Arts and Sciences, on the basis of high scholastic ability and financial need.

Prizes

Philo Sherman Bennett Prize. The Philo Sherman Bennett prize of approximately $25 is awarded every alternate year "for the best essay discussing the principles of free government." Not awarded in 1939-1940.

The Vivian Carkeek Prize. The Vivian M. Carkeek cash prize of $50 is awarded annually for the best student contribution to the *Washington Law Review* by a member of the senior class on a point of Washington law, or any point of peculiar interest to Washington attorneys.

The Western Printing Company Prize in Law. The Western Printing Company offers an annual cash prize of $25 to that student in the Law School who, in the opinion of the Law Faculty, has made the greatest contribution to the success of the *Washington Law Review.*

The Frank W. Baker Award. This annual award of $250 is to be made "to the student in the Law School who shall prepare and submit to the Dean of the Law School the best thesis on a topic which will foster and promote an understanding of the duty of an American citizen to uphold and preserve the Constitution of the United States and the supremacy of the Supreme Court, and to counteract the tendency of students to succumb to the specious arguments of advocates of subversive doctrines."

The Nathan Burkan Memorial Competition. A prize of $100 is to be awarded to a student of the graduating class of the Law School on a subject within the field of Copyright Law. The authority to make rules for the contest and the awarding of the prize is vested in the Dean of the Law School.

The Charles H. Bebb Prize in Architecture. Mr. Charles H. Bebb offers a prize of $50 in the School of Architecture to the sophomore, junior or senior student who submits the best design in the terra cotta treatment.

Junior Military Prize. The members of the Non-commissioned Officers' Training Camp, University of Washington, 1918, established a fund, the income of which shall be utilized as a prize to be awarded to the student completing his junior year with the highest honors in military science.

The Junior Military Medals. (a) The United States Coast Artillery Association presents annually a medal to the student in the Coast Artillery Unit completing his junior year with honors in military science.

(b) The Military Order of the Loyal Legion of the United States, Commandery of the State of Washington, presents annually a medal to the student in the Infantry Unit completing his junior year with honors in military science.

Medals of Merit. The Department of Washington, Reserve Officers' Association of the United States presents annually a Medal of Merit to an outstanding cadet field officer in each unit.

Leadership Prizes. (a) The Seattle Chapter, Reserve Officers' Association of the United States, presents annually an officer's saber to the outstanding cadet captain in command and leadership in the Infantry Unit.

(b) The University Post No. 11, American Legion, presents annually an officer's saber to the outstanding cadet captain in command and leadership in the Coast Artillery Unit.

Honor Basic Student Prizes. Seattle Post No. 1, American Legion, presents annually a medal to the outstanding basic student in each unit.

The Ruth Nettleton Award. In memory of Ruth Nettleton, who died while a senior at the University of Washington, a few of her friends have established the Ruth Nettleton Memorial Fund, the interest from which is offered each year as a prize in sculpturing.

The Charles Lathrop Pack Prize. The late Charles Lathrop Pack, for many years president of the American Tree Association, has provided an annual prize of $50 for the best essay by a student majoring in forestry. The subject shall be chosen with reference to interesting the general public in forestry matters.

The Washington State D. A. R. Ada McCleary Prize. The Washington State Society, D. A. R. offers an annual prize of $25 to a girl majoring in Home Economics at the end of her freshman year and intending to complete the course. The award is made on the basis of scholarship, financial need, personality and patriotic ideals.

The Frank Billings Kellogg Prizes. Earnings from the "International Goodwill Fund" will provide a prize for students who are interested in pacific means for settling disputes between nations. Awards will be made for essays and public speeches promoting international friendliness and cooperation.

The Lehn and Fink Medal. Lehn and Fink, of New York, offers a gold medal each year to the student in the graduating class who prepares the best essay on some scientific topic of pharmaceutical importance.

The Rho Chi Society Prize. Rho Chapter of Rho Chi Society offers an annual book prize to the student in pharmacy completing his freshman year with the highest grade point average of his class.

The Alpha Kappa Psi Plaque and Medallion Award. Rho Chapter of Alpha Kappa Psi, a professional fraternity in commerce, awards annually

the Alpha Kappa Psi Scholarship Medallion to the male student pursuing a degree in the College of Economics and Business, who has attained the highest scholastic average for three years of collegiate work in this University.

Honor Graduates in Military Science and Tactics. At the close of the academic year, the University may designate as Honor Graduates 5 per cent of the total number of students enrolled in the second year Advanced Course of each Unit on March 1 of that year. Students so designated will have completed the prescribed R.O.T.C. four-year course and will be selected from the academic graduates of the current year. Only those will be selected whose attainments in scholarship have been so marked as to receive the approbation of the President of the University, and whose proficiency in military training and intelligent attention to duty have merited the approbation of the professor in Military Science and Tactics.

Honor Awards

Presentation of honor awards is made as follows:

1. The President's Medal is presented at Commencement to the member of the graduating class who has the highest scholastic standing for his entire course.

2. The following are presented by the President in the name of the Faculty at the annual President's Assembly in the autumn quarter:

a. The Junior Medal, awarded to the Senior having the highest scholastic standing for the first three years of his course.

b. The Sophomore Medal, awarded to the Junior having the highest scholastic standing for the first two years of his course.

c. Certificates of High Scholarship, awarded to Seniors, Juniors, and Sophomores for excellence in scholarship in their Junior, Sophomore, and Freshman years respectively.

STUDENT WELFARE

Housing

The University, through its personnel offices and health service, inspects and approves a wide variety of living accommodations for men and women students. Lists of such places are available at the dean of men's and dean of women's offices. With the exception of four residence halls for women, providing rooms for three hundred students, all accommodations are off the campus, and consist of boarding and rooming houses, private homes, apartments and housekeeping rooms, the student cooperatives, independent organized houses, and fraternity and sorority houses. Residence in the last mentioned awaits invitation to membership, but it is understood that in all other cases (except apartment houses) residence shall be arranged for on the basis of the school quarter, either by written or verbal agreement with the householder or board of trustees of the house. (See section on Living Costs, page 66.)

Women students under twenty-one years of age not living in their own homes, with immediate relatives, in nurses' training school homes, or in homes where they are earning their board and room, or both, are required to live in some type of organized group house, i.e., University residence halls, sorority houses, or independent organized houses approved by the University. If circumstances warrant, exceptions shall be made by the dean of women's office upon request of the parents.

Failure to comply with this regulation will make the student subject to discipline to the extent of cancellation of registration.

Employment

Various agencies of the University do everything possible to assist worthy students in finding employment. All part-time placement for men and women in off-campus jobs, as well as board and room jobs for men, is handled through the University Employment Office, located in Clark Hall. The Y.M.C.A. in Eagleson Hall also assists men to obtain work. Women students desiring to earn room and board with some compensation should apply at the dean of women's office in Clark Hall. In all cases a personal interview is required.

It is important that students who find it necessary to help finance their college education through some type of employment should plan to limit their schedule of college work in proportion to the number of hours of employment.

The National Youth Administration Project affords an opportunity to a limited number of students for work in the various departments of the University. The compensation is $15.00 a month for approximately two hours' work per day. Information as to eligibility rules, etc., may be received from the dean of men, who has been designated as Director of the project at the University of Washington.

Loans

There are several loan funds available to both men and women students. Experience has demonstrated the wisdom of limiting such assistance to students who have junior standing or more, and who have demonstrated their ability as college students and their sincerity of purpose. Due to the heavy call upon loans, it has seemed necessary to limit the amount of individual loans to the cost of resident tuition and supplies. It is desirable to make application for loans at least ten days in advance of the date instruction begins. A few small emergency funds are available. These are very limited in amount and time. For information consult the dean of men or dean of women.

Leona M. Hickman Loan Fund. Loans are limited to qualified young men who are actual residents of King County, Washington, who desire to provide themselves with advanced educational training. Except in special cases, loans cannot exceed $250 to any one applicant in any school year and not in excess of $1,000 to any one student. Interest rate is 5 per cent per annum.

Address applications to Peoples' National Bank of Washington, Trustee, Seattle, Washington.

University Health Center

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

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

The dispensary is available to all students during the span of class hours, for emergencies and infectious ailments only. The infirmary is available for the reception of bed patients at all hours.

From the results of the entrance physical examinations the students are classified. Those found to be below standard are re-examined at a later date for evidences of incipient tuberculosis, heart disease or other chronic disabilities. Ordinary medicines are dispensed in small quantities without cost to the

student. Close cooperation is maintained with the family physician when one is retained; in no way is the idea of supplanting the family physician contemplated. Outside calls are not made by University physicians.

The infirmary cares for all cases of illness (including physicians' attendance, nursing and medicines) for a period of one week each quarter free of charge. For a period longer than one week a charge of $2 per day is made. Students confined in the infirmary are permitted to ask for the services of any licensed regular medical practitioner in good standing, at their own expense.

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

After absence from classes due to illness, a student is not re-admitted without a clearance certificate obtained from the Health Service. This certificate is issued only to those students who have been under observation of the Service. Those students, who receive care at home or afield from the campus, must, to secure a certificate, communicate with the Health Service on the first day of their absence. In this manner a record of all student sickness is kept, which is used as a guide for health supervision. (See Leave of Absence, page 70.)

Personal and Vocational Guidance

The offices of the dean of men and dean of women are concerned with the general welfare of the students of the University and welcome correspondence and conferences with both parents and students. Students are urged to avail themselves of the opportunity for consultation in regard to social, personal, and vocational problems. These offices, which work closely with the advisory system of the colleges and schools of the University, are in a position not only to counsel students personally, but to direct them to faculty advisers and other sources of information and assistance. Obstacles to successful work in colleges may often be removed through the friendly advice these officials stand ready to give.

ASSOCIATIONS AND CLUBS

Alumni Association. All graduates of the University of Washington and all persons who have completed satisfactorily one year of collegiate work are eligible for membership in the association. Members receive: One year's subscription to the *Washington Alumnus,* library, football, voting privileges, etc. The membership fee is three dollars ($3.00) per year, being good for twelve months from date of payment. Dual memberships for man and wife, or for two persons living at the same address, are four dollars and fifty cents ($4.50) per year, including one copy of the *Washington Alumnus* and all other advantages of a single membership. A Board of Trustees, consisting of twenty-three members, is the governing body of the Association.

Associated Students. The Associated Students of the University of Washington (A.S.U.W.) is the central organization which conducts the activities of the student body. Membership is required of all regularly enrolled undergraduate students. The fees are as follows: autumn quarter five dollars ($5), winter quarter two dollars and fifty cents ($2.50), spring quarter two dollars and fifty cents ($2.50), summer quarter one dollar ($1).

This fee gives each student a membership in the corporation, including a free subscription to the University of Washington Daily and free or reduced admission to such football, basketball, baseball games, tennis, track and wrestling meets, crew regattas, debates, oratorical contests, musical concerts as may be designated by the Board of Control.

The management of the Associated Students is vested in the office of the Director of Student Activities. The administration of the affairs of the Asso-

ciated Students is carried on through an annually elected Board of Student Finance and the Student Council.

The Board of Student Finance is composed of the seven following members: The Director of Student Activities of the University of Washington, the President of the Associated Students of the University of Washington, the President of the Associated Women Students, a representative appointed by the Director of Student Activities and three representatives appointed by the President of the University of Washington.

The Student Council is composed of eleven members, as follows: The President, the Vice President, and Secretary of the Associated Students of the University; the President of the Associated Women Students; a graduate representative; the President of the Senior Class; the senior representative; the President of the junior class; the junior representative; the President of the sophomore class, and the President of the Managerial Council.

STUDENT CONDUCT AND ACTIVITIES

Cheating

Whenever cheating is detected, the following method of procedure shall be followed:

1. The instructor shall take whatever action seems to be commensurate with the gravity of the offense and the character of the student.

2. The instructor shall report to the office of the Dean of Men or the Dean of Women the name of the student involved, the nature of the offense, and the action taken.

General Eligibility Rules

In order to participate in any student activity, a student shall keep off probation, shall carry not less than twelve hours of work in the University during the quarter of participation, and shall comply with the rules and regulations of the committee governing the activity. For athletic activities of men, the Registrar and the Chairman of the Faculty Athletic Committee shall determine eligibility. In all other activities, the Registrar and the Dean of Men shall determine the eligibility of men, and the Registrar and the Dean of Women that of women.

Library Rules

1. A student may borrow books for a period of two weeks, or, with special permission, for four weeks. Renewals may be made for two weeks if the books are not in demand.

2. Books may be recalled for reserve or in an emergency.

3. Books are due on the last date stamped on the date slip inside the back of the cover. A fine of 25 cents per volume will be assessed for books not returned on the date due, increasing to 50 cents per volume on the fourth day and $1.00 on the ninth day for which they are overdue.

4. Reserve books are to be used in the library only; with a few exceptions they are issued for a period of two hours.

5. Books from the Reserve Room, excepting those belonging to the Reference Collection, may be borrowed for home use when the library is to be closed. They are due in the Reserve Room at the hour the library next opens.

6. Failure to return a volume to the Reserve Desk within ten minutes after it is due, subjects the borrower to the fine of 25 cents for any part of the first hour and five cents for each additional hour or fraction thereof. All fines are levied when the books are returned and are payable at the office of the Comptroller.

7. Permission to borrow reference material is granted at the discretion of the reference librarian. Borrowers who fail to return such material at the time designated are fined the same as for reserve books. Anyone who takes reference material *without permission,* is subject to a fine of 50 cents for the first day and 25 cents for each additional day until the material is returned.

8. Failure to comply with (3) or (6) is considered a financial delinquency and registration, transcripts, and diplomas will be denied until the obligation is met.

Meetings and Speakers at Student Clubs

1. The buildings and campus of the University are primarily devoted to education; they are also used for cultural and recreational purposes incidental to the work of the University.

2. The University buildings and grounds are not available for commercial or other outside uses, except that its assembly halls may, by arrangement with the President's office, be used for graduation exercises and other special assemblages of the public schools.

3. Meetings of student organizations upon the campus are permitted for purposes educational, cultural and recreational in their nature, connected with the work of the colleges or departments of the University.

4. All student groups desiring to make use of the facilities of the campus for meeting places, shall apply at the beginning of each year to Professor Raymond Farwell, chairman of the Executive Council of Student Campus Organizations; if organized during the school year, shall apply to the above Committee before holding any meetings on the campus.

5. A student organization or group which is of a strictly professional character, or which is sponsored by an appropriate University department, may invite an outside speaker to address a meeting in a University building or on the campus but shall notify the President's office before the meeting is held. (An "outside speaker" shall be construed to mean any speaker not a registered student or a member of the staff.) Any other student organization or group desiring to invite an outside speaker to address a meeting in a University building or on the campus must have such invitation approved in advance by the Executive Council of the Student Campus Organizations Committee and by the President of the University. The terms "student organization or group" in this rule shall not be construed to refer to classes.

6. Arrangements and programs for meetings held under the sponsorship of a college or department of the University and open to the public shall be first approved by the President of the University. Departments or groups of departments desiring to have speakers for their students only, shall apply to the President's office. Special lectures should be held in the afternoon in order not to disrupt regular morning classes.

7. Permission for the use of any space for outside organizations must be obtained by applying to the Secretary of the Board of Regents, Dean H. T. Condon, and to the President of the University. This permission is granted only for educational purposes.

8. Only all-University functions for which classes are generally dismissed may be designated as assemblies.

9. Necessary arrangements for rooms and space to be used between the hours of 8 a.m. and 5 p.m. will be made by appyling to the Registrar's office. Rooms and space to be used between the hours of 5 p.m. and 8 a.m. will be secured by applying to the Buildings and Grounds' office.

10. All financial arrangements for the use of space shall be made through the office of the Comptroller of the University.

Pledging to Fraternities or Sororities

1. No student having less than junior standing shall be initiated into a fraternity or sorority until he or she shall have earned successfully 18 resident credits in two quarters or 14 in one quarter, in addition to the required credits in physical education activity, and military or naval science.

2. Candidates for initiation into fraternities or sororities shall secure certification of eligibility from the office of the Dean of Men or the Dean of Women.

Student Activities

Student activities are governed by the Committee on Student Affairs and Student Welfare in accordance with the rules of the faculty. Students are responsible for acting in accordance with the specific rules of the Committee, information regarding which may be secured from the Dean of Men or the Dean of Women.

Student Publications

1. Only those publications so designated by the Dean of Men and the Director of Student Activities may make use of the good will of the University in soliciting advertising.

2. Permission to issue student publications is obtained from the President's office.

3. The editors of all student publications shall be held responsible for all matter that appears in their respective publications. Correspondents of all other publications shall be held similarly responsible for all items contributed by them to their respective publications.

4. No editions of *The Daily*, by special sets of editors shall be allowed, except by express permission of the publications committee of the Board of Control.

Tutoring

1. Students seeking the services of a tutor may obtain assistance in the Student Employment Office, in the offices of the Dean of Men and the Dean of Women, or in the office of the proper major department.

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

3. The tutor shall secure the approval of the head of the department for all tutoring for compensation secured on a form provided for the purpose, giving the names of the student or students and the tutor. In cases where the tutor is in the rank of instructor or higher, the approval of the dean must also be secured.

DEPARTMENT OF MILITARY SCIENCE AND TACTICS

History

Military training has been given at the University of Washington since 1875 with the exception of a brief interval in the present century.

The department of Military Science and Tactics has been established not only for the purpose of teaching the fundamentals of military science but also certain essentials of organization and leadership which are indispensable to a young man's industrial or professional career.

The Reserve Officers' Training Corps

Under the provisions of the National Defense Act of 1916, as amended in 1920, any university or college may, upon its own application and the approval of the War Department, maintain a Reserve Officers' Training Corps. The University of Washington made its application for a unit in the autumn of 1916. This was approved by the War Department, at which time an Infantry Unit was organized. In the autumn of 1919, the Coast Artillery Unit was added.

Under the provisions of the National Defense Act, the Federal Government details to educational institutions where R.O.T.C. units have been established, officers of the regular army to act as instructors in the department, and loans the institution the necessary equipment for the use of these students, without cost to the institution. The War Department approves the course of study, leaving the requirements as to attendance and exemptions, whether the course shall be voluntary or compulsory, to the administration of the institutions concerned.

The University of Washington requires two years of Military or Naval Science of all male citizens of the United States. (For exceptions, see page 68.)

Objects of the Reserve Officers' Training Corps

The general object of the courses of instruction of the Reserve Officers' Training Corps is primarily to qualify students for positions of leadership in time of national emergency, and secondarily to provide the nation with an electorate informed of the purpose and necessity for a sane policy of national defense.

The complete course of instruction comprises four years: a basic course of two years and an advanced course of two years.

The object of the basic course is to give the student knowledge of the fundamental training requirements of the arm of service in which he is enrolled and to develop his initiative, confidence and ability, thus qualifying him, in case of emergency, to instruct untrained civilians in the duties of a soldier.

The object of the advanced course is to qualify for a commission in the Officers' Reserve Corps a limited number of selected students who have completed the basic course and who have demonstrated exceptional qualities of leadership.

The applicatory method will be employed throughout the four years for the purpose of developing the qualities of command and leadership.

The training outlined is progressive and is designed to cover the maximum amount of ground in the limited time available. As many of the trainees do not take the advanced course, every effort is made to offer in the basic course those phases of military training which will qualify the college graduate for effective military service in case of an emergency and, at the same time, offer instruction which will be of educational value in preparation for civil life.

Uniforms and Allowances

The University having adopted a distinctive uniform for all students in the department of military science and tactics, each student who has been accepted for enrollment and training in this department will be issued a uniform and charged a uniform fee to cover the cost. For the year 1939-1940 the fee will be approximately $12.00. This amount will be deposited by the student at the time he takes the physical examination required by the University, provided he passes the physical examination successfully. This uniform may be worn daily thus saving civilian clothes; it must be worn at such times as the Professor of Military Science and Tactics may direct, and will become the personal property of the student after the first three quarters in the R.O.T.C.

At the end of the second year the student will be reimbursed for his uniform fee by the University in the amount allowed by the federal government which currently is $9.00 for the second year.

The uniform prescribed for advanced students is the regulation army officer's uniform, with appropriate R.O.T.C. insignia. The federal government will advance part of the cost of the uniform, at present $29.00, at the beginning of the school year.

The federal government made the following allowances to advanced course students for the year 1938-1939: uniform $36.00; commutation of rations, 25 cents per day for two years less time spent in summer camp; pay while in summer camp, 70 cents per day. This total approximates $175.00 for the two-year course.

The summer camp is held annually, for a period of six weeks, commencing about the middle of June. The student attends camp after the completion of his first year in the advanced course. During the time he is in attendance at camp he is allowed food, clothing, shelter, medical treatment and hospitalization and 70 cents per day, and in addition transportation to and from camp.

DEPARTMENT OF NAVAL SCIENCE AND TACTICS

All male students in the University who are American citizens, and are not physically disqualified, are required to take military training throughout the first two years of residence. The four-year course in Naval Science and Tactics prescribed by the Navy Department for units of the Naval Reserve Officers' Training Corps, may be substituted by the student for military training. Enrollment in this course is limited by the Navy Department and students will be selected for enrollment by the Professor of Naval Science and Tactics from those applying. The course in Naval Science and Tactics leads to a commission as ensign.

General Knowledge and Training

As the course in Naval Science is designed to train students to perform the duties of officers in the Naval Reserve, the student's cognizance of naval affairs will make him a more valuable citizen, fitted at once to take a responsible position in any national or general emergency. There are other distinct advantages to the student electing this course. The work is interesting, as well as beneficial. The graduate will gain a knowledge of the sea which few citizens possess, and his familiarity with maritime affairs will be of service in any business associated with shipping. In addition to his training in organization, discipline, leadership, and executive ability, his acquaintance with the extensive variety of mechanisms and appliances, both mechanical and electrical, used in the naval service, and knowledge of the use and safety precautions necessary in handling explosives, gases and fuels will be an asset to him in any business or profession.

Requirements for Admission to Course

Applicants for this course must be citizens of the United States and must pass a very rigid physical examination given by a board of naval medical officers.

Graduates Commissioned in Navy Reserve

Students who have successfully completed the course in naval science will be given a certificate showing such completion. Those who have successfully completed the course will, if recommended by the President of the University and the Professor of Naval Science and Tactics, be given a commission in the U. S. Navy Reserve.

Summer Cruises

For those students regularly enrolled in the Naval R.O.T.C., a summer cruise without expense to the student is generally, but not always offered. Usually a four-week cruise on a battleship to Hawaiian waters is offered during the summer at the end of freshman and sophomore years, which approximately one hundred Basic Course students may take each summer if they desire. Practical instruction is given on the cruise in navigation (for sophomores), seamanship and general ship's duty at deck and engineering stations. As this cruise is not required, no university credit is given for it.

Advanced Course students must take the Advanced Course cruise prior to receiving a commission.

In addition to the regular summer cruises, numerous week-end cruises in Puget Sound on an Eagle Boat are arranged for the instruction and entertainment of the students during the college year. These week-end cruises are voluntary. Inspection trips are made to the different vessels of the Fleet visiting in this vicinity, and to the Navy Yard at Bremerton. On occasion, permission is obtained for Naval R.O.T.C students to take short trips on vessels of the U. S. Fleet, and when approved by parents or guardians, to take short flights at the Naval Air Station, Sand Point. Sailing or recreation parties may be taken in the 30-foot whaleboats which are part of the unit's equipment.

Fees and Expenses

Other than the regular University tuition fees there is no extra expense to the students regularly enrolled in the Naval R.O.T.C. On enrollment, an outfit of uniforms is furnished the students by the Navy Department.

The Navy Department has authorized the Professor of Naval Science and Tactics to accept a limited number of students as supernumeraries, or Naval Science Students. As no appropriations are available for these supernumeraries, students taken as Naval Science Students will be required to pay for their own uniforms.

Advanced course students are paid $.25 a day, as subsistence allowance, while taking that course. This amounts to about $90 per year. In addition, advanced course students are paid the pay of apprentice seamen ($21 per month) during the summer cruise. All students are given subsistence while cruising and are allowed transportation and subsistence between the University and the port of embarking for the cruise.

Obligations Incurred

Entering freshmen making application for enrollment in the course of naval science must agree to fulfill the following obligations and agree to accept a commission in the Navy Reserve at the end of the four years' course in the Naval R.O.T.C.

1. Elect naval science as one of their courses in the University, for four full years.
2. Submit evidence of citizenship.
3. Submit to physical examination prior to enrollment, and yearly thereafter.
4. Agree to be vaccinated for small-pox and given typhoid prophylaxis during freshman year.
5. Devote five hours per week in attendance of the course in naval science and such other times as may be necessary to properly prepare their lessons.
6. Wear uniforms as required for drills and class room work, and to submit to naval discipline while under instruction in naval subjects and during the summer practice cruise.
7. Take the necessary courses in mathematics as part of their regular university program.
8. Make one advanced summer cruise prior to receiving commission in the Navy Reserve.

SCHOOLS OF ARCHITECTURE AND ART

(See College of Arts and Sciences section, pages 89 and 91.)

COLLEGE OF ARTS AND SCIENCES

The College of Arts and Sciences is a regular four-year college offering a wide range of courses leading generally to the degrees of bachelor of arts or bachelor of science.

The College provides a variety of training in answer to the evident demands of modern life. It aims, of course, to give pre-professional work to those going into professional fields such as law, medicine, librarianship, dentistry, teaching and so forth. It offers further for those not specializing in any particular profession an opportunity for a general educational course with a major emphasis on some art or science. The College is also developing a program of General Studies aiming to provide a broad cultural college course without specialization in any single subject.

Entrance Requirements

For detailed information concerning University fees, expenses, and admission requirements, see pages 49-86.

For entrance to the College of Arts and Sciences the student must present 12 units* of credit, belonging normally to the last three years of the high school curriculum, which must include the following:

English, two units
Plane geometry, one unit, or second year algebra
Social science, one unit
Foreign language, a second unit
Laboratory science, one unit (biology, botany, chemistry, physics, or zoology)

If a student enters with six or more academic units which include the above subjects he enters without a deficiency. The foreign language and laboratory science requirements *only* may be made up in the college with university credit. Such credits may not be used in satisfying the group requirements as indicated below.

CURRICULA

The departments and schools in the College of Arts and Sciences shall be grouped as follows:

Group I	*Group II*	*Group III*
Architecture	Anthropology	Anatomy
Art	Economics	Astronomy
Classical Languages	Geography	Bacteriology
English	History	Botany
General Literature	Home Economics	Chemistry
Germanic Languages	Nursing Education	Fisheries
Journalism	Philosophy	Geology
Liberal Arts	Physical Education	Mathematics
Librarianship	Political Science	Physics
Music	Psychology	Zoology & Physiology
Oriental Studies	Sociology	Oceanography
Romanic Languages		Pharmacy 15
Scandinavian Languages		

Courses from other colleges, schools, or departments in the University may be placed under these groups for the convenience of transfer students, and for the allocation of electives. A department may be allocated to one group only.

There are three types of curricula.

*To count as a unit, the subject must be taught five times a week, in periods of not less than 45 minutes, for a high school year of 36 weeks. In satisfying entrance requirements with college courses, a minimum of ten quarter credits is counted as the equivalent of the entrance unit.

1. *Prescribed Departmental Curricula*

Students should elect prescribed departmental majors only after consultation with special departmental advisers. They should consider their aptitude for the particular branch of specialized knowledge and in some cases the outlook for future employment. Courses of study in those departments offering prescribed majors are listed in this bulletin and may be considered as requirements for the bachelor's degree. The degree given will be bachelor of arts or bachelor of science in the chosen department.

2. *Elective Departmental Curricula*

Elective departmental majors are more flexible than prescribed majors and should be chosen by those students who have definite leanings toward a particular branch of knowledge, but who for good reasons may not want to follow the prescribed departmental curricula. Such students should have some acquaintance with the principal fields of knowledge and a thorough training in one or two fields.

The minimum requirements for the first two years shall be thirty credits in one group, twenty credits in a second group, and ten credits in the remaining group, the major department determining the choice of courses. The major department, if it so desires, may specify courses within these group requirements, or add further requirements for their particular department and may institute comprehensive examinations in the major subject at the end of the second year. A major consists of thirty-six credits or more, depending upon the department.

For the last two years of work the student should consult departmental advisers. At least sixty credits of the total one hundred and eighty shall be in the upper division courses. The degree will be bachelor of arts or bachelor of science depending upon the major selected.

3. *Non-departmental Curricula: General Studies*

Still more flexible than departmental majors are those provided by the Division of General Studies. An effort is made to meet the needs of those whose interests are not professional or are too broad for the limitations of a single department by organizing courses of study adapted to the needs of the individual student. This permits drawing upon the resources of several departments or from other colleges as well in building up curricula along the lines of a general education, in special fields of thought or problems of interest, or in a more or less vocational direction.

The minimum requirements for the first two years are fifteen credits in each group. These may be so combined with the remaining credits of free electives that they will provide certain terminal values should the student be unable to complete his work for graduation. In most instances the General Studies major will be assigned to a special adviser in his senior year for guidance in following his major study. At least sixty credits of the total one hundred and eighty shall be in upper division courses. The degree will be bachelor of science or bachelor of arts depending upon the relative preponderance of scientific or non-scientific subjects in the curriculum.

General Requirements

In addition to the choice of one of three types of curricula, the following requirements in English composition, military or naval science and physical and health education must be included.

Composition 1-2. Ten credits after passing Preliminary Freshman English Test unless exempted in whole or in part. For Composition 2, journalism students substitute Journalism 51.

The physical education requirement for women consists of the health education lecture course, Physical Education 10 or Physical Education 4, 6, 8, for which academic credit is allowed, and five quarters of activity courses to be taken during the first two years.

Two years of military or naval science are required of all male students during the first six quarters of residence in addition to five quarters of physical education and a two-credit academic course in hygiene, Physical Education 15.

MAJOR REQUIREMENTS AND SPECIAL CURRICULA IN THE VARIOUS DEPARTMENTS AND SCHOOLS

Below are gathered together the pre-major and major requirements and set curricula arranged by departments and schools.

ANATOMY

John L. Worcester, Executive Officer, Anatomy Building

(See Biological Sciences, page 94.)

ANTHROPOLOGY

Erna Gunther, Executive Officer, 211 Museum

DEGREE: Bachelor of Arts

	Credits		Credits
51, 52, 53.*Intro. to Anthropology	15	141. Primitive Literature	3
101. Basis to Civilization *or*		142. Primitive Religion	3 } 6
105. Culture Growth *or*		143. Primitive Art	3
107. Methods of Archaeology	3 or 5	150. General Linguistics	3
111. Indian Cultures of Pacific *or*		160. History of Anthropology	2
112. Peoples of the Pacific *or*		185. Primitive Soc. & Pol. Institutions	5
110. American Indians	3	193-195. Reading	†

A 2.5 grade point average in anthropology is required of all majors in the field.

*Students starting major before spring, 1937, should be allowed to substitute other courses amounting to five credits.

†Total number of credits necessary to bring full amount to forty-five.

This major should be supported by appropriate courses in psychology, zoology, geology, geography according to special interests. It is necessary, if graduate work in the field is contemplated, to take French and German through Scientific Reading or to offer its equivalent.

ARCHITECTURE

Harlan Thomas, Director, Physiology Hall

Member of the Association of Collegiate Schools of Architecture

(See School of Architecture bulletin for detailed information.)

DEGREE: Bachelor of Architecture

All students contemplating the study of architecture should confer with the director of the school as to their special qualifications and reasons for entering the professional study of architecture. A student should have credits in plane geometry, algebra through quadratics, trigonometry, physics, and at least two years of foreign language. Thirty-five credits of foreign language are required for graduation, fifteen credits of which are provided in the curriculum.

CURRICULUM IN ARCHITECTURE LEADING TO THE DEGREE OF BACHELOR OF ARCHITECTURE

First Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Arch. 1. Architecture Appreciation	2	Arch. 2. Architecture Appreciation	2	Arch. 3. Architecture Appreciation	2
Arch. 4. Elements of Design	4	Arch. 5. Elements of Design	4	Arch. 6. Elements of Design	4
Arch. 7. Graphics	1	Arch. 8. Graphics	1	Arch. 9. Graphics	1
Arch. 47. Elements of Building Construction.	3	Arch. 48. Elements of Building Construction.	3	Art 34. Drawing and Sculpture	3
Art 32. Drawing and Sculpture	3	Art 33. Drawing and Sculpture	3	Comp. 6. Composition	3
Comp. 4. Composition	3	Comp. 5. Composition	3	Electives	2
Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+

Second Year

Arch. 51. History of Architecture	2	Arch. 52. History of Architecture	2	Arch. 53. History of Architecture	2
Arch. 54. Design Grade I.	5	Arch. 55. Design Grade I	5	Arch. 56. Design Grade I	5
Math. 54. Architecture Mathematics	3	Math. 55. Architecture Mathematics	3	Math. 56. Architecture Mathematics	3
French 1. Elementary	5	French 2. Elementary	5	French 3. Elementary	5
Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+

Third Year

Arch. 40. Water Color	2	Arch. 41. Water Color	2	Arch. 42. Water Color	2
Arch. 101. History of Architecture	2	Arch. 102. History of Architecture	2	Arch. 103. History of Architecture	2
Arch. 104. Design Grade II	5	Arch. 105. Design Grade II	5	Arch. 106. Design Grade II	5
Arch. 120. Working Drawings	2	Arch. 121. Working Drawings	2	Arch. 122. Working Drawings	2
C.E. 170. Theory of Construction	3	Arch. 117. Building Construction	3	Arch. 118. Building Construction	3
Electives	2	Arch. 125. Pencil Sketching	1	Arch. 126. Pencil Sketching	1

Fourth Year

Arch. 107. Design Grade II	5	Arch. 113. Freehand Drawing	3	Arch. 142* History of Ornament	2
Arch. 112. Freehand Drawing	3	Arch. 141. History of Ornament	2	Arch. 151. History of Architecture	2
Arch. 140. History of Ornament	2	Arch. 154. Design Grade III	5	Arch. 155. Design Grade III	5
E.E. 105. Electric Wiring	2	C.E. 151. Plumbing and Sanitation	2	M.E. 110. Heating and Ventilation	2
Electives	3	Electives	3	Electives	5

Fifth Year

Arch. 152. Theory of Architecture	2	Arch. 153. Theory of Architecture	2	Arch. 158. Design Grade III	5
Arch. 156. Design Grade III	5	Arch. 157. Design Grade III	5	Arch. 169. Specifications and Materials	2
Art 160. Life Drawing	3	Arch. 168. Specifications and Materials	2	Art 162. Life Drawings.	3
E.B. 57. Survey of Business Law	3	Art 161. Life Drawings.	3	Electives	5
Electives	2	Electives	3		

*Suggested elective but not required.

Physical Education 4, 6, 8, or 10 must be included in all women's schedules and Physical Education 15 must be included in all men's schedules. These courses carry academic credit.

ART

Walter F. Isaacs, Director, 401 Education Hall

(See School of Art bulletin for detailed information.)

DEGREE: Bachelor of Arts

The work in the School of Art is designed to offer the fundamentals of art for the benefit of the general student who wishes to gain some appreciation of the field, and for those who expect to pursue a more advanced course. About one year of broad fundamental training is prerequisite to highly specialized work. Courses of vocational nature are not featured in the beginning inasmuch as the student's progress is limited without the cultivated art sense that is achieved by sound fundamental training. Students who expect to enter one of the professional fields of art should consult their instructors concerning the available opportunities and probability of success.

Advanced standing in this school is granted only on presentation of credentials from art schools or university art departments whose standards are recognized by this school. Ordinarily, the presentation of samples of work done will be required before advanced standing will be considered.

Required for the First Year

Art 5, 6, 7, Drawing and Painting	9 credits
Art 9, 10, 11, Design	9 credits
Comp. 4, 5, 6. English Composition	9 credits
Modern Foreign Language	15 credits
General Electives	3 credits
Military or Naval Science, and Physical Education	plus credits

MAJOR IN PAINTING AND DESIGN

Second Year	*Credits*
Art 53, 54, 55. Design	9
Art 56, 57, 58. Drawing and Painting	9
Art Electives	3
General Electives	24
Mil. or Nav. Sci., and Phys. Educ.	+
	45

Third Year	*Credits*
Arch. 3. Architecture Appreciation	2
Art 126. History of Modern Painting	2
Art 160, 161, 162. Life	9
Approved Design	3
Applied Art (Metal, Jewelry or Pottery)	6
Political Science, or Sociology, or Economics	5
*Laboratory Science	10
General Electives	8
	45

Fourth Year	*Credits*
Art 20. Modern Sculpture	2
Art 62. Essentials of Interior Design	2
Art 150. Illustration	5
Art 163 or 164. Composition	5
Art Electives	15
General Electives	16
	45

Preferred electives for students interested in Costume Design, Art 169, 170, 171; 179, 180, 181; Home Economics courses in clothing and textiles 12, 25, 47; 101, 102; 160, 161 and 198.

The total number of credits must include Phys. Educ. 15 for men or Phys. Educ. 10 or Phys. Educ. 4, 6 and 8 for women.

*Only courses in the following departments will be recognized: botany, zoology, chemistry, physics (except photography), geology.

MAJOR IN PUBLIC SCHOOL ART

Students wishing to prepare for teaching may follow the public school art curriculum of this school leading to the bachelor of arts degree, or the public school art curriculum in the College of Education leading to the degree of bachelor of arts in education. In either case the major and minor are both in art, but the candidate is expected to complete a second minor in some field other than art. An average standing of "B" in art subjects is required of all teaching candidates.

First Year	*Credits*
Art 5, 6, 7. Drawing and Painting	9
Art 9, 10, 11. Design	9
Comp. 4, 5, 6. English Composition	9
Sociology 1*	5
Economics 4*	5
Educ. 1. Educ. Orientation	2
General Electives	6
Mil. or Naval Sci., and Phys. Educ.	+

Second Year	*Credits*
Art. 53, 54, 55. Design	9
Art. 56, 57, 58. Drawing and Painting	9
Arch. 3. Architecture Appreciation	2
Laboratory Science (see note)	10
Psychology 1	5
General Electives	10
Mil. or Naval Sci., and Phys. Educ.	+

It is necessary to have 20 or 25 credits of major work before taking Education courses.

Third Year	*Credits*
Art 160, 161, 162. Life	9
Art 105, 106 and Approved Design	9
Applied Art (Metal, Jewelry or Pottery)	6
Educ. 60. Secondary Education	3
Educ. 90. Measures in Secondary Edu.	2
Educ. 70. Methods	5
Educ. 9. Psychology of Secondary Edu.	3
Political Science 1*	5
General Electives	3

Fourth Year	*Credits*
Art 150, 151. Illustration	10
Art 163, 164. Composition	10
Art 100. Methods	2
Art 101. Elements of Interior Design.	2
Art 102. Bookbinding	2
Art. 126. History of Modern Painting.	2
Art 20. Modern Sculpture	2
General Electives	15

Fifth Year	*Credits*
Educ. 120. Educational Psych	3
Educ. 71, 72. Cadet Teaching	8
Phil. 129. Esthetics	5
Art Electives	15
General Electives	14

The bachelor's degree will be awarded upon the completion of the requirements of the four-year course. The normal diploma will be awarded upon the completion of the requirements for the fifth year.

The total number of credits must include Phys. Educ. 15 for men or Phys. Educ. 10 or Phys. Educ. 4, 6 and 8 for women.

*The social science requirement may be satisfied by 15 credits in one or more of the following departments: sociology, economics, political science.

NOTE: Only courses in the following departments will be recognized: botany, zoology, chemistry, physics (except photography), geology.

MAJOR IN INTERIOR DESIGN

Second Year	*Credits*
Arch. 1, 2, 3. Appreciation	6
Arch. 4, 5, 6. Elements of Design	12
Arch. 7, 8, 9. Graphics	3
Art 80, 81, 82. Furniture Design	9
Art. 83. History of Furniture	2
General Electives	13
Mil. or Naval Sci., and Phys. Educ.	+

Third Year	*Credits*
Art 110, 111, 112. Interior Design	15
Art 62. Essentials of Interior Design	2
Economics, Political Science, or Sociology	5
*Laboratory Science	10
General Electives	13

Fourth Year	*Credits*
Art 20. Modern Sculpture	2
Art. 126. History of Modern Painting.	2
Art 172, 173, 174. Interior Design	15
Arch 101, 102, 103. History of Architecture	6

Fourth Year (Continued)	*Credits*
H.E. 25. Textiles	5
H.E. 47. Home Furnishings	5
Electives	10

The total number of credits must include Phys. Educ. 15 for men or Phys. Educ. 10 or Phys. Educ. 4, 6 and 8 for women.

*Only courses in the following departments will be recognized: botany, zoology, chemistry, physics (except photography), geology.

MAJOR IN PAINTING OR SCULPTURE

Painting

Second Year	*Credits*
Art 56, 57, 58. Drawing and Painting.	9
Art 65, 66, 67. Drawing and Painting.	9
General Electives	27
Mil. or Naval Sci., and Phys. Educ.	+

Third Year	*Credits*
Art 107, 108, 109. Portrait	9
Approved Design	6
Art 126. History of Modern Painting	2
Arch. 3. Architecture Appreciation	2
*Laboratory Science	10
Economics, Political Science, or Sociology	5
Art 20. Modern Sculpture	2
Art Electives	9

Fourth Year	*Credits*
Art 160, 161, 162. Life	9
Art 163, 164. Composition	10
Electives	26

Sculpture

Second Year	*Credits*
Art 56, 57, 58. Drawing and Painting.	9
Art 72, 73, 74. Sculpture	9
General Electives	27
Mil. or Naval Sci., and Phys. Educ.	+

Third Year	*Credits*
Art 20. Modern Sculpture	2
Art 103, 104. Pottery	6
Art 122, 123, 124. Sculpture	9
Art 126. History of Modern Painting	2
Arch. 3. Architecture Appreciation	2
*Laboratory Science	10
Economics, Political Science, or Sociology	5
Electives	9

Fourth Year	*Credits*
Art 132, 133, 134. Sculpture	9
Art 136, 137, 138. Sculpture Comp.	9
Art 160, 161, 162. Life	9
General Electives	18

Preferred electives—Architectural Design and History of Ornament.

The total number of credits must include Phys. Educ. 15 for men or Phys. Educ. 10 or Phys. Educ. 4, 6 and 8 for women.

*Only courses in the following departments will be recognized: botany, zoology, chemistry, physics (except photography), geology.

BACTERIOLOGY

B. S. Henry, Executive Officer, 420 Johnson Hall

DEGREE: Bachelor of Science

The major in bacteriology provides training for: (a) a liberal science education; (b) preparation of medical and industrial laboratorians; (c) preparation for advanced work for bacteriologists.

Ten credits of botany or zoology, 10 credits of physics and Chemistry 111 and 132 are required of all bacteriology majors.

A grade point average of 2.5 in courses in chemistry and biology shall be required for admission to Bacteriology 100 and sponsorship by the department. A grade point average of 2.5 in all courses in bacteriology shall be required for graduation.

Transfer students entering the undergraduate curricula shall be considered by a departmental committee and any examinations deemed necessary shall be required.

For the degree of bachelor of science with a major in bacteriology, 36 credits of bacteriology and satisfaction of the College of Arts and Sciences requirements are necessary.

For the degree of bachelor of science in bacteriology the set course below must be followed; the selection of an optional group in the third and fourth years depends upon the type of specialization desired.

DEGREE: Bachelor of Science in Bacteriology

First Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Comp. 1. Composition	5	Comp. 2. Composition	5	Psych. 1. General	5
Chem. 1 or 21. General.	5	Chem. 2 or 22. General.	5	Chem. 23. Qualitative Analysis	5
Zool. 1 or 3. Introduction		Zool. 2 or 4. Introduction		Soc. 1. Survey	5
or		*or*		Military or Naval Science and Physical Education	+
Bot. 1. Elementary	5	Bot. 2. Elementary	5		
Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+		

Second Year

Chem. 131. Organic..... 5	Chem. 132. Organic..... 5	Chem. 111. Quantitative Analysis 5
Physics 1 or 4. General. 5	Physics 2 or 5. General. 5	Bact. 100. Fundamentals of Bacteriology 5
Elective* 5	Elective* 5	Elective* 5
Military or Naval Science and Physical Education +	Military or Naval Science and Physical Education +	Military or Naval Science and Physical Education +

*Students planning to take option "a" (see below) in their third and fourth years are urged to use these electives for foreign language courses.

Third Year

Autumn Quarter *Credits*	*Winter Quarter* *Credits*	*Spring Quarter* *Credits*
Bact. 105. Infec. Diseases 5	Bact. 102. Sanitary and	.....
Anat. 105. Histology.... 6	Clinical Methods..... 5	
Group Option	*Group Option*	*Group Option*
(a) Bacteriologist:	(a) Bacteriologist:	(a) Bacteriologist:
Biology elective.... 5	Chem. 140. Physical. 3	Chem. 141. Physical 3
(b) Medical Laboratorian:	Biology elective..... 5	Bact. 104. Serology. 5
Bact. 103. Public	Elective 2	Electives 7
Hygiene 5	(b) Medical Laboratorian:	(b) Medical Laboratorian:
(c) Industrial Laboratorian:	Elective 5	Bact. 104. Serology. 5
Bot. 115. Yeasts and	Anat. 100. Lecture.. 3	Zool. 107. Par'sit'l'gy 5
Molds 5	Anat. 101. General.. 3	Elective 5
	(c) Industrial Laboratorian:	(c) Industrial Laboratorian:
	Elective 10	Electives 15

Fourth Year

Autumn Quarter *Credits*	*Winter Quarter* *Credits*	*Spring Quarter* *Credits*
Bact. 120. Applied..... 5	Bact. 121. Applied..... 5	Elective 5
Elective 5	Electives 5	
Group Option	*Group Option*	*Group Option*
(a) Bacteriologist:	(a) Bacteriologist:	(a) Bacteriologist:
Chem. 161. Physiological 5	Chem. 162. Physiological 5	Electives 10
(b) Medical Laboratorian:	(b) Medical Laboratorian:	(b) Medical Laboratorian:
Bact. 110. Pathology 5	Zool. 121. Microscopic	Bact. 122. Applied.. 5
(c) Industrial Laboratorian:	Technique 3	Elective 5
Bact. 130. Industrial 5	Elective 2	(c) Industrial Laboratorian:
	(c) Industrial Laboratorian:	Bact. 132. Industrial 5
	Bact. 131. Industrial 5	Bact. 122. Applied.. 5

The total number of credits must include Physical Education 15 for men, or Physical Education 4, 6, 8, or 10 for women.

BIOLOGICAL SCIENCES

Anatomy—John L. Worcester, Executive Officer, Anatomy Building
Botany—T. C. Frye, Executive Officer, 306 Johnson Hall
Zoology—Trevor Kincaid, Executive Officer, 202 Johnson Hall

DEGREE: Bachelor of Science in Anatomy, Botany or Zoology, depending upon which science is selected

In this curriculum the student must select a major in anatomy, botany or zoology. On selecting his major subject, the student should at once consult his major department, a member of which will act as his adviser. The adviser will plan a special curriculum for the student, fitting him for his chosen work.

First Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Comp. 1. Composition	5	Comp. 2. Composition	5	Mathematics or Elective	5
Botany or Zoology	5	Botany or Zoology	5	Electives	10
Electives	5	*Math. or Elective	5	Military or Naval Science and Physical Education	+
Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+		

Second Year

Chemistry or Physics	5	Chemistry or Physics	5	Major	5
Major	5	Major	5	Electives	10
Electives	5	Electives	5	Military or Naval Science and Physical Education	+
Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+		

Third Year

Major	5	Major	5	Major	5
Political Science, Sociology, or Economics	5	Political Science, Sociology, or Economics	5	Electives	10
Electives	5	Electives	5		

Fourth Year

Major	5	Major	5	Electives	15
Electives	10	Electives	10		

*Two and one-half years of mathematics required, which may be taken in high school or University.

The total number of credits must include Physical Education 15 for men, or Physical Education 4, 6, 8, or 10 for women.

BOTANY

T. C. Frye, Executive Officer, 306 Johnson Hall

(See Biological Sciences, page 94.)

CHEMISTRY

H. K. Benson, Executive Officer

DEGREE: Bachelor of Science

For students wishing to specialize in chemistry there are curricula in the College of Arts and Sciences, and a prescribed curriculum in chemical engineering for those who plan to engage in manufacturing industries, leading to the degree of bachelor of science in chemical engineering (see College of Engineering section, page 173.)

In the College of Arts and Sciences students may select one of two courses: (1) the prescribed curriculum given below for those who intend to make use of chemistry as a vocation, leading to the degree of bachelor of science in chemistry; (2) the elective curriculum for those who want a general course in chemistry, leading to the degree of bachelor of science. The elective curriculum is designed for those desiring to major in chemistry as part of a broad general education or in preparation for teaching (see College of Education section, page 158), or preliminary to entering medicine. The following courses or their equivalent shall constitute the minimum requirements for the elective major: Chemistry 1 or 21, 2 or 22, 23, 111, 131, 132, 140, 141 (in lieu of 140-141, pre-medical students may present Chemistry 161-162); 15 credits each in college mathematics and physics; 10 credits in French or German. At least 20 credits in chemistry and 10 credits in physics should be completed among the first 90 credits (end of the sophomore year). The intention of the student to

graduate with a major in chemistry should be declared not later than the end of the sophomore year.

For all chemistry majors in the College of Arts and Sciences, a grade point average of 2.5 in chemistry courses and a grade point average of 2.5 in all courses, shall be required for graduation. Upon completion of the first 90 credits (equivalent to the work of the freshman and sophomore years) every student will be passed upon by a departmental committee which shall consider his academic record and other qualifications, and give any comprehensive examinations deemed necessary, to determine whether or not the department desires to sponsor the student in further work in his curriculum. All students from other schools entering the undergraduate curricula shall first be considered by a departmental committee, which shall pass on the credentials presented in chemistry courses and give any examinations that may be deemed necessary to determine the proper place to begin courses in this department.

DEGREE: Bachelor of Science in Chemistry

First Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Chem. 1 or 21. General.	5	Chem. 2 or 22. General.	5	Chem. 23. Qualitative Analysis	5
Math. 4. Plane Trigonometry	5	Math. 5. College Algebra	5	Math. 6. Analytical Geometry	5
Comp. 1. Composition	5	Comp. 2. Composition	5	[1]Electives	5
Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+

Second Year

Chem. 109. Quantitative Analysis	5	Chem. 110. Quantitative Analysis	5	Chem. 101. Advanced Qualitative Analysis	5
Physics 1 or 97. General	5	Physics 2 or 98. General	5	Physics 3 or 99. General	5
Math. 107. Calculus	5	Math. 108. Calculus	5	Math. 109. Calculus	5
Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+

Third Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Chem. 131. Organic	5	Chem. 132. Organic	5	Chem. 133. Organic	5
[2]Electives	5	[2]Electives	5	[2]Electives	5
Group Option		*Group Option*		*Group Option*	
(a) General: Electives	5	(a) General: Electives	5	(a) General: Electives	5
(b) [3]Industrial: Chem. 121. Chem. of Eng. Materials	5	(b) Industrial: Chem. 122. Inorganic Chem. Industries.	5	(b) Industrial: Chem. 123. Organic Chem. Industries.	5
(c) Biochemical: Physiol. 151. Adv. *or* Bact. 101. General	5	(c) Biochemical: Physiol. 152. Adv. *or* Bact. 102. Sanitation	5	(c) Biochemical: Physiol. 153. Adv. *or* Bact. 103. Public Hygiene	5
(d) [4]Oceanographical: Physics 101. Intro. Modern Theories.	3	(d) [4]Oceanographical: Physics 102. Intro Modern Theories.	3	(d) [4]Oceanographical: Electives	5
Elective	2	Elective	2		

[1] Electives must be approved by department.

[2] In addition to the subjects specially listed above, 10 credits in either French or German are required to be completed before the end of the third year.

[3] Chem. 1 and 52 (Chemical Calculations) are suggested before registering for Chem. 121.

[4] Twenty-five credits of electives must be taken in the biological sciences or geology.

Fourth Year

Chem. 181. Physical and Theoretical 5
[5]Electives 2

Group Option

(a) General:
Electives 8
(b) Industrial:
Chem. 171. Unit Operations 5
Chem. 176. Chem. Engineering Thesis 3
(c) Biochemical:
Chem. 161. Biological 5
Electives 3
(d) [4]Oceanographical:
Chem. 161. Biological *or* elective 5
Elective 3

Chem. 182. Physical and Theoretical 5
[5]Electives 2

Group Option

(a) General:
Electives 8
(b) Industrial:
Chem. 172. Unit Operations 5
Chem. 177. Chemical Engineering Thesis 3
(c) Biochemical:
Chem. 162. Biological 5
Chem. 166. Biochem. Preparations 3
(d) [4]Oceanographical:
Chem. 162. Biological *or* elective..... 5
Elective 3

Chem. 183. Physical and Theoretical..... 5

Group Option

(a) General:
Electives 10
(b) Industrial:
Electives 10
(c) Biochemical:
Chem. 163. Biological 3
Electives 7
(d) [4]Oceanographical:
Electives 10

[5] Chem. 190 and 191 (History of Chemistry) are suggested as electives.
The total number of credits for graduation must include Physical Education 15 for men, or Physical Education 4, 6, 8 or 10 for women.

CLASSICAL LANGUAGES AND LITERATURE

(Latin and Greek)

David Thomson, Executive Officer, 203 Denny Hall

DEGREE: Bachelor of Arts

LATIN

For a major at least 36 credits chosen from courses other than 1-2, 3, 4, 5, 6. Fifty per cent of the credits in the major must be in upper division courses. A student majoring in Latin must take at least 15 credits of Greek. At the end of the senior year all majors must take the senior examination.

GREEK

For a major at least 36 credits chosen from courses other than 1-2. At least fifty per cent of the credits must be in upper division courses. Two years of Latin in high school or Latin 1-2, 3 in the University. A reading knowledge of German is advisable. Senior examination required at the end of the senior year.

NOTE: Courses in Classical Antiquities do not count toward a major or minor in Latin and Greek.

ECONOMICS

H. H. Preston, Dean, College of Economics and Business, 204 Commerce Hall

DEGREE: Bachelor of Arts

Majors in economics in the College of Arts and Sciences must meet the general requirements of that college. They must take Economics and Business 1-2, 100, 105, 185, 187, and four additional courses selected from the list below.

*103. Money and Banking
*104. Public Service Industries
*105. Economics of Labor
*106. Economics of Marketing & Advertis.
*107. World Economic Policies
*108. Risk and Risk Bearing
*109. Principles of Real Estate
120. Business Organization & Combination
121. Corporation Finance
125. Advanced Money and Banking
131. Principles of Foreign Trade
141. Regulation of Public Utilities
142. Adv. Economics of Public Utilities
161. Labor Legislation
162. European Labor Problems
163. Economics of Consumption
164. Labor Relations
171. Public Finance and Taxation I
172. Public Finance and Taxation II
175. Business Fluctuations
181. Economic Development of the U.S.
185. Advanced Economic Theory
187. Development of Economic Thought
188. Institutional Economics

*Courses starred are intermediate courses introductory to special fields and may be taken in the third quarter of the sophomore year.

ENGLISH

(Literature, Drama, Speech and Composition)

D. D. Griffith, Executive Officer, 107 Parrington Hall

DEGREE: Bachelor of Arts

The schedules given below present the courses required in addition to Composition 1 and 2, which are general courses and may not be counted toward a major or minor in English.

Substitutions in the following lists are allowed to fit a student's plan of study if approved in writing by the Department of English.

LITERATURE

The upper division major courses in Literature are divided into the following groups:

Group I

150, 151. Old and Middle English
153, 154. English Literature: 1476-1642

Group II

144, 146. Eighteenth Century Literature
167, 168. Seventeenth Century Literature
170, 171. Shakespeare

Group III

161, 162. American Literature
174, 175. Late Nineteenth Century Literature
177, 178. Early Nineteenth Century Literature

Major Requirements

	Credits
57. Introduction to Poetry	5
58. Introduction to Fiction	5
64, 65. Literary Backgrounds	10
One major course from each major group	15
A continuation of one of the above major courses	5
Electives in English	5
Senior Major Examination	0
	45

DRAMA

The Division of Drama, in addition to the required courses listed below, offers courses in stage lighting, radio acting and production, dramatic writing for radio, advanced courses in scene and costume design and acting, and a course in puppetry.

Major Requirements

	Credits
Drama 1, 2, 3. Introduction to the Theatre	6
Speech 43. The Speaking Voice	3
Drama 47, 48. Theatre Speech	6
Drama 51, 52, 53. Acting	9
Drama 103. Scene Construction	3
Drama 104. Scene Design	3
Drama 105. Theatrical Costume Design and Construction	3
Drama 106. Make-up	3
Drama 121, 122, 123. Advanced Acting and Directing (2 quarters)	6
Drama 127, 128, 129. History of the Theatre	6
Drama 151, 152, 153. Representative Plays	9
Drama 197. Theatre Organization and Management	2
Senior Major Examination	0
	54

Normally supplementary studies in literature are required which should include Literature 58, 64, 65, and two courses from 161, 162, 170, 171, 174, 175, 177, 178.

SPEECH

Work in the Division of Speech is designed to contribute both to the practical needs of the individual and to the attainment of such general educational objectives as personality adjustment, analytical power, clear thinking and emotional control.

Courses in speech fall into five main groups:

Group I

Public Address and Argumentation
Courses 38, 40, 41, 101, 103, 138, 139, 188, 211, 217, 218

Group II

Voice Science and Voice Training
Courses 43, 44, 187, 214

Group III

Oral Interpretation of Literature
Courses 79, 179, 215

Group IV

Speech Pathology and Correction
Courses 19, 50, 51, 190, 191, 192, 193, 194, 216

Group V

General and Special Courses
Courses 50, 51, 55, 161-162, 163, 186, 220, Education 75X

Majors in speech are offered two schedules: one for those who desire the training for its cultural values or for some definite speech activity and the other for those who wish to prepare for teaching. For scientific information regarding the requirements of a teaching major or minor in speech, see the College of Education section, page 151, and consult the Division of Speech. The following schedule offers an academic major in speech and is designed for those not selecting the teaching major.

Major Requirements

	Credits
40. Essentials of Speaking	5
43. The Speaking Voice	3
186. Backgrounds of Speech	5
191. Speech Correction	3
Approved Speech electives (18 credits upper division)	26
Comprehensive Senior Examination	0
	40

Speech majors should elect the following courses as a part of the College of Arts and Sciences requirements:

	Credits
Literature 64, 65. Literary Backgrounds	10
Literature 117. History of the English Language	5
Psychology 1. General Psychology	5
Philosophy 2. Introduction to Social Ethics	5
Science, including Physiology 11	10
Approved studies in a subject other than speech (10 credits upper division)	25

To accommodate students whose major work lies in other fields but who are interested in the cultural and professional values to be gained through the study of speech, a selection of twenty-five credits of approved courses, at least 10 of which should be upper division, is recommended.

COMPOSITION

As the individual student objectives are so varied, no formal major in composition is outlined. In general, the requirements include Literature 57, 58, 64, 65, 117 and ten credits approved major literature courses. The composition requirement is eighteen credits from composition courses numbered over 100 and selected from the following list with the approval of the Department of English.

Composition 110, 111, 112. Advanced Verse Writing
Composition 156, 157, 158. Advanced Narrative Writing
Composition 184, 185, 186. Professional Creative Writing
Drama 111, 112, 113. Playwriting
Drama 144, 145, 146. Dramatic Writing for Radio
Journalism 173, 174-175. Short Story Writing

FISHERIES

W. F. Thompson, Acting Director, 1 Fisheries Building

DEGREE: Bachelor of Science—elective course

DEGREE: Bachelor of Science in Fisheries

(See School of Fisheries bulletin for detailed information)

First Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Comp. 1. Composition...	5	Comp. 2. Composition...	5	Elective	5
Zool. 1. Animal Biology.	5	Zool. 2. Animal Biology.	5	Zool. 5. Embryology....	5
Chem. 1 or 21. General.	5	Chem. 2 or 22. General.	5	Chem. 23. Qual. Analysis	5
Fish. 108	1	Fish 109.....	1	Fish. 110.	1
Military or Naval Science and Physical Education +		Military or Naval Science and Physical Education +		Military or Naval Science and Physical Education +	

Second Year

*German or French.....	5	*German or French.....	5	Elective	5
Zoology or Fisheries (see options A, B_1 or C)..	5	Zoology or Fisheries (see options A, B, or C)..	5	Zoology or Fisheries (see options A, B, or C)..	5
Math. 4 or 31.....	5	Math. 5 or 32.....	5	Math. 6 or 33.....	5
Military or Naval Science and Physical Education +		Military or Naval Science and Physical Education +		Military or Naval Science and Physical Education +	

*German is recommended. Any language substitution must be approved by the School of Fisheries.

NOTE: These requirements are listed in the order in which it is recommended that they be taken. They may be postponed and subjects required or permitted in the third and fourth years may be substituted, on approval by the School of Fisheries. Physical Education 15 must be included.

The total number of credits for graduation must include Physical Education 15 for men, or Physical Education 4, 6, 8, or 10 for women.

Third and Fourth Years

One of the following optional courses should be chosen: (A) General Fisheries Biology; (B) Life History and Conservation, Vertebrates or Invertebrates; (C) Hatchery Biology, the Propagation and Rearing of Fish. Under each option five hours of fisheries are required each quarter and in addition the Seminar meetings, Fisheries 195, 196, 197, are required in the fourth year. The remaining elective credit hours under options B and C must be chosen from subjects recommended by the School of Fisheries.

Option A. *General Fisheries Biology.* Fish. 101, Comparative Anatomy of Fishes; 102, 103, Classification and Identification; 105, 106, 107, Commercial Aquatic Invertebrates, are required under this option. A student must earn not less than 39 hours in fisheries and not over 96 credits in any two departments. The remaining elective credits must be approved by the School of Fisheries.

Option B. *Life History and Conservation.* Fish. 101, Comparative Anatomy of Fishes; 102, 103, Classification and Identification; 105, 106, 107, Commercial Aquatic Invertebrates; and 157, 158, Age, Growth, Migrations, and Races are required. 125, Spawning Habits, and 126, Early Life History of Fishes, may be substituted for 157 and 158. In addition 15 credits of mathematics besides that specified in the second year are required.

Option C. *Hatchery Biology, Propagation and Rearing of Fish.* Fish. 101, Comparative Anatomy of Fishes; 102, 103, Classification and Identification; 105, 106, 107, Commercial Aquatic Invertebrates; 151, Natural Fish Foods, Water Supplies; 152, Propagation of Fresh Water Fishes; 153, Hatch-

ery Biology; 154, Fish Diseases, are required. Fish. 125 or 157 may be substituted for 103. Chem. 144, Physiological; Bacteriology 101, General, are required.

Recommended Electives. In options (B), and (C), any fisheries, zoological or oceanographical course may count as an elective. The following additional subjects are recommended as electives: *Chemistry:* 109, 110, or 111, Quantitative Analysis; 131, 132, 133, Organic; 144, Physiological. *Mathematics:* 13, Statistics; 41, 42, or 107, 108, 109, Calculus. *Bacteriology:* 101, General; 102, Sanitary. *Physics:* 1, 2, 3, or 4. 5, 6, General. *Physiology:* 53, 54, General. *Geology:* 1, Earth Science, or 6, Physiography, or 7, History of Geology. *Botany:* 3, Classification.

FOOD TECHNOLOGY

B. S. Henry, Chairman, 420 Johnson Hall; W. L. Beuschlein, E. R. Norris, E. I. Raitt, J. I. Rowntree, R. S. Weiser

A major in food technology provides training for students who intend to enter the field of food production as control or research laboratory workers. Emphasis may be placed upon bacteriology, chemistry, or food utilization by selection of various optional courses in the fourth year. Women interested in Home Economics research or teaching food and nutrition in college should follow this curriculum. Further flexibility is permitted in that a course may be substituted for any regularly scheduled course with the consent of the committee members representing the department in which the eliminated course is given.

For all food technology majors, a grade point average of 2.5 in bacteriology, chemistry and home economics, and a grade point average of 2.5 in all subjects shall be required for graduation.

DEGREE: Bachelor of Science in Food Technology

First Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Chem. 1. General.....	5	Chem. 2. General.....	5	Chem. 23. Qual. Analysis	5
Comp. 1. Composition...	5	Comp. 2. Composition...	5	Group 2. Elective.....	5
Zool. 1. Animal Biol.		Zool. 2. General		Zoology or Botany.....	5
or		*or*		P.E. 15 *or* P.E. 10, *or*	
Bot. 1. Elementary.....	5	Bot. 2. Elementary.....	5	exemption exam.....2-5	
Military or Naval Science		Military or Naval Science		Military or Naval Science	
and Physical Education	+	and Physical Education	+	and Physical Education	+

Second Year

Chem. 131. Organic.....	5	Chem. 132. Organic.....	5	Chem. 111. Quant. Anal.	5
Physics 1. General.....	5	Physics 2. General.....	5	Physics 3. General.....	5
Math. 4. Plane Trig.....	5	Math. 4. College Algebra	5	Bact. 100. Fundamentals	5
Military or Naval Science		Military or Naval Science		Military or Naval Science	
and Physical Education	+	and Physical Education	+	and Physical Education	+

Third Year

Bact. 105. Infec. Diseases	5	Chem. 140. Elem. Phys..	3	Chem. 141. Elem. Phys..	3
Bot. 115. Intr. Yeasts		Bact. 107. Spoilage.....	3	H.E. 110. Food Utiliz...	3
and Molds	5	Chem. 162. Physiolog....	5	H.E. 111. Nutrition....	5
Chem. 161. Physiolog...	5	Elective	4	Chem. 104. Food Anal...	4

Fourth Year

Bact. 130. Industrial....	5	Bact. 131. Industrial....	5	Bact. 132. Industrial....	5
Chem. 121. Industrial...	5	Chem. 122. Industrial...	5	Chem. 123. Industrial...	5
Optional*	5	Optional*	5	Optional*	5

*Practical work in food plant, federal, state, or private laboratory, institution kitchen or formal course work, to be decided upon by student in consultation with the committee.

Additional recommended courses: colloidal chemistry, microscopic technic, histology, entomology, calculus, experimental cookery.

GENERAL LITERATURE

Allen R. Benham, Adviser, 132 Vernon Parrington Hall

DEGREE: Bachelor of Arts

The Department of General Literature aims to give the student a synthetic view of European literature and to consider literature in general as a form of human expression.

A major in General Literature requires a reading knowledge of two foreign languages. French and German are especially recommended. The satisfaction of the requirement is determined by the department offering instruction in the language selected. The major in General Literature also requires General Literature 101, General Literature 191, 192, 193 and sufficient other courses to make a total of 36-60 credits.

In lower division courses, preparatory to the major, the student should earn 18 hours in specific departments (see the announcement of the English Department and the lower division courses offered in translated Greek, Latin, Oriental and Romanic literature).

In supplementary upper division courses for his major the student should select from philosophy (especially Esthetics and the History of Philosophy) and from the upper division courses in English and in translated literature in other languages.

To expedite selection, the following list of preparatory and supplementary courses in literature is inserted:

I. English Literature 57, 58, 64, 65, 104, 106, 141, 142, 143.
II. French 118, 119, 120.
III. German 100, 101, 102, 103, 104.
IV. Greek 13, 15, 17, 18, 113.
V. Italian 181, 182, 184.
VI. Latin 11, 13.
VII. Oriental Studies 50 (Literature of India), 52 (Literature of Persia), 130 (Russian Literature), 170 (Literature of China), 171 (Literature of Japan).
VIII. Romanic Languages 34, 35, 36 (or 134, 135, 136).
IX. Scandinavian 99, 109, 110, 111, 180, 181, 182.
X. Spanish 118, 119, 120.

The student who plans to work in General Literature should get in touch with his adviser as early in his academic career as possible and arrange a logical course in accord with the student's interest. It is recommended in general that the course include a comprehensive survey of at least one national literature, some studies in several and detailed knowledge of one.

GENERAL STUDIES

H. B. Densmore, Chairman, 121 Education Hall

DEGREE: Bachelor of Arts or Bachelor of Science

Enrollment in General Studies is open to students who fall within the following classifications: (1) those who can spend only a limited time in the University and wish guidance in making up a program of work from this or other colleges adapted to their special needs; (2) students who wish a year or two of general work prior to enrolling in some departmental major; (3) those who wish to follow through to graduation the study of a field of knowledge or a subject of special interest not provided for in the usual departmental curricula. To be admitted to this division the student must have

maintained at least a "C" average in his immediately preceding educational experience.

The requirements for graduation in General Studies are:

1. A 15-15-15 distribution of credits in the lower division groups with a grade point average of 2.0.

2. The early selection, with the help of an adviser, of a special field or subject of interest as a major to focalize and give direction to the student's work. The special fields at present are:

Social Science	Physical Science
Language and Literature	Biological Science
Fine Arts	

Special subjects may include any phase of thought or vocational objective from any branch of knowledge that can be handled effectively in General Studies with the help of the instructors in the other departments concerned.

3. Formulation of a curriculum covering the final two years or more of the course, to be recommended by the adviser and approved by the committee.

4. Completion of at least 36 credits in the chosen field or subject. Because work will usually be drawn from several contributary departments or colleges, the number of credits allowed in this major will often exceed the maximum of 60 usually allowed. The Bachelor of Arts degree is awarded when the major subject is in Group I or II; the Bachelor of Science when the major subject is in Group III.

5. Completion of at least sixty upper division credits. This number may need to be increased considerably in order to meet the further requirement that at least half of the credits in the major be upper division.

6. A senior study embodying the reactions of the student to the work done in pursuing his major interest.

Prospective majors should consult with the chairman for assignment to an adviser on courses of study and major interest. Suggestive curricula are kept on file for examination in his office.

GEOGRAPHY

Howard H. Martin, Executive Officer, 29 Johnson Hall

DEGREE: Bachelor of Arts

Major in Geography

	Credits
Geog. 1-101. Regional Geography *or*	
Geog. 7. Economic Geography	5
Geog. 11-111. Climate	5
Geog. 121. Regional Climatology *or*	
Geol. 2. Physical Geography	5
Geog. 102. United States	5
Geog. 155. Influences of Geographical Environment	5
Geog. 170. Conservation of Natural Resources	5
Approved geography electives	15
	45

Majors should elect courses in economics, political science, history, sociology, and anthropology. Students desiring to specialize in climatology or meteorology should consult with the department concerning suitable courses in physics and mathematics.

GEOLOGY

G. E. Goodspeed, Executive Officer, 114 Johnson Hall

DEGREE: Bachelor of Science

Recommendations applying to all undergraduate curricula in Geology:

A grade point average of at least 2.5 shall be required for geology 5 or 105, 6 or 106, 7 or 107 for admission to any courses in geology with a number over 100.

Majors in geology not taking the "set" professional course must, unless given special permission by the department, complete the following geology courses: 5 or 105, 6 or 106, 7 or 107, 101, 112 or 113, 121, 123, 124, 131, 132, 142—a total of 53 credits. A grade point average of 2.5 in all courses in geology shall be required of geology majors for graduation.

DEGREE: Bachelor of Science in Geology

First Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Chem. 1 or 21. General.	5	Chem. 2 or 22. General.	5	Chem. 23. Qual. Analysis	5
Math. 4. Trigonometry..	5	Math. 5. College Algebra	5	Comp. 1. Composition...	5
G.E. 1. Engin. Drawing.	3	G.E. 2. Engin. Drawing.	3	G.E. 21. Plane Surveying	3
Elective	2	Elective	2	G.E. 3. Drafting Probs..	3
Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+

Second Year

Geol. 5. Rocks & Minerals	5	Geol. 6. Elementary Physiography	5	Geol. 7. Historical Geol.	5
Physics 1. General.....	5	Physics 2. General.....	5	Geol. 121. Mineralogy...	5
Zool. 1. Elementary....	5	Lit. 20. Survey of American Literature	5	Comp. 2. Composition...	5
Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+

Third Year

Geol. 123. Optical Mineralogy	5	Geol. 124. Petrography and Petrology	5	Geol. 125. Petrography and Petrology	5
Pol. Sci., Soc., Geog., or other Group 2 electives	5	Geol. 130. Paleontology.	5	Geol. 132. Invertebrate Paleontology	5
French or German 1....	5	French or German 2....	5	French or German 3....	5

Fourth Year

Geol. 101. History of Geology	3	Geol. 126. Sedimentary Petrography	5	Geol. 190. Thesis.....	5
Pol. Sci., Soc., Geog., or other Group 2 electives	5	Geol. 127. Ore Deposits.	5	Geol. 122. Field Methods	5
*Professional electives..	7	Geol. 142. Structural Geology	5	*Professional elective...	5

*For those who desire to specialize in stratigraphical geology, the professional electives should include such courses as mesozoic geology, tertiary geology and stratigraphy. For petrological geology, courses in physical chemistry and quantitative analysis are essential, and for mining geology, courses in mining engineering, metallurgy and metallurgical analysis. For physiographic geology, courses in map interpretation, geomorphology and glacial geology are necessary.

A fifth year may be necessary for the completion of the above schedule, if all of the important professional electives are to be included.

The total number of credits must include Physical Education 15 for men, or Physical Education 4, 6, 8, or 10 for women.

GERMANIC LANGUAGES AND LITERATURE

Curtis C. Vail, Executive Officer, 111 Denny Hall

DEGREE: Bachelor of Arts

Students becoming majors or minors in the German department should have had college German 1, 2, 3, plus 3 credits of second year German, or German 1, 2, 3, with grade "A" in German 3, or the high school equivalent to be determined by the executive officer of the department. For the departmental major at least thirty-six credits in the department are required beyond this prerequisite.

Students are advised to distribute their major over their entire four-year college course to avoid periods of disuse, and to give ample time to their supporting subjects.

In the humanities, for purposes of orientation, the department offers courses in English translation. Here, four or five aspects of Germany's intellectual and literary history have been singled out for study with the hope that they may prove particularly fruitful when understood.

Majors preparing for library work, may substitute literary courses in German (not courses offered in translation, however) for the departmental major requirements, German 110, 111, 112, 118. These latter are demanded of prospective teachers (see College of Education section, page 151, major and minor requirements).

	Credits
Ger. *4, 7, 10, 30, 60. Second Year work, about	5
Ger. 113, 114, 115. Upper Division Scientific German	at least 23
Ger. 119. History of German Language	
Ger. 120. Introduction to Schiller	
Ger. 121. Introduction to Goethe	
Ger. 122. Introduction to Keller	
Ger. 123. Introduction to Heimatkunst	
Ger. 124. Nineteenth Century Novelle	
Ger. 125. Recent Novellen	
Ger. 133-135. Modern Novels	
Ger. 136-138. Modern Drama	
Ger. 139. Studies in German Literature	
Ger. 140, 141. History of German Literature	
Ger. 142. Lyrics and Ballads	
Ger. 150. Lessing	
Ger. 152. Goethe's Lyric Poetry	
Ger. 153. Goethe's Dramatic Works	
Ger. 165. Schiller's Historical Dramas	
Ger. 166, 167. Goethe's Faust, Parts I and II	
Ger. 180-185. Nineteenth Century Literature	
Ger. 110, 111, 112. Grammar and Composition	6
Ger. 118. Phonetics	2
Minimum total	36

*Two credits of this 5-credit course can count toward a major.

HISTORY

Edward McMahon, Executive Officer, 202 Denny Hall

DEGREE: Bachelor of Arts

For a history major, 50 credits including History 1-2 as required courses. At least fifty per cent must be in upper division courses. Electives on advice of head of department.

SCHOOL OF HOME ECONOMICS

(Euthenics)

Effie I. Raitt, Director, 201 Home Economics Hall

(See School of Home Economics bulletin for detailed information)

Home economics is primarily an applied field of knowledge. Its subject matter is based upon factual material and laws found in physical sciences, social sciences, and fine arts. The application of the principles of these supporting subjects defines the technics, determines the standards, and forms the basis for the choices which modern living makes necessary. The School of Home Economics is concerned with a liberal education no less than with providing a professional training. Therefore, requirements include, in addition to courses in home economics, work in the humanities, and in social and basic sciences. Home economics assembles from these fields material which will help the individual better understand his physical and social environment, endeavors to show the application of such knowledge in terms of human needs, and provides an outlet for his abilities in constructive vital work. Home economics affords an insight into the cultures of other people, particularly in history of costume, costume design and historic textiles. Scientific courses not only lay the foundation for professional work but also aid in developing critical judgment and the habit of seeking cause and effect relationships.

Professional Curricula

Teacher-Training
Institution Administration
Textiles, Clothing and Art.

The professional curricula in Teacher-Training and Institution Administration require the completion of 225 credits plus five quarters of physical education. The professional degree of bachelor of science in home economics is awarded.

For the Textiles, Clothing and Art curriculum, 180 credits plus five quarters of physical education are required; the professional degree of bachelor of arts in home economics is awarded.

Five years of college training are required for the three-year normal diploma, requisite for high school teaching in the State of Washington. Completion of the teacher-training curriculum in general home economics, together with the completion of the requirements for the three-year normal diploma, entitles a graduate to a certificate to teach vocational education in any high school which is subsidized by the federal government under the Smith-Hughes and George-Deen acts.

Six months of supervised field work may be substituted for 30 credits of academic work in the institution administration curriculum during the fifth year.

The University Commons and Residence Halls are operated under the supervision of the School of Home Economics. They are used as practice fields for students in institution administration.

Non-Professional Majors

A general major in home economics is offered for which the degree of bachelor of science is awarded. A textiles, clothing and art major is offered for which the degree of bachelor of arts is awarded. A total of 180 plus 5 physical education credits is required. The minimum requirements for the first two years are those established in the College of Arts and Sciences in curricula involving majors.

General Major: Required home economics courses include the following: H.E. 12, 15, 25, 47, 107-108, 141, 144, 145, 181, 190 and their prerequisites.

Textiles, Clothing and Art Major: Required home economics courses include: H.E. 12, 25, 47, 112, 113, 114, 133, 144 ,145, 181, and at least ten credits from the following: H.E. 101, 102, 188, 189, 198. In addition thirty credits in art are required. If the major interest is merchandising instead of designing, the director of the School of Home Economics should be consulted concerning substitution of courses in economics and business for equivalent art requirements.

In addition to the major and group requirements, the College of Arts and Sciences requirements in English composition, military or naval science, and physical and health education must be included.

All who expect to enter a professional field in home economics must follow one of the three professional curricula. Application for admission to these curricula is required after completion of 75 credits.

Service Courses

A number of courses in home economics with a minimum of prerequisites are offered for those who are majoring in other departments.

Service courses in home economics are of two types:

A. Supporting courses for other subjects—

H.E. 9, 105, 106 for Nursing Education majors.
H.E. 104 for Social Work and Physical Education majors.
H.E. 109 for Social Work majors.

B. Courses for free election by any student—

H.E. 12. Laboratory practice in clothing selection, dress design and construction.
H.E. 15. Demonstration and practice in food preparation.
H.E. 24. A shortened course in textiles.
H.E. 41. A shortened course in home furnishing.
H.E. 104. Nutrition.
H.E. 109. Cost of living studies and family budgets.
H.E. 131. Clothing selection.

Any course is open to non-majors who have the required prerequisites.

Post Graduate Training

Public Health Nutrition: The increasing demand for home economists in the social welfare agencies, for nutritionists in the public health fields, and the necessity for specific training have led to the establishment of a post-

graduate curriculum for properly qualified students. The requirements are two quarters of academic study and five months of supervised field work. The field work will be obtained in out-patient departments of hospitals and with social service agencies.

The courses recommended in the University will depend upon undergraduate preparation and the experience of the student.

Required of all:

S.W. 175, 231, 232; Soc. 128; H.E. 214, 215; N.E. 102 with addition of courses in public health as facilities are provided.

Preferred electives:

S.W. 176 or 254, 178 or 243, 218, 260; H.E. 109; Soc. 112, 141, 142, 156, 159, 165, 166, 190, 194, 266; Pol. Sci. 113, 155; Psych. 117, 118, 126; E.B. 105; N.E. 175.

It is recommended that students looking toward this post graduate year include in their undergraduate work as many of the above preferred electives as possible.

Students will be enrolled in the Graduate School of the University. Credits in graduate courses may be counted toward a Master's Degree.

Institution Administration: Two fields of post graduate training are offered for graduates in institution administration. One is the dietitian internship which is given in hospitals throughout the country. A limited number of commercial apprenticeships are also available. Both are one year in duration and are endorsed by the American Dietetic Association.

Interneship for Administrative Dietitians: A limited number of internships for administrative dietitians is provided at the University of Washington for students of institution administration. Students may apply for appointment after completion of 195 credits. This course has been inspected and approved by the American Dietetic Association and is under the supervision of the Business Director of Dining and Residence Halls. Field work includes six months in the University Commons and Residence Halls; three months in a commercial restaurant in the downtown business district; and three months in an industrial lunch room.

Master's Degrees

A master's degree may be earned in the following fields:

Master of Science:

Food and nutrition which may be combined with household economics or home economics education, and a minor in an allied field.

Master of Arts:

Textiles and clothing which may be combined with household economics or home economics education, and a minor in an allied field.

Professional Graduate Degree:

Master of Science in Home Economics or Master of Arts in Home Economics.

Major and minor subjects in home economics with undergraduate work in basic fields.

PROFESSIONAL CURRICULA IN HOME ECONOMICS

(Bachelor of Science in Home Economics)

(A minimum of 20 credits of language, literature, or history is required for graduation in all professional curricula.)

Freshman Year for Students Planning to Enter the Teacher-Training and Institution Administration Curricula

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Comp. 1	5	Comp. 2	5	Physiol. 7. Elementary Physiology	5
H.E. 7	2	Chem. 1 or 21. General Chemistry	5	Chem. 2 or 22. General Chemistry	5
Art 9	3	Elective in Language, Literature or History.	5	P.E. 6	2
Elective in Language, Literature or History.	5	Physical Education	+	Arch. 3	2
Physical Education	+			Physical Education	+

TEACHER TRAINING

Second Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Physics 89. Physics of the Home	5	Physics 90. Physics of the Home	5	H.E. 25. Textiles	5
Chem. 135. Organic	4	Chem. 136. Organic	4	Psych. 1. General Psychology	5
H.E. 15. Food Preparation	5	H.E. 12. Costume Design and Construction	5	N.Ed. 5. Home Nursing	3
Physical Education	+	P.E. 4	2	Educ. 1. Education Orientation	2
		Physical Education	+		

Third Year

H.E. 107. Nutrition	5	H.E. 108. Nutrition	3	Bact. 101. General Bacteriology	5
H.E. 115. Food Preparation	3	H.E. 116. Food Preparation	5	H.E. 114. Costume Design and Construction	3
H.E. 112. Costume Design and Construction	3	H.E. 113. Costume Design and Construction	3	Zoology 17. Eugenics	2
E.B. 4. Survey of Economics and Business	5	Soc. 1. Survey of Sociology	5	Educ. 9. Psychology of Secondary Education, Senior High School	3
		or			
		Soc. 150. General Soc.	5		

Fourth Year

Educ. 70. Introduction to H.S. Procedure	5	H.E. 181. Consumer Buying	3	Educ. 75NA. Home Economics	3
H.E. 47. Home Furnishing	5	H.E. 145. Family Relationships	3	H.E. 144. Income Management	3
Soc. 112. The Family	5	H.E. 148. Home Management House	2	H.E. 190. Child Nutrition and Care	5
		H.E. 141. Home Selection and Management	5	Educ. 60. Principles of Secondary Education	3
				Educ. 90. Measurement in Secondary Education	2

Fifth Year

Educ. 71. Cadet Teaching	5	Educ. 72. Cadet Teaching	3	Social Work 176. The Rural Community	5
Educ. 30. Washington State Manual	0	Educ. 120. Educational Sociology	3		

(Electives to make a total of 225 credits)

For secondary certification, fifteen quarter hours of contemporary social problems must be included. Courses in current history, political science, economics and sociology will satisfy this requirement.

Preferred electives: Language; Literature; History; Psychology 131, *Child Psychology*.

Students who do not intend to teach but wish to combine Home Economics and Social Work or Home Economics and Journalism may omit Education courses.

INSTITUTION ADMINISTRATION

Second Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Phyics 89. Physics of the Home	5	Physics 90. Physics of the Home	5	Bact. 101. General Bacteriology	5
Chem. 135. Organic	4	Chem. 136. Organic	4	Zool. 17. Eugenics	2
H.E. 15. Food Preparation	5	H.E. 25. Textiles	5	H.E. 131. Clothing Selection	2
Physical Education	+	Physical Education	+	E.B. 1. Principles of Economics and Business	5

Third Year

H.E. 107. Nutrition	5	H.E. 108. Nutrition	3	Chem. 144. Physiological	5
H.E. 115. Food Preparation	3	H.E. 120. Advanced Food Preparation	3	H.E. 121. Institution Food Preparation	5
E.B. 2. Principles of Economics	5	Pych. 1. General Psychology	5	H.E. 141. Home Selection and Management	5
Elective	2	E.B. 62. Principles of Accounting	5		

Fourth Year

H.E. 47. Home Furnishing	5	H.E. 122. Institution Purchasing	3	H.E. 181. Consumer Buying	3
Soc. 1. Survey of Sociology	5	H.E. 145. Family Relationships	3	H.E. 191. Diet Therapy	3
or		H.E. 123. Institution Management I	3	H.E. 175. Institution Equipment	3
Soc. 150. General Sociology	5	Soc. 112. The Family	5	H.E. 190. Child Nutrition and Care	5
H.E. 144. Household Economics	3	H.E. 124. Institution Management II	3		
Educ. 75NB. Home Economics	3				

Fifth Year

Electives	15	H.E. 196. Supervised Field Work *or* Electives	15	H.E. 197. Supervised Field Work *or* Electives	15

Preferred electives: See Teacher Training Curriculum.

TEXTILES, CLOTHING AND ART

(Bachelor of Arts in Home Economics)

First Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Comp. 1	5	Comp. 2	5	Hist. 1. Med. & Mod. European History	5
H.E. 7. Introduction to Home Economics	2	Chem. 1. Gen. Chemistry	5	Chem. 2. Gen. Chemistry	5
Art 9. Design	3	Art 10. Design	3	Art 11. Design	3
P.E. 10. Phys. Education	5	Art 5. Drawing	3	Art 6. Drawing	3
Physical Education	+	Physical Education	+	Physical Education	+

Second Year

H.E. 25. Textiles	5	H.E. 12. Costume Design and Construction	5	H.E. 47. Home Furnishing	5
Hist. 2. Med. & Mod. European History	5	E.B. 4. Survey of Economics and Business	5	Soc. 1. Survey of Sociology	5
Elective	5	Elective	5	Arch. 3. Architecture Appreciation	2
Physical Education	+	Physical Education	+	Elective	3

Third Year

H.E. 112. Costume Design and Construction..... 3	H.E. 113. Costume Design and Construction..... 3	H.E. 114. Costume Design and Construction..... 3
Art 160. Costume Design 2	Art 170. Costume Design 2	Art 171. Costume Design 2
Soc. 112. The Family... 5	H.E. 144. Income Management 3	Psych. 1. General Psychology 5
Elective 5	Elective 7	Elective 5

Fourth Year

H.E. 181. Consumer Buying 3	H.E. 198. Historic Textiles 3	H.E. 133. History of Costume 5
Hist. 114. Culture of the Renaissance..... 5	H.E. 145 Family Relationships 3	Phil. 1. Introduction to Philosophy..... 5
H.E. 188. Adv. Textiles. 3	H.E. 161. Adv. Costume Design & Construction 5	Elective 5
H.E. 160. Adv. Costume Design & Construction 5	Elective 2	

A total of 30 credits in Art is required.

Preferred Electives: Art 20, 53, 54, 55, 62, 83, 101, 105, 126, 129, 157, 158, 159, 182, 183; H. E. 101, 102, 189; Botany 102; E. B. 106, 135.

Preferred Language: French.

JOURNALISM

Vernon McKenzie, Director, Lewis Hall

DEGREE: Bachelor of Arts

(See School of Journalism bulletin for detailed information.)

The curriculum of the School of Journalism leads to the degree of bachelor of arts, major in journalism, for which 180 credits must be obtained, plus the University requirements in military or naval science and physical education. A student seeking a degree of bachelor of arts, major in journalism, is required to complete the College of Arts and Sciences lower division requirements; 7 credits of specified pre-journalism; 37 credits of upper division journalism (given in the non-elective third year); 30 credits of English; 8 credits of specified political science (3 credits of which are included in the non-elective third year); 5 credits of specified geography (in the first year work); and 20 credits in one of the fields of sociology, political science, psychology, history, geography or economics, or in some other field only by special permission of the heads of the departments concerned.

Of the 30 credits required in English, 20 are specified as follows: Composition 1, 5 credits; Speech 38 or 40, 5 credits; Literature 64 and 65, 10 credits. Political Science 1, 5 credits, is required before taking the journalism third year. An average class grade of "B" or better must be earned in all journalism subjects.

Required Journalism Courses

	Credits
1. Journalism as a Profession	1
2. The Newspaper and Society	1
51. News Writing	5
147– Fundamentals of Journalism 148– Fundamentals of Journalism 149. Fundamentals of Journalism	Third Year..37

LIBRARIANSHIP

(See page 132.)

MATHEMATICS

A. F. Carpenter, Executive Officer, 147 Philosophy Hall

DEGREE: Bachelor of Arts or Bachelor of Science

For a major in mathematics the following courses in mathematics are required.

Prerequisite, ½ unit advanced algebra, ½ unit solid geometry in high school or university.

	Credits
4. Plane Trigonometry	5
5. College Algebra	5
6. Analytical Geometry	5
107, 108, 109. Differential and Integral Calculus	15
Electives (upper division)	12
Minimum total credits	42

DEGREES: Bachelor of Science in Mathematics

Bachelor of Arts in Mathematics

Minimum requirements for the degree of Bachelor of Science in Mathematics. In addition to the regular University requirements in English composition, physical education and military or naval science, the student shall earn the indicated number of credits in the following groups:

Subjects	*Credits*
Mathematics, an academic major plus eight approved U.D. credits	50
Physics, chemistry	15
Astronomy, geology, zoology, botany	15
Language,† literature, art, architecture, music	15
History, political science, economics, sociology, psychology, philosophy	15

†Students who expect to proceed to graduate work in mathematics should acquire a reading knowledge of both German and French.

Minimum requirements for the degree of Bachelor of Arts in Mathematics. The same as the above, except that a minimum of 15 credits in science (physics, chemistry, astronomy, geology, zoology, botany) is allowed; and the preponderance of the student's credits, including mathematics, should be in liberal arts courses.

The foregoing requirements can be met in a great variety of ways, depending upon the student's high school preparation and his individual needs.

MUSIC

Carl Paige Wood, Director, Music Building

(See School of Music Bulletin for detailed information)

DEGREES: Bachelor of Arts in Music

Bachelor of Arts—Elective Course

All students who register as music majors are given a placement examination in music fundamentals, voice and piano, during Freshman Week. As a result of this examination a student may be required to change his registration so as to make up deficiencies, or may be admitted to a more advanced course. Freshmen will not ordinarily be given advanced credits in music, but will substitute other approved courses for those omitted.

The equivalent of the second year, first semester of the state course of study for high school credits in piano, or Music 9AX, is required of all music majors. Freshmen deficient in piano may be admitted by demonstrating proficiency on other approved instruments, but must arrange to make up the deficiency immediately as a prerequisite to courses in harmony. For this purpose elementary piano instruction is offered in classes at a small fee.

Students other than freshmen whose training and proficiency in music, gained before entering the University, may warrant advanced standing, should make application during their first quarter of residence. In no case will more than 18 credits in vocal or instrumental music be allowed students entering with advanced standing.

Prescribed Curricula in Music

I. Major in Vocal or Instrumental Music.

II. Major in Music Education.

III. Major in Composition.

All students majoring in a prescribed curriculum will be required to complete the following general course outlined for the first two years in addition to the University requirement of Physical Education 4, 6, 8 or 10 and five quarters of physical education activities for women or Physical Education 15 and five quarters of physical education activities plus six quarters of military science or naval science for men.

Eighteen credits must be earned in ensemble courses and so distributed that no less than six credits are in orchestral classes and six in choral groups. An ensemble course may be repeated with credit.

Students majoring in vocal or instrumental music are required to earn 36 credits, 30 of which must be in the major branch in addition to the senior recital (Music 199). An exception is made in the case of organ majors who may present 12 of the required 36 credits in piano. Students must show marked talent for performance before being accepted as majors in this curriculum. Instrumental or vocal courses numbered below 48 will not be counted in the total 30 credits required.

Students majoring in composition or music education are required to earn 18 credits in vocal or instrumental music as a minimum.

First Year	*Credits*	*Second Year*	*Credits*
Music 15, 16. Fundamentals	5	[2]Music 52. Advanced Ear Training	3
Music 46, 51. Harmony	6	Music 53, 101. Harmony	10
Music 40, 42. Elementary Orchestral Instruments	6	Music 109. Counterpoint	5
Vocal or Instrumental Music	6-9	Music 72, 73, 74. Literature & History	8
English Composition	10	Music 127. Choral Literature	2
[1]College of Arts and Sciences Elective	3-6	Physics. 50. Sound	5
Ensemble	6	Vocal or Instrumental Music	6-9
		Ensemble	6

[1]Twenty credits to be elected in the social sciences. Majors in Music Education elect Education 1.

[2]Students receiving a grade of "A" or "B" in Music 51 may substitute electives for Music 52.

At the end of the second year, students may, with the approval of the Director, continue with one of the following three curricula:

I. A MAJOR IN VOCAL OR INSTRUMENTAL MUSIC

Third Year	*Credits*	*Fourth Year*	*Credits*
Music 112. Forms	5	Music 151, 152, 153. Modern Music	6
Music 117. Elementary Composition and Arranging	5	Music 157. Composition	5
Music 104, 105, 106. Music Since 1850	6	Music 199. Senior Recital	2
Vocal or Instrumental Music	9	Phil. 129. Aesthetics	5
[1]Approved electives	10	Vocal or Instrumental Music	9
Ensemble	6	[1]Approved electives	12
[2]Science	5	Ensemble	6

[1]Suggested electives: Music 190, 191, 192, Philosophy, Literature, Modern Languages.

Voice majors should elect Literature 57, Music 160, ten credits of German and ten credits of either Italian or French.

Piano majors should elect Music 165, 166, 167, 138 and 139.

Organ majors should elect Music 163.

[2]See College of Arts and Sciences section, page 87, group III.

II. A MAJOR IN MUSIC EDUCATION

(A) *Voice.* Two years of study are required, or the ability to demonstrate attainment equal to Music 9CX.

(B) *Cadet Teaching.* Students shall demonstrate their proficiency in piano and voice before an examining committee as a prerequisite to cadet teaching.

(C) *Teaching Minor.* To qualify for the normal diploma, students should, during the junior year, choose a teaching minor in an academic subject.

(D) *Grades.* Students must earn the grade of "B" in three-fourths of the upper division music courses, and no grade lower than "C" in any music course.

Third Year	*Credits*	*Fourth Year*	*Credits*
Music 113. School Music	5	Music 104, 105, 106. Music Since 1850, *or* 151, 152, 153. Modern Music	4
Music 128. Choral Literature	2	Music 116, 154. School Music	5
Music 112. Forms	5	Music 180. Orchestral Conducting	3
Music 136. Technique of Conducting	3	Vocal or Instrumental Music	6
Ensemble	6	Educ. 9. Educational Psychology	3
[1]Science	5	Educ. 70. Introduction to High School Procedure	5
Educ. 60. Secondary Education	3	Educ. 90. Measurements	2
College of Arts and Sciences Elective	13	College of Arts and Sciences Elective	13
[2]Music Elective	3	[2]Music Elective	4

[1]College of Arts and Sciences group III will satisfy—see College of Arts and Sciences section, page 87.

[2]Music electives to be chosen from the following courses: Music 117, 190, 191, 192, 195.

The Bachelor of Arts in Music degree will be awarded upon the completion of the requirements of the fourth year, or 180 credits plus the required physical education and military or naval science. The three-year normal diploma will be awarded upon the successful completion of the requirements as outlined below, which must total at least 45 credits.

Fifth Year

	Credits		*Credits*
Music 155. Supervision	3	Educ. 120. Educ. Sociology	3
Vocal or Instrumental Music	6	Educ. 71, 72. Cadet Teaching	8
[1]Music Elective	5-6	Col. of Arts and Sciences Elective	19-20

[1]Music electives to be chosen from the following courses: Music 117, 190, 191, 192, 195.

III. A MAJOR IN COMPOSITION

Third Year	*Credits*	*Fourth Year*	*Credits*
Music 112. Forms	5	Music 151, 152, 153. Modern Music	4
Music 117. Elementary Composition and Arranging	5	Music 163. Advanced Counterpoint	5
Music 136. Technique of Conducting	2	Music 180. Orchestral Conducting	3
Music 143. Orchestration	5	Music 197. Advanced Composition	6
Music 157. Composition	5	Vocal or Instrumental Music	6
Music 104, 105, 106. Music since 1850	4	Music 190, 191, 192. Advanced Music Literature	9
College of Arts and Sciences Elective	8	Philosophy 129. Aesthetics	5
Ensemble	6	Electives	7
[1]Science	5		

Suggested electives: Philosophy; literature, history; psychology.
[1]See College of Arts and Sciences section, page 87, group III.

In addition to these three prescribed curricula leading to the degree of Bachelor of Arts in Music, the School of Music offers a broader non-professional curriculum leading to the degree of Bachelor of Arts.

Elective Curriculum in Music

Minimum requirements:	*Credits*	*Minimum requirements:*	*Credits*
Music 15, 16. Fundamentals	5	English Composition	10
Music 46, 51, 53. Harmony	11	Sociology, Political Science, Economics	15
*Vocal or Instrumental Music	12	Psychology	5
Music 127, 128. Choral Literature	4	Philosophy	5
Music Literature and History	18	[1]Science	10
Chosen from the following: Music 72, 73, 74, 104, 105, 106, 151, 152, 153, 190, 191, 192.		Humanities	10
		College of Arts and Sciences Electives	45
Ensemble	8		

*Major students in this course will be given an examination in vocal or instrumental music at the end of the junior year.
[1]See College of Arts and Sciences section, page 87, group III.

NURSING EDUCATION

Elizabeth Soule, Director, Nursing Education Building

(See School of Nursing Education bulletin for detailed information)

Students entering the School of Nursing Education may take up curricula in one of three main groups:

I. Basic courses leading to the degree of Bachelor of Science in Nursing

II. Courses for Graduate Nurses:
   a. Leading to the degree of Bachelor of Science in Nursing
   b. Leading to the certificate in Public Health Nursing
   c. Leading to the certificate in Nursing Supervision

III. Courses leading to the degree of Master of Science or Master of Nursing

These curricula are set forth in detail in the succeeding pages.

Group I.—Basic Courses

CURRICULUM A

Quarters in Campus Division

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Physics 89. Home	5	Physics 90. Home	5	Chem. 2 or 22. General	5
Comp. 4. Composition	3	Comp. 5. Composition	3	Anat. 100. General Human	3
N.Ed. 1. History	3	Chem. 1 or 21. General	5	Home Econ. 9. Elementary Nutrition	6
Psychology 1. General	5	Elective	3	Elective	2
Physical Education	1	Physical Education	1	Physical Education	1
Chem. 137. Organic	5	Bact. 102. Sanitary and Clinical Methods	5	Home Econ. 105. Advanced Nutrition	5
Bact. 101. General	5	*or*		Soc. 1. Introduction	5
Physiology 53. General	5	Bact. 103. Public Hygiene	5	Elective	5
Physical Education	1	Anat. 101. General Human	3		
		Physiology 54. General	5		
		Elective	2		
		Physical Education	1		

Quarters in Hospital Division

N.Ed. 50. Principles of Elementary Nursing	5	N.Ed. 60. Principles of Medical Nursing	3	N.Ed. 61. Principles of Nursing Medical Specialties	3
N.Ed. 51. Case Study	1	N.Ed. 70. Principles of Surgical Nursing	3	N.Ed. 71. Principles of Nursing Surgical Specialties	3
N.Ed. 52. Introduction to Hospital Practice	6	N.Ed. 62. Medical Nursing Practice	6	N.Ed. 66. Principles of Preventive Medicine	2
Anat. 105. Pathology	3	Phar. 61. Therapeutics	3	N.Ed. 72. Surgical Nursing Practice	6
Phar. 51. Elementary	2				
N.Ed. 76. Principles of Otolaryngology and Ophthalmology	2	N.Ed. 86. Principles of Obstetrical Nursing	5	N.Ed. 80. Principles of Pediatric Nursing	5
N.Ed. 64. Principles of Special Therapy	2	N.Ed. 75. Outpatient Nursing Practice	6	N.Ed. 73. Operating Room Practice	6
N.Ed. 101. Introduction to Public Health Nursing	2				
N.Ed. 65. Special Therapy Practice	6				
N.Ed. 82. Pediatric Nursing Practice	6	N.Ed. 100. Professional Problems	2	N.Ed. 90. Principles of Psychiatric Nursing	5
Elective	3	N.Ed. 88. Obstetrical Nursing Practice	6	N.Ed. 92. Psychiatric Nursing Practice	6
		Elective	2	Elective	3
		N.Ed. 68. Communicable Disease Nursing Practice	6		

Twenty elective credits must be taken in Group I or II of College of Arts and Sciences Curricula.

CURRICULUM B

A selected course not meeting the complete curriculum requirements for the degree of bachelor of science in nursing is offered for students of hospital schools wishing the cooperation of the University in a one-year preliminary nursing course. On completion of this preliminary course and the hospital course, which grants 45 lump credits, the student receives junior stand-

ing in the University toward the degree of bachelor of science in nursing under curriculum A in group II.

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Comp. 4. Composition...	3	Comp. 5. Composition...	3	Chem. 2 or 22. General.	5
N.Ed. 1. History of Nursing	3	Chem. 1 or 21. General.	5	Home Econ. 9. Nutrition	6
Psychology 1. General...	5	Soc. 1. Survey.....	5	Physical Education.....	1
Elective	5	Elective	2	Physiol. 53. Human.....	5
Physical Education.....	1	Physical Education.....	1		

Summer Quarter	*Credits*
Physiol. 54. Human.....	5
Anat. 100. Anatomy Lectures	3
Anat. 101. Gen. Human.	3
Bact. 101. General Bacteriology	5

Group II.—Curricula for Graduate Nurses

CURRICULUM A

The University offers this course to enable the graduate nurse to broaden her scientific and cultural background and prepare for advanced professional work. It allows the student a choice of her electives in the fields of public health nursing, nursing administration, or nursing education, and grants the degree of bachelor of science in nursing.

First Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Comp. 1. Composition...	5	Chem. 1 or 21. General.	5	Chem. 2 or 22. General.	5
Psychol. 1. Introduction	5	Comp. 2. Composition...	5	E.B. 4. Survey.....	5
Elective	5	Elective	5	Elective	5

Second Year

Physiol. 53. Human.....	5	Physiol. 54. Human.....	5	Home Econ. 105 or 106. Nutrition	5
Elective 10		N.Ed. 150	5	Elective 10	
		Soc. 1. Survey.....	5		

Third Year

Bact. 101. General.....	5	Bact. 102. Sanitary and Clinical Methods.....	5	Bact. 103. Public Hygiene	5
N.Ed. 102. Public Health	5	N.Ed. 103. Administration Public Health....	3	Soc. 31. Social Statistics	5
or		*and*		Elective	5
N.Ed. 151. Administration of Schools of Nursing	5	N.Ed. 104. Epidemiology	2		
Elective	5	*or*			
		N.Ed. 152. Supervision.	5		
		Elective	5		

CURRICULUM B

Leading to Certificate in Public Health Nursing

The broadening of the field of nursing has created a demand on the part of nurses for definite study along lines which experience has shown to be closely interwoven with the problems of the family and the community. A nurse must combine with the technical knowledge she already possesses an understanding of the fundamental principles of economics and the social sciences.

The demand for properly trained and qualified public health nurses is constantly increasing as new fields open through recognition by the public of the economic value of the work. Beginning each quarter of the year the University offers a course in public health nursing which is open to graduate

nurses who are deemed qualified for such work, and who wish to broaden their training to take up positions in this specialized line. This course is endorsed by the National Organization for Public Health Nursing.

This course includes five quarters of academic work at the University and one quarter of field work, or four quarters of academic work and two quarters of field work, depending upon the experience the individual student has had in the public health nursing field.

	Credits
N.Ed. 102. Principles of Public Health	5
N.Ed. 103. Administration Public Health	2
N.Ed. 104. Epidemiology	2
N.Ed. 150. Principles Teaching Nursing and Health	5
Soc. 1. Survey	5
Soc. 128. Field of Social Work	3
Soc. Work 175. Social Case Work	5
Psych. 1. Introduction	5
Bact. 103 Public Hygiene	5
N.Ed. 110 Field Work	8 to 16
*N.Ed. 106. Rural Health Work	2
*N.Ed. 112. Advanced Field Work	12
N.Ed. 113. Readings in Specialized Fields of Public Health Nursing	2
*N.Ed. 165. Contemporary Nursing Literature	2
*N.Ed. 171. Psychiatric Information	2
*N.Ed. 172. Psychiatric Information	2
*Home Econ. 106. Nutrition for Public Health Nurses	5
*Comp. 1. Composition	5
*Comp. 2. Composition	5
*Speech 40. Essentials of Speaking	5
*Psych. 131. Child Psychology	5
*Soc. 31. Social Statistics	5
*Chem. 1 or 21. General	5
*Chem. 2 or 22. General	5
Total credits required	90

*Electives.

CURRICULUM C

Leading to a Certificate in Nursing Supervision

Executives and students of the field of hospital and nursing administration have frequently expressed the need for supervisors, administrators and teachers who have had advanced education and experience, qualifying them for positions of responsibility in fields of obstetric, pediatric, medical, surgical, operating room, psychiatric, tuberculosis, out-patient nursing and diet therapy.

The University offers the course leading to a certificate in nursing supervision for graduate nurses who wish preparation as head nurses or supervisors. This program combines five to seven credits of academic work each quarter with a year's professional practice in one major and two minor nursing services elected from the specialities listed above. Five credits in each of the social sciences, economics, psychology, sociology, and nutrition, is required before beginning the advanced professional program in the hospital division.

Prerequisite Courses

	Credits
E.B. 4. Survey	5
Soc. 1. Survey	5
Psych. 1. General	5
Home Econ. 105. Nutrition	5
or	
Home Econ. 106. Nutrition	5

Advanced Supervisory Program

Academic Courses	*Credits*
Phar. 101. E. Advanced Pharmacy and Therapeutics	2
N.Ed. 150. Principles of Teaching	5
N.Ed. 152. Supervision of Hospital Departments	5
N.Ed. 153. Administration of Nursing Service	5
or	
N.Ed. 151. Administration of Schools of Nursing	5
N.Ed. 154. Cadet Teaching and Ward Administration	10
Total credits required	47

Professional Practice	
Review, supervision, and advanced administration in classes and practice of major and 1st and 2nd minor nursing specialities selected.	
1st Minor Service	1 quarter
2nd Minor Service	1 quarter
Major Service	1 quarter
Advanced Adminstration and Teaching	1 quarter
Total practice required	4 quarters

Group III.—Graduate Curricula

Graduate work in Nursing Education is offered with a major in the fields of (1) Administration in Schools of Nursing, (2) Teaching and Supervision, (3) Public Health Nursing. The minor must be chosen from the allied fields.

If the Master of Science is desired the minor should be in the fields of biological or physical sciences such as physiology, anatomy, bacteriology, or chemistry. If the Master of Nursing is desired the minor should be in the fields of social sciences, education or home economics.

OCEANOGRAPHIC LABORATORIES

Thomas G. Thompson, Executive Officer, 202 Oceanographic Laboratories

(See Oceanographic Laboratories bulletin for detailed information)

A thorough training in the fundamental sciences is essential for an extensive study in oceanography. Such a study does not ordinarily begin until graduate standing has been attained, although exceptional upper division students will be considered. Preparation for graduate study in oceanography may be approached by majoring in one of the physical or biological sciences. For the convenience of students contemplating such work, curricula for undergraduates are suggested by the staff of the laboratories. By adherence to the curriculum a student may graduate with the degree of bachelor of science. The student adviser will be a member of the staff of the laboratories representing the major department. (See also page 357.)

ORIENTAL STUDIES

George Edward Taylor, Executive Officer, 207 Denny Hall

DEGREE: Bachelor of Arts

One general and four specialized curricula are offered to students desiring to major in Oriental Studies, of which the student is required, after consultation, to select one. This choice must ordinarily be made not later than the sophomore year.

General Major in Oriental Studies

	Credits
10. Survey of Asia	5
40. Chinese Civilization, or 41. Japanese Civilization	5
114, 115, 116. History of Religion	9
Electives in Literature: 50, 52, 170, 171, minimum of U.D. credits	10
History electives: 90, 91, 92, 180, 181, minimum of	15
Reading Course electives: 190, 191, 192, 193, minimum of	3
	47

Major in Japanese Studies

	Credits
10. Survey of Asia	5
1-2, 3. Japanese Language	15
107, 108, 109. Japanese Language, second year	15
170. Chinese Literature in Translation	5
171. Japanese Literature in Translation	5
Electives: 41, 91, 115, 181, 193, minimum of	3
	48

In addition to the above, the following courses are strongly recommended: O.S. 44-45, 46, *Chinese Language,* and 110, 111, *Japanese Language,* third year.

Major in Chinese Studies

	Credits
10. Survey of Asia	5
44-45, 46. Chinese Language	15
147, 148, 149. Chinese Language, second year	15
90 or 180. Chinese History	5
115. History of Religion	3
170. Chinese Literature in Translation	5
Approved electives: 40, 92, 192, minimum of	3
	51

Major in Slavic Studies

	Credits
7-8, 9. Russian Language	15
140, 141, 142. Russian Language, second year	9
162, 163. Russian Language, third year	6
130. Russian Literature	5
136. The Russian Revolution	5
10. Survey of Asia, or 116. History of Religion	3 or 5
Approved electives: 40, 190, 192, 193, 194, minimum of	5
	48 or 50

Major in Oriental Languages

	Credits
10. Survey of Asia	5
Language electives (Hebrew, Sanskrit, Arabic, Aramaic, Chinese, Japanese), minimum of	45
Approved electives: 50, 52, 115, 116, 170, 171, or reading courses	15
	65

PHILOSOPHY

William Savery, Executive Officer, 264 Philosophy Hall

DEGREE: Bachelor of Arts

Major Requirements

	Credits
2. Introduction to Social Ethics *or*	
3. Introduction to Ethics	5
5. Introduction to Logic	5
101-102-103. History of Philosophy	9
Electives	17
Minimum total credits	36

Fifty per cent of the credits in the major must be in upper division courses. Psychology 1 is required, and major students are urged to elect courses in psychology.

PHYSICAL EDUCATION FOR MEN AND WOMEN

Mary Gross Hutchinson, Executive Officer,
105 Women's Physical Education Building

Henry M. Foster, Executive Officer, 210 Men's Pavilion

(See bulletin of the School of Physical Education and Hygiene for detailed information.)

The School of Physical Education and Hygiene offers three curricula, all leading to the bachelor of arts degree.

Group A—Major in physical education. For the non-professional student.

Group B—Major in recreational leadership. For the professional student in the field of recreation. Because of rapidly developing community programs in both urban and rural areas, there is an increasing demand for leaders in this field.

Group C—Professional teacher training. For the professional student in health and physical education. Increased emphasis in these fields has created demands for well-trained teachers. This is a five-year course; application is made in the junior year for admission; for standards of admission consult head of department.

I. Major in physical education.

II. Minor in physical education.

III. Minor in health education.

GROUP A—MAJOR IN PHYSICAL EDUCATION

Required foundation and related courses:

	Credits
Zool. 1. Animal Biology	5
Zool. 2. General Zoology	5
Zool. 16. Evolution	2
Zool. 17. Eugenics	2
Chem. 1-2. General Chemistry (Unless taken in high school)	10
Anat. 100. Anatomy Lectures	3
Physiol. 50. Physiology	6
*H.E. 104. Nutrition for Non-majors	2
Lib. Arts 1	5
†P.E. 10	5
Comp. 1-2	10
*Military or Naval Science	12-18
Soc. 1. Survey of Sociology	5
Psych. 1. General Psychology	5
Speech 40. Essentials of Speaking	5
†P.E. 11, 12, 13. Physical Education Activities for Freshmen Majors	6
†P.E. 51, 52, 53. Physical Education Activities for Sophomore Majors	6
*P.E. 6, 7, 8; 9, 10, 11. Phys. Educ. Activities for Majors	6
	†68+12
Total credits required	*70+18—24

Required professional courses:

Men—

	Credits
107. Personal and General Hygiene	3
110. First Aid and Safety	3
113. Principles of Recreation	3
115. Physiology of Muscular Exercise	5
145. Principles of Health and Physical Education	5
150. Physical Education Administration	5
153. Methods and Materials in Health Teaching	3
158. Methods in Teaching Apparatus, Tumbling, and Stunts	2
161. Methods in Teaching Boxing and Wrestling	2
162. Methods and Materials in Teaching Folk, Tap, and Clog Dancing	2
163. Methods and Material in Teaching of Sports	2
165. The Administration of Health Education	3
Total credits required	38

*Required of men only.
†Required of women only.

Women—

	Credits
111. Rhythmic Activities for Small Children	2
112. Elementary School Athletic Program	3
113. Principles of Recreation	3
115. Physiology of Muscular Exercise	5
118. Analysis of Rhythm	3
128. Administration and Organization of Camp Programs	3
145. Principles of Health and Physical Education	5
156. Methods and Materials in Teaching Dance	2
162. Methods and Materials in Teaching Folk, Tap and Clog Dancing.	2
163. Methods and Materials in Teaching of Sports	2 or 3
164. Methods in Teaching Swimming	3
165. The Administration of Health Education	3
Total credits required	36 or 37

GROUP B—MAJOR IN RECREATIONAL LEADERSHIP

Required foundation and related courses:

	Credits
Comp. 1, 2	10
†P.E. 11, 12, 13. Physical Education Activities for Freshmen Majors	+6
†P.E. 51, 52, 53. Physical Education Activities for Sophomore Majors.	+6
*P.E. 6, 7, 8; 9, 10, 11. Phys. Educ. Activities for Majors	+6
†P.E. 10. Health Education	5
*P.E. 107. Personal and Gen. Hygiene.	3
Zool. 1. Animal Biology	5
Physiol. 50. Physiology	6
Lib. Arts 1 or 11	5
Psych. 1. General Psychology	5
Speech 40. Essentials of Speaking	5
Soc. 1. Survey of Sociology	5
Soc. 66. Group Behavior	5
Soc. 124. Play and Leisure Time	3
	†66
Total credits required	*58

Elective Related Courses:	Credits
Forestry 6. General Forestry	2
Forestry 65. Forest Recreation	3
Librarianship 180. Story Telling	3
Music 22, 23, 24. Music Appreciation	2
Psych. 118. Social Psychology	5

Required professional courses:

Men—

	Credits
110. First Aid and Safety	3
113. Principles of Recreation	3
115. Physiology of Muscular Exercise	5
124. Activities and Recreational Methods	5
125. Administration of Play and Recreation	3
126. Observation and Practice Teaching	2
145. Principles of Health and Physical Education	5
158. Methods in Teaching Apparatus, Tumbling, and Stunts	2
161. Methods in Teaching Boxing and Wrestling	2
162. Methods and Materials in Teaching Folk, Tap and Clog Dancing	2
163. Methods and Materials in Teaching Sports	2
164. Methods in Teaching Swimming	2
165. The Administration of Health Education	3
170 or 171 or 172 or 173. Athletic Coaching	6
Total credits required	45

*Required of men only.
†Required of women only.

Women—

	Credits
101. Methods and Materials in Gymnastics, Stunts, and Tumbling	3
110. First Aid and Safety	2
111. Rhythmic Activities for Small Children	2
112. Elementary School Athletic Program	3
113. Principles of Recreation	3
115. Physiology of Muscular Exercise	5
118. Analysis of Rhythm	3
124. Activities and Recreational Methods	5
125. Administration of Play and Recreation	3
126. Observation and Practice Teaching	2
128. Administration and Organization of Camp Programs	3
145. Principles of Health and Physical Education	5
156. Methods and Materials in Teaching Dance	2
162. Methods and Materials in Teaching Folk, Tap, and Clog Dancing.	2
163. Methods and Materials in Teaching Sports	3
164. Methods in Teaching Swimming	3
165. The Administration of Health Education	3
Total credits required	52

GROUP C—PROFESSIONAL TEACHER TRAINING

I. Major in Physical Education

Required foundation and related courses:

	Credits
Zool. 1. Animal Biology	5
Zool. 2. General Zoology	5
Zool. 16. Evolution	2
Zool. 17. Eugenics	2
Chem. 1-2. General Chemistry (Unless taken in high school)	10
Anat. 100. Anatomy Lectures	3
Physiol. 50. Physiology	6
*H.E. 104. Nutrition for Non-Majors	2
Lib. Arts 1	5
†P.E. 10	5
Comp. 1-2	10
Soc. 1. Survey of Sociology	5
Psych. 1. General Psychology	5
Speech 40. Essentials of Speaking	5
†P.E. 11, 12, 13. Physical Education Activities for Freshmen Majors	6
†P.E. 51, 52, 53. Physical Education Activities for Sophomore Majors	6
*P.E. 6, 7, 8; 9, 10, 11. Physical Education Activities for Majors	6
Total credits required	*70+6 †68+12

Required professional courses:

Men—

	Credits
107. Personal and General Hygiene	3
110. First Aid and Safety	3
113. Principles of Recreation	3
115. Physiology of Muscular Exercise	5
122. Kinesiology	3
127. Tests and Measurements	3
135. Adapted Activities	3
145. Principles of Health and Physical Education	5
150. Physical Education Administration	5
153. Methods and Materials in Health Teaching	3
158. Methods in Teaching Apparatus, Tumbling, and Stunts	2
161. Methods in Teaching Boxing and Wrestling	2
162. Methods and Materials in Teaching Folk, Tap, and Clog Dancing.	2
163. Methods and Materials in Teaching Sports	2
164. Methods in Teaching Swimming	2
165. Administration of Health Education	3
Athletic Coaching	6
Total credits required	55

*Required of men only.
†Required of women only.

Women—

	Credits
101. Methods and Materials in Gymnastics, Stunts, and Tumbling	3
110. First Aid and Safety	2
111. Rhythmic Activities for Small Children	2
112. Elementary School Athletic Program	3
113. Principles of Recreation	3
115. Physiology of Muscular Exercise	5
118. Analysis of Rhythm	3
122. Kinesiology	3
127. Tests and Measurements	3
128. Administration and Organization of Camp Programs	3
131, 132, 133. Principles and Methods in Posture Education	9
145. Principles of Health and Physical Education	5
150. Physical Education Administration	2
153. Methods and Materials in Health Teaching	3
156. Methods and Materials in Teaching Dance	2
162. Methods and Materials in Teaching Folk, Tap, and Clog Dancing.	2
163. Methods and Materials in Teaching Sports	3
164. Methods in Teaching Swimming	3
165. Administration of Health Education	3
Coaching	0
Total credits required	62

II. Minor in Physical Education

Required foundation course:

Physiol. 50. Physiology	6

Required professional courses:

Men—

	Credits
107. Personal and General Hygiene	3
110. First Aid and Safety	3
145. Principles of Health and Physical Education	5
158. Methods in Teaching Apparatus, Tumbling and Stunts	2
161. Methods in Teaching Boxing and Wrestling	2
162. Methods and Materials in Teaching Folk, Tap and Clog Dancing.	2
163. Methods and Materials in Teaching Sports	2
165. Administration of Health Education	3
Athletic Coaching	4
Total credits required	26

Women—

	Credits
51. Physical Education Activities for Sophomore Majors	+2
52. Physical Education Activities for Sophomore Majors	+2
112. Elementary School Athletic Program	3
145. Principles of Health and Physical Education	5
150. Physical Education Administration	2
153. Methods and Materials in Health Teaching	3
162. Methods and Materials in Teaching Folk, Tap, and Clog Dancing	2
163. Methods and Materials in Teaching of Sports	3
165. Administration of Health Education	3
Electives	5
Total credits required	26+4

Electives to be selected from:

101. Methods and Materials in Gymnastics, Stunts and Tumbling	3
113. Principles of Recreation	3
118. Analysis of Rhythm	3
128. Organization and Administration of Camp Program	3
156. Methods and Materials in Teaching Dance	2
164. Methods in Teaching Swimming	3

Substitutions subject to approval of head of department.

III. Minor in Health Education

Required foundation and related courses:

	Credits
Zool. 1. Animal Biology	5
Zool. 17. Eugenics	2
Physiol. 50. Physiology	6
	13

Required professional courses:

†P.E. 10. Health Education	5
*H.E. 104. Nutrition	2
*P.E. 107. Personal and General Hygiene	3
Psych. 2. Psychology of Adjustment (5) *or* Soc. Wk. 231. Psychiatric Information for Social Workers (2)	5 or 2
Nursing Educ. 104. Public Health Administration and Epidemiology	2
P.E. 110. First Aid and Safety	2-*3
P.E. 145. Principles in Health and Physical Education	5
P.E. 153. Methods and Materials in Health Teaching	3
P.E. 165. Administration of Health Education	3
Total credits required	†22 or 25 *23 or 26

*Required of men only.
†Required of women only.

For additional requirements for three-year normal diploma, see College of Education section, page 151.

PHYSICS

Henry L. Brakel, Executive Officer, 206 Physics Hall

DEGREE: Bachelor of Science—elective course

DEGREE: Bachelor of Science in Physics

First Year

Autumn Quarter	Credits	*Winter Quarter*	Credits	*Spring Quarter*	Credits
Comp. 1. Composition	5	Comp. 2. Composition	5	Speech 40. Essentials of Speaking	5
Math. 4. Plane Trig.	5	Math. 5. College Algebra	5	Math. 6. Analytic Geom.	5
Physics 1. Mechanics and Sound	5	Physics 2. Electricity and Magnetism	5	Physics 3. Heat & Light	5
Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+

Second Year

Chem. 1 or 21. General.	5	Chem. 2 or 22. General.	5	Chem. 23. General	5
Math. 107. Calculus	5	Math. 108. Calculus	5	Math. 109. Calculus	5
Physics 101. Introduction to Modern Physics	3	Physics 102. Introduction to Modern Physics	3	Physics 150. Heat and Introduction to Thermodynamics and Kinetic Theory	3
Physics 105. Electricity and Magnetism	3	Physics 106. Electricity and Magnetism	3	Elective	2
Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+

Third Year

Math. 114. Differential Equation	3	Math. 115. Differential Equations	3	Physics 160. Optics	6
Chem. 111. Quantitative Analysis	5	Chem. 131. Organic	5	Chem. 132. Organic	5
*Advisory elective	7	*Advisory elective	4	*Advisory elective	4
		Physics 140. Sound	3		

Fourth Year

Physics 191. Theoretical Mech.	4	Physics 192. Theoretical Mech.	4	Physics 115. Photography	4
Physics 195. Experimental Atomic Physics	3	Physics 196. Experimental Atomic	3	Chem. 183. Physical and Theoretical Chemistry.	5
Chem. 181. Physical and Theoretical Chem.	5	Physics 180. History of Physics	2	Physics 154. Low and High Frequency Measurements	4
Elective	3	Chem. 182. Physical and Theoretical Chemistry.	5	Mech. Eng. 55. Manufacturing Methods	1

*Foreign Language, French or German.
The total number of credits must include Physical Education 15 for men, and Physical Education 4, 6, 8, or 10 for women.

POLITICAL SCIENCE

Charles E. Martin, Executive Officer, 11A Condon Hall

DEGREE: Bachelor of Arts

The courses in political science are offered to meet the needs of the following groups: (1) students seeking sufficient political training to aid them in understanding their civic duties; (2) those desiring courses in political science as a part of their liberal education; (3) students who desire to prepare themselves for positions in the public service, national, state, and local, and the foreign service; (4) students seeking courses in political science which are preparatory and supplementary to their work in the following professional schools—law, education, business administration, and journalism; (5) those who desire that systematic and intensive training which will prepare them as teachers or investigators in political science.

Forty-five credits for a major which must include 30 upper division credits, 20 credits in one group and 10 in each of the other two.

I. Political Theory and Jurisprudence.
II. International Relations.
III. Politics and Administration.

PSYCHOLOGY

Stevenson Smith, Executive Officer, 338 Philosophy Hall

DEGREE: Bachelor of Science

For a major, 40 credits of psychology approved by the department.

Majors should elect courses in chemistry, mathematics, physics, physiology, philosophy and zoology.

The following courses are required: Psych. 1, 2, 102, 106, 108, 109, 124 and 140.

Required courses in other departments: zoology, 10 credits; mathematics, 5 to 15 credits.

ROMANIC LANGUAGES AND LITERATURE

(French, Spanish and Italian)

Howard Lee Nostrand, Executive Officer, 215 Denny Hall

DEGREE: Bachelor of Arts

FRENCH

For a major, a minimum of 36 credits which must include the following courses:

	Credits
41. Phonetics	3
101, 102. Composition and Conversation	6
103. Composition and Conversation, *or* 107. French Themes	3
158, 159. Advanced Syntax	4
*Literature	9 or 10

*French literature courses numbered above 117. At least 6 of the 9 or 10 credits shall be in literature courses conducted in French.

ITALIAN

A minimum of 36 credits approved by the head of the department.

SPANISH

For a major, a minimum of 36 credits which must include the following courses:

	Credits
101, 102, 103. Advanced Composition	9
159. Advanced Syntax	3
*Literature	9 or 10

*Spanish literature courses numbered above 117. At least 6 or 7 of the 9 or 10 credits shall be in literature courses other than the survey courses, which are Spanish 118, 119, 120; 34, 35, 36, or 134, 135, 136.

SCANDINAVIAN LANGUAGES AND LITERATURE

(Swedish, Norwegian, and Danish)

Edwin J. Vickner, 210 Denny Hall

DEGREE: Bachelor of Arts

SWEDISH

	Credits
1, 2, 3. Elementary	9
4, 5, 6. Swedish Reading	6
23, 24, 25. Swedish Literature	6
103, 104, 105. Recent Swedish Writers	9
106, 107, 108. Recent Norwegian-Danish Writers or special work in Swedish Literature	6
	36

NORWEGIAN OR DANISH

	Credits
10, 11, 12. Elementary Norwegian or Danish	9
13, 14, 15. Norwegian or Danish Reading	6
20, 21, 22. Norwegian or Danish Literature	6
103, 104, 105. Recent Swedish Writers, or special work in Norwegian or Danish Literature	6
106, 107, 108. Recent Norwegian or Danish Writers	9
	36

SLAVIC STUDIES (Russian Language)—See Oriental Studies

GRADUATE SCHOOL OF SOCIAL WORK

Ernest F. Witte, Director, 300-F Commerce Hall

(See Graduate School of Social Work bulletin for detailed information.)

The Graduate School of Social Work accepts a limited number of graduate students each year to complete the social service curriculum. Applicants are selected who hold a baccalaureate degree from an accredited college, and who show, by academic record and by character and maturity, aptitude for social work. Application should be made directly to the Graduate School of Social Work and must be filed before June 1.

Admission

With few exceptions, registration in social work courses is limited for beginning students to those who enter in the autumn quarter and remain for at least three consecutive quarters of full time study or until they have com-

pleted the basic curriculum recommended by the American Association of Schools of Social Work. Advanced students who have had courses in other schools which are members of the American Association of Schools of Social Work may be admitted, however, in any quarter provided application for admission is made *at least one month* in advance of the opening date of the quarter.

Professional Students. To enter the professional courses, a student must have received a baccalaureate degree from an accredited college. The applicant's undergraduate study should have included at least thirty-six credits in the social and biological sciences, twenty-five credits of which should be in a particular sequence in a social science. While students without such pre-social work preparation may be admitted, and permitted to make up the deficiency gradually, students are preferred who have a basic foundation in the social and biological sciences.

Part-Time Students. Social workers of experience may be admitted to professional courses by special arrangement after conference with the director. The third quarter of case work is open only to students having twelve credits in professional courses other than case work.

Pre-Social Work Students. A program of background courses has been arranged in the sociology department for those planning to enter the Graduate School of Social Work in their fifth year. Courses numbered under 200 are open to undergraduate students. A leaflet advising a pre-social work sequence of courses in the social sciences and related fields may be had upon request to the Graduate School of Social Work or social science departments.

Curriculum

A broad first year curriculum is required of all students. Courses considered fundamental for first-year students include the following :

Social Case Work I and II
Case Work with Psychiatric Interpretation, *or* Child Welfare Case Work
Field Work, I, II, and III
Psychiatric Information for Social Workers I and II
Medical Information for Social Workers
Community Organization *and/or* The Rural Community
Problems of Public Assistance
Problems of Child Welfare
Social Statistics *and/or* Methods of Social Research
Group Work *and/or* Social Aspects of the Law

During the second year of graduate study increasing attention is given to field work experience; and additional courses are required in the administration of social agencies, social legislation, the history of social work, social research, and specialized case work.

In addition to courses under the direction of the faculty of the Graduate School of Social Work, the faculties of other departments and schools of the University of Washington are called upon for courses in political science, sociology, home economics, labor problems, public health, and psychology.

While qualified students are urged to complete the work for a master of arts degree, those who have satisfactory preprofessional preparation but are unable to remain longer than one year can complete, in that time, the basic curriculum prescribed by the American Association of Schools of Social Work, which is outlined above. Upon securing employment, they are then eligible to apply for admission to the American Association of Social Work-

ers. Students entering upon professional study directly after receiving the baccalaureate degree may find it desirable to complete the basic curriculum and then secure a position, returning at a later date to conclude work for the master's degree.

SOCIOLOGY

Jesse F. Steiner, Executive Officer, 319 Physics Hall

DEGREE: Bachelor of Arts

Sociology treats of the life of human groups. Its subject matter is closely related to that presented by the other social studies. Students should read the department leaflet and consult staff advisers before selecting courses.

Students will be accepted as Sociology majors only after maintaining an average of 2.0 over their entire University records, and an average of 2.5 in the department for the quarter immediately preceding their date of affiliation.

	Credits
1. Survey or Sociology *or* 150. General Sociology	5
31. Social Statistics	5
55. Human Ecology, *or* 155. Human Ecology	5
66. Group Behavior	5
Electives from courses offered in the department, chosen after consultation regarding the special field of interest	16 or 18
Minimum total	36

ZOOLOGY

Trevor Kincaid, Executive Officer, 202 Johnson Hall

(See Biological Sciences, page 94.)

PRE-EDUCATION

W. L. Uhl, Executive Officer, 113 Education Hall

(See College of Education bulletin for detailed information.)

Pre-education Students. During the freshman year, students who expect to teach register as pre-education freshmen in the College of Arts and Sciences and pursue the regular courses of this college. They must confer in this year with the dean of the College of Education. This conference is for two purposes: (1) to obtain admission to the College of Education; and (2) to select suitable combinations of teaching subjects and orientation courses for the proposed preparation for teaching.

PRE-LAW

David Thomson, Adviser, 203 Denny Hall

General. For admission to the School of Law, students in the College of Arts and Sciences must present a minimum of 135 academic credits with a scholarship average of 2.5 grade points, together with the required work in military or naval science, and physical education. They must satisfy the usual first and second year requirements of the College, viz. composition, health and hygiene, 30 credits in one College of Arts and Sciences group, 20

in another and 10 in a third. While the School of Law does not prescribe specific courses it strongly recommends that all pre-law students complete the basic courses in history (English and American), economics and political science, and at least one course in logic or mathematics. It regards some work in sociology as desirable and recommends that in choosing electives, the student should include some courses in the biological and physical sciences.

Combined Seven-Year Arts-Law Curriculum. It is possible to obtain the degrees of bachelor of arts and bachelor of laws in seven years. To have the benefit of this combined course, students must, in the first three years, earn 138 credits in the College of Arts and Sciences together with the required credits in military or naval science and physical education. To acquire the 138 credits in three years the student should carry an average of 16 credits each for three quarters during the junior and sophomore years, exclusive of military or naval science and physical education. As one can enter the Law School to advantage only at the beginning of the autumn quarter, the entire 138 credits should be completed within the customary three years, with work during an intervening summer quarter if necessary. At the beginning of the fourth year, if a student has earned 138 credits with an average of 2.5 grade points, and the required credits in military or naval science and physical education (see above), he may enter the School of Law and there earn 42 credits which will be counted toward his bachelor of arts degree. He will be granted the bachelor of arts degree at the end of the fourth year, or as soon as he completes the required work above specified and 42 credits in the School of Law. The degree of bachelor of laws will be conferred upon completion of his work in the Law School.

This combined arts-law curriculum, in lieu of a major, requires 70 upper division credits in place of the 60 credits required of students offering a major. As the 42 credits of law, counted toward the bachelor of arts degree, are in upper division courses, it follows that at least 28 of the 138 credits referred to above must also be in upper division courses. These 28 credits must be so grouped that they can be approved by the dean of the College of Arts and Sciences as constituting, with the law courses, a satisfactory substitute for the major usually required for the bachelor of arts degree.

In exceptional cases where the student has at least 135 credits, the dean of the Law School may, upon written petition, permit registration in the Law School and allow the student to satisfy the remaining three credits necessary for the combined degrees at some subsequent time.

Transfer Pre-Law Students. Students from other institutions entering this University with advanced standing may take advantage of this combined seven-year curriculum, provided they are registered in the College of Arts and Sciences for at least one full year of work, and earn at least 45 credits in the University before entering the School of Law. This privilege will not be extended to normal school graduates attempting to graduate in two years, nor to undergraduates of other colleges who enter this University with the rank of senior.

Required Curricula in Group Majors

A Seven-Year Curriculum in Science and Law. This is a combination curriculum whereby a student may obtain the degrees of bachelor of science and bachelor of laws in seven years. At the end of his third year, after he has earned 138 academic credits with a grade point average of at least 2.5, and completed the required six quarters in military or naval science and physical education, and all required work with a major in some department, he may register in the School of Law for the first year's work in law. He will be granted the bachelor of science degree at the end of the fourth year, or as soon as he completes the required work above specified and 42 credits in the School of Law making a total of 180 credits for graduation. The fifth, sixth and seventh years of the curriculum are devoted to completing the remainder of the required work for graduation from the School of Law.

PRE-LIBRARY

Ruth Worden, Director, 111 Library

(See School of Librarianship bulletin for detailed information.)

Admission. Admission to the general course in librarianship is granted as follows:

To graduate students holding the baccalaureate degree from any college or university of good standing, with an average grade of "B" in their undergraduate work and at least 20 college credits of one modern foreign language. Students desiring to enter college or university library work or work in a large public library are required to have a reading knowledge of both French and German.

Initial admission to classes in the School of Librarianship is permitted only at the beginning of the college year in the autumn.

Students planning to enter the School of Librarianship should consult the director of the school at least once a year.

Librarianship 180, *Story Telling,* is open to students outside of the school, but does not carry credit toward the degree in librarianship.

The following courses may be taken, in senior or fifth year, by teaching majors who wish to qualify to meet the requirements of the State Department of Education for teacher-librarians: 170, *Introduction to Children's Work;* 175, *Cataloging and Classification;* 177, *Bibliography and Reference;* 182, *School Library Administration;* and 195, *Book Selection for School Libraries.*

Scholarship. In preparing for the School of Librarianship a student must maintain an average of "B," as a strong foundation is essential for successful library service. Students not making an average of "B" in librarianship courses may, at the discretion of the faculty of the school, be dropped.

Graduation. The degree of bachelor of arts in librarianship is granted upon satisfactory completion of 45 credits in the school.

PRE-MEDICINE

or

PRE-DENTISTRY

John L. Worcester, Executive Officer, Anatomy Building

TWO- AND FOUR-YEAR CURRICULA PREPARATORY TO MEDICINE

ONE- OR TWO-YEAR CURRICULUM PREPARATORY TO DENTISTRY

The University offers two curricula preparatory to the study of medicine. One of these is for two years and will meet the requirements of medical schools which require only two years of college work for admission to their professional study. The second is for four years and leads to a Bachelor of Science degree. It is accepted by most schools that require more than two years of preparation, but the student is urged to consult with the premedic adviser for the subjects for the last two years of the four-year curriculum.

This curriculum will not reduce the amount of work to be done by the student in medical school, but it is designed to increase its efficiency. These courses are also well adapted for pre-dental students, as the best dental schools require the same foundation work as the medical schools.

Below is the outline of the four-year curriculum. The first and second years constitute the two-year curriculum. Courses in the other years are optional, as indicated above.

First Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Chem. 1 or 21. General.	5	Chem. 2 or 22. General.	5	Chem. 23. Qual. Analysis	5
Zool. 3. Pre-medical.....	5	Zool. 4. Pre-medical.....	5	Physiol. 7. Elementary..	5
Comp. 1. Composition...	5	Comp. 2. Composition...	5	Psych. 1. General.....	5
Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+

Second Year

Physics 1. General.....	5	Scientific French or German	5	Physics 3. General.....	5
Lit. 73. Introduction to Modern Literature....	5	Physics 2. General.....	5	Chem. 132. Organic.....	5
Electives	5	Chem. 131. Organic.....	5	E.B. 4. Surv. of Econ...	5
Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+	*or* Pol. Sci. 1. Surv. of Political Science.....	5
				Military or Naval Science and Physical Education	+

Third Year

Anat. 100. Lectures.....	3	Anat. 102. General Human	6	Anat. 103. General Human	6
Anat. 101. General Human	3	Anat. 106. Histology and Embryology	6	Anat. 107. Neurology...	6
Anat. 105. Histology and Embryology.....	6	Bact. 102. Sanitary and Clinical Methods.....	5	‡Bact. 104. Serology....	5
‡Bact. 101. General.....	5				

Fourth Year

Physiol. 151. Advanced..	5	Physiol. 152. Advanced..	5	Physiol. 153. Advanced..	5
‡Chem. 161. Physiological	5	‡Chem. 162. Physiological	5	Bact. 112. Pathology....	5
Bact. 105. Infec. Diseases	5	Electives	6	Anat. 104. Topographic.	4
				Electives	2

‡Approved electives may be substituted.

The total number of credits must include Physical Education 15 for men, or Physical Education 4, 6, 8, or 10 for women.

DESCRIPTION OF COURSES

For description of courses in the various schools and departments of the College of Arts and Sciences, see Departments of Instruction section, page 217.

COLLEGE OF ECONOMICS AND BUSINESS

The fundamental objective of the College of Economics and Business is to offer a broad training in the basic principles of economic and business organization. Emphasis is placed upon training in fundamental economic principles as a sound basis for citizenship and also as a foundation for professional education in business.

In preparing students for careers in business it is the goal of the College to give the students thorough grounding in the scientific approach to business problems, and to instill in them a sense of social responsibility in their business relationships. Sufficient practical training in business routine is included to enable the student to serve effectively when he enters the field of business. He is given training during the first two years in basic economic principles and related social sciences. In the freshman and sophomore years he is taught also the use of the tools and technical equipment with which business is administered and controlled, including accounting, statistics, mathematics, business law, and English.

In the junior and senior years he is given an introduction to the basic principles of management, finance, labor, marketing, transportation, international economic problems, and the like. A portion of his time is reserved for training in a special phase of business or field of economic study.

The integration of the work of the classroom with business in the community has been accomplished in various ways:

1. Utilizing active business men as regular lecturers.

2. Securing the services of local business leaders for lectures in their special fields.

3. Scheduling of special assemblies when outside business men or governmental experts are available in Seattle.

4. Promoting student contact with business institutions.

5. Participation by staff members in the business organizations of their respective specialities.

6. Lectures before business groups.

The business men in the State, and especially in the city of Seattle, are co-operating in a most genuine way in educational work in business administration. Students are encouraged to avail themselves of the opportunities to do part-time work in local concerns, along their chosen lines.

Student Organizations

The Student's Advisory Council. The Economics and Business Student Council, organized in the autumn quarter of 1919 by students of economics and business, is a representative body of seven students from the major fields in the college. In addition to those regularly elected, the presidents of the student organizations are included as ex-officio members. It functions in an advisory capacity on matters relating to standards of scholarship and student welfare; it also administers the Economics and Business Student Loan Fund. The Council sponsors student mixers and assumes leadership in planning the annual banquet of the College.

Beta Gamma Sigma. Beta Gamma Sigma is an honorary scholastic fraternity open to both men and women in the College of Economics and Business.

Beta Alpha Psi. Beta Alpha Psi is an honorary accounting fraternity for men. Membership is based on scholastic standing and upon a competitive examination required of all candidates.

Alpha Kappa Psi. Alpha Kappa Psi is a professional business fraternity for men. Its aim is to promote the serious study of business problems.

Alpha Delta Sigma. This is a professional organization for men interested in advertising.

Gamma Alpha Chi. Gamma Alpha Chi is a professional organization for women interested in advertising.

Pan Xenia. The parent chapter of Pan Xenia, professional and international society for major students in foreign trade, was founded in 1918 at the University of Washington.

Propeller Club. The membership of Propeller Club is composed of students who have a particular interest in maritime commerce or water transportation.

Women's Vocational Club. The Economics and Business Women's Vocational Club was formed in 1927, its purpose being to bring about a spirit of friendliness and comradeship among women interested in business as a profession and to acquaint University women with vocational opportunities through personal contacts with downtown women's clubs.

Admission and Expenses

For detailed information regarding University entrance requirements and expenses, see pages 49-86.

For entrance to the College of Economics and Business, 12 required units* taken during the last three years of high school should be distributed as follows:

English	2 Units	Must be taken in high school
U. S. History and Civics	1 Unit	
Geometry or Advanced Algebra	1 Unit	
2nd Unit Foreign Language	1 Unit	Recommended
3rd Unit English	1 Unit	
Physics or Chemistry	1 Unit	
Social Science	1 Unit	
Bookkeeping	1 Unit	
Typewriting	1 Unit	
Shorthand	2 Units	

Ability in typewriting is not a requirement for graduation, but it is a very useful tool while a student is at the University and a practical necessity in a large proportion of the positions which are available after graduation. Students who have not had this training in high school are urged to get it before they graduate from the University.

Inquiries in regard to the College of Economics and Business should be addressed to the Dean. All correspondence regarding admission should be sent to the Registrar of the University.

*To count as a unit a subject must be taught five times a week, in periods of not less than 45 minutes, for a high school year of 36 weeks. In satisfying entrance requirements with college courses, a minimum of ten quarter credits is counted as the equivalent of the entrance unit.

SUGGESTIONS FOR PLANNING COURSES

A major in this college is in the general field of economics and business, but, since a certain amount of concentration is desirable, either before or in the third quarter of the sophomore year, each student in the college is required to select a minimum approved sequence of at least fifteen credits in some special field. He is placed in contact with an instructor, working in that field, who will advise him. *Conference between student and instructor may be held at any time at their mutual convenience and should not be delayed until the registration period.* At the time of registration the student's program must be approved by the registration secretary for the College of Economics and Business who will enforce all requirements, together with the course prerequisites as stated in this bulletin. A brief description of the special fields is given below.

1. *Economics.* The courses in economics are planned with three classes of students in mind: (1) those who do not care to specialize in any technical field but who desire a general cultural education centering around economic and social thought; (2) students who are looking forward to teaching economics and business; (3) students who are preparing to do graduate and research work in social science.

Students whose interests are in economics, in politics, or in a general cultural background in the social sciences, and not in professional training for business, will find these courses highly important to an enlightened judgment and an intelligent appraisal of many of the more important phases and developments of our economic and social order. The College thus performs a *service* as well as a professional function.

The courses in the field of labor have a fourfold purpose, viz., to acquaint the students with (1) the historical relationship between labor and the other industrial factors, (2) governmental activities in mediation, arbitration, and legislation, (3) the development of labor theory, and (4) to offer statistical training in the field of labor research. Students will be advised by the professor in charge of the labor courses as to the ones which best fit their individual needs.

2. *Public Finance.* The courses in public finance emphasize taxation in order that the students may acquire substantial familiarity with controlling principles and their application, forms of taxation, shifting and incidence of taxes, tax administration and programs of tax reform. The courses in public finance have been designed to meet the needs of (1) students whose interests are primarily cultural in character and to whom a knowledge of public finance is of real importance in intelligent appraisal of our economic and social order, (2) students anticipating business careers for which an understanding of public fiscal practices, methods and practices in taxation, and the economic effects of expenditures and revenues upon industrial society is essential, (3) students who are preparing for administrative work with fiscal agencies of government, and (4) students interested in graduate study and research in economics and business.

3. *Banking and Finance.* The purposes of the courses in business finance are two-fold: (1) to provide basic training for all business students in the principles and practices used in financing business enterprises, and the determination of proper investment policies for individuals or institutions; (2) to furnish a professional training for students desiring to prepare for positions in (a) commercial and savings banks, (b) investment banks and the security brokerage business, (c) credit departments in manufacturing, commercial and mercantile enterprises, (d) financial institutions established by the Federal government.

Students interested in business finance will select either commercial banking or investment banking as their field of special interest and will be assigned

a faculty adviser on the basis of this choice. In either case E.B. 103 should be taken in the sophomore year.

4. *Foreign Trade and Consular Service.* Training in this field has three objectives:

(1) It aims to give students an acquaintance with the facts and principles of international economic relations in order that they will have an intelligent understanding of the problems that confront the nations of the world and will be able to judge them dispassionately, yet constructively.

(2) It instructs students in the mechanism of international trade in raw materials and manufactured goods, and the production, distribution, exchange and financing of these products. The courses in foreign trade, covering the principles of exporting and importing, when supplemented by work in money and banking, marketing, commercial law, and marine insurance, prepare students for positions with export commission houses, the export departments of manufacturing concerns, the profession of customs broker, manufacturer's export agents, or foreign representatives of an American exporting or manufacturing concern.

(3) It prepares students for the United States Government trade and consular service. The government requirements are exacting. Students who major in this field and who, under guidance, supplement their major courses with the proper electives in other departments, secure an adequate preparation for the consular examinations and their future work in the foreign field.

Students preparing for foreign service should have a speaking knowledge of some modern foreign language. Supporting courses in other departments include Geography 102, 103, 104, 105, 106, 115; Political Science 121, 122, 124, 127, 129; History 157, 158, 159; Oriental Studies 90, 91; and Law 122, 141.

5. *Marketing.* The field of marketing comprises all those activities involved in getting goods from producers to consumers. The work in this department is planned to provide an understanding of the economic structure of the marketing system, a knowledge of the marketing functions and the agencies performing them, a familiarity with current problems, and a certain facility in gathering, analyzing, and interpreting data as the basis for marketing plans and policies.

Courses must be carefully planned before registration in conference with a member of the marketing staff. The supporting or elective courses are vitally important and vary so much with the different needs of individual students that they cannot be set down here. E.B. 106, *Economics of Marketing and Advertising,* will be followed by E.B. 134, *Wholesaling;* E.B. 135, *Retailing;* and E.B. 136, *Advertising,* preferably in the order named, although the sequence may be begun with E.B. 135 by those who take E.B. 106 in the autumn quarter. These are foundation courses for the three divisions in the general field. Together they constitute the necessary ground work for specialized study in any one of the divisions. This may be done in E.B. 193A,B,C, *Problems in Marketing.* This work is largely individual in character. The first quarter is devoted to the principles and the methodology of product and market analysis. The remaining quarters are given to individual and group study of specific problems. Each student will be required to complete a major project involving the assembling, presentation, and interpretation of data covering a specific problem in his field.

6. *Public Utilities and Transportation.* The courses in public utilities and transportation are designed to develop the facts and principles basic to an understanding of the economic character of the public service industries; to provide a background for an intelligent appreciation of important and far-reaching problems of management and of social control; and to develop an

attitude of critical analysis and an ability to make sound judgments. In the field of public utilities and transportation is found a highly significant social experiment to control and fix prices and service.

The professional objectives are (1) preparation for positions and eventual executive or administrative work in traffic and business departments of the public service industries; (2) preparation for work on the technical staffs of the various state and federal public service regulatory commissions. In addition, majors in other disciplines and fields of economics and business find course work in public utilities and transportation of interest as related to business production costs, distribution costs, pricing and service practices and policies, investments, the position of the consumer, the pragmatic experiment in governmental price control, etc.

Students interested in railroad, water, or air transportation may select electives from this and other fields in economics and business, or in certain cases students may be advised to elect supporting courses from civil engineering, naval science, or aeronautical engineering.

Students interested in the local utilities may select electives from this or other fields in economics and business, or in certain cases students may be advised to elect supporting courses from law and political science.

7. *Management and Accounting.* Management is essentially a study of the basic problems of business control considered from the viewpoint of the owner or the responsible operator or financial executive. An attempt is made in the courses to introduce the student to the philosophy of science in business and give him a proper understanding of the status of business management as a profession, through a study of the fundamental processes found in the internal and external conditions of commercial and industrial concerns.

The management series includes E.B. 101, 150, and 195, and covers such problems as the economics of business structures and functions; social controls over business; the economics of location; the manager's administration of purchasing, processing, marketing, and finance through the use of organization, standards, and measurements. A brief survey is made of the technological aspects of commerce and industry through a study of the mechanical, electrical, chemical, and geological factors involved. On the professional side, the courses provide training for those students who are looking forward to such executive positions as departmental managers, factory superintendents, personnel managers, and directors of research.

Because of the great importance of business measurements used in executive control, special emphasis is placed upon the study of accounting, of which three distinct groups of courses are offered. The first group, consisting of E.B. 62 and 63, taken in lower division, is designed to give the student a thorough knowledge of the basic structure of accounting.

The second group, consisting of E.B. 110, 111, and 112, are pre-professional courses in advanced accounting theory and are designed to give the student the ability to apply the principles of accounting to analysis and interpretation of operating and financial statements. They constitute preparation for students who expect to serve in the capacity of treasurer, comptroller or budget director in any business enterprise.

The third group, including E.B. 152, 153, 154, 155, 157, 158, 195, and 258, consists of professional courses, which together with E.B. 110, 111, and 112, are designed to provide the requisite theoretical and technical training in accounting for professional work and the state certified public accountants' examination. These courses also lead to such opportunities as governmental and private auditors and industrial accountants. Majors in this field will be obliged to take approximately forty credits in accounting and will need to use their electives for this purpose.

8. *Real Estate.* The sequence of courses in real estate should be carefully followed. E.B. 109, in which principles of urban real estate are discussed, is followed by E.B. 169, Real Estate Principles and Practices, includ-

ing a study of appraisals of farm and urban land and improvements, financing, selling and advertising real estate, leases and property management. E.B. 199B and 199C are problem courses in which advanced students in real estate may make detailed analyses of current problems in real estate.

Supporting courses in other departments which are especially significant to students of real estate are E.B. 129, Property Insurance; Speech 40, Essentials of Speaking; Architecture 1-2, Architectural Appreciation; Law 104 and 123, Real Property; E.B. 115, Business Correspondence; Sociology 155, Human Ecology.

9. *Insurance.* The courses in insurance are intended primarily to enable students to acquire knowledge of the economic principles which are the foundation of the science of insurance and the practices followed in writing insurance contracts. The courses are planned with the idea of preparing for employment with insurance companies and also to enable persons needing insurance to purchase their contracts intelligently.

10. *Economic Geography.* Economics and business may be combined with geography by substituting a major of 28 upper division credits in geography for the special requirement of 15 credits in economics and business and 13 credits of electives. The cycle of advanced courses in continent geography (Europe, Asia, South America, etc.) provides a comprehensive survey of world resources and activities which gives the student trained in economics a a broad general background for business, participation in world affairs, and travel or exploration. Majors in economic geography should add electives in political science or world trade.

11. *Geology and Mining.* For those who contemplate positions with oil or mining companies or government positions dealing with mineral resources, a combination with geology and mining is suggested. After satisfying the general and special upper division requirements of the College of Economics and Business, 30 credits remain as free electives in the normal program. These may be used in courses which will give a background of the principles involved without the advanced technical work necessary for the mining engineer and geologist. Students who plan to use their electives in this way should offer chemistry in satisfaction of the science requirement. The student adviser in geology or mining engineering should be consulted in electing courses in these fields.

12. *Pre-Law Curriculum—Seven-Year Course in Economics and Business Combined with Law.* It is possible to obtain the degree of bachelor of arts in economics and business and bachelor of laws in seven years. The requirements and suggestions for the first two years of this combined seven-year course are the same as for the economics and business course. Students planning to take advantage of the combined seven-year curriculum may omit business law (E.B. 54, 55, 56), and substitute therefor first-year law courses after entrance to the Law School. To have the benefit of this combined course, students must maintain a grade point average of 2.5 and must, in the first three years, earn 138 economics and business credits, together with the six quarters of required military or naval science and five quarters of physical education. As the Law School can be entered advantageously only at the beginning of the autumn quarter, the entire 138 credits should be completed within the customary three years, with work during an intervening summer quarter if necessary. A student will be admitted to the Law School for the combined degree if he has 135 credits, the remaining three credits to be earned in the subsequent summer under the direction of his adviser in the College of Economics and Business.

In the 138 economics and business credits must be included the 45 credits of upper division requirements. The student must comply with all of the regulations prescribed for majors in economics and business, except the requirement of fifteen credits in a special field.

The student will be granted his bachelor of arts degree in economics and business at the end of the fourth year, or as soon as he completes the required work above specified and 42 credits in the School of Law, making a total of 180 credits for graduation in economics and business. The degree of bachelor of laws will be conferred upon completion of his work in the Law School.

13. *Commercial Engineering.* This course consists of a major in engineering, primarily mechanical, with a minor in economics and business. Its purpose is to provide basic training in the fundamentals of economics, business law, accounting, management and finance, as well as in engineering. The first two years of its curriculum are the same as electrical and mechanical engineering, which include E.B. 3. In the third and fourth years some of the more specialized engineering subjects are replaced by E.B. 54, 55, 62, 63, 101, 103, 110, 121, and 154.

14. *Maritime Commerce and Naval Science.* The University of Washington is one of six institutions in the United States at which a department of naval science and tactics has been organized. All male students who can pass the physical examination may take courses in this department. Thirty credits of work are offered during the four years of undergraduate study. The completion of the work in the naval science and tactics department leads to a commission in the United States Naval Reserve,

Following is a summary of the combination of the work in naval science with a major in economics and business, including the special requirements in public utilities and transportation.

	Credits
General lower division requirements in economics and business. (See p. 141)	93
General and specific requirements in economics and business. (See p. 142)	60
Seamanship and naval science—18 academic plus 18 basic credits	18
Electives	9
	180 plus 18 Basic Credits.

For the four-year curriculum in naval science see the professor of naval science.

15. *Commercial Teaching.* The courses in commercial teaching are planned to prepare students for teaching positions in commercial departments of secondary schools. The requirements are as follows:

(a) Satisfaction of the lower division requirements as outlined on page 14.

(b) E.B. 16-17-18. *Secretarial Training.* Nine credits. This requirement may be satisfied in either lower or upper division, or by passing a satisfactory examination. In case of exemption by examination, University credit is not given.

(c) Thirty credits of the upper division general requirements in economics and business, including E.B. 106 and E.B. 185. The remaining fifteen credits of this requirement may be postponed until the fifth year.

(d) The special requirement must include ten credits of upper division accounting.

(e) Twenty-eight credits of education courses, including Edu. 75E or Edu. 75F. See College of Education section, page 151.

REQUIREMENTS FOR GRADUATION

Graduates of the College of Economics and Business receive the degree of bachelor of arts in economics and business. The following is a summary of the requirements for this degree:

1. The student must satisfy the entrance requirements of the University and the College of Economics and Business. Students entering from other colleges with junior standing must either present or make up the following courses to meet the minimum lower division requirements of the college: E.B. 1-2, 54, 55, 56, 62, 63, 100.

2. The student must earn 180 credits in subjects required by the University and required or approved by the faculty of the college. In addition, he must meet the general University requirement of six quarters of military or naval science and five quarters of physical education, plus Physical Education 10 or 15.

3. Of the total 60 credits of approved electives, 15 must be selected from political science, sociology, psychology, and philosophy.

4. During the sophomore year the student will select a special field of major interest. This choice will determine his adviser. In consultation with his adviser the student will select the upper division courses which best meet his needs. This will include not only the courses which meet the special requirements but also the supporting courses chosen as electives. *It will not be possible to register for upper division work until a signed statement has been obtained from the adviser.*

5. Continuation in the College of Economics and Business will depend upon the student's demonstration of general fitness for work in that college, including the maintenance of satisfactory academic performance. No student will be regularly admitted to the sophomore year in the College of Economics and Business if he has any entrance deficiency or if his grade point average is below 1.8. Failure to obtain a cumulative grade point average of 2.0 by the end of the sophomore year, and to maintain it thereafter, will be regarded as unsatisfactory. Students with records of unsatisfactory performance will be reported to the dean for appropriate action. The same rules apply to a major in economics in the College of Arts and Sciences. A student may transfer from another college to the College of Economics and Business, provided he has no entrance deficiency, and thereafter becomes subject to the above rules.

6. Course Requirements:

LOWER DIVISION REQUIREMENTS

First Year

Credits	*Credits*	*Credits*
E.B. 1-. Prin. of Econ.. 5	E.B. -2. Prin. of Econ.. 5	Geog. 7. Econ. Geog.... 5
Sci., Math. or Lang.[1].... 5	Sci., Math. or Lang..... 5	Comp. 37. Argumentation 5
Comp. 1, 15, or Elective 5	Elective 5	Elective 5

Second Year

Credits	*Credits*	*Credits*
History 57..... 3	History 58 3	History 59 3
E.B. 54. Business Law.. 3	E.B. 55. Business Law.. 3	E.B. 56. Business Law.. 3
E.B. 62. Principles of Accounting..... 5	E.B. 63. Principles of Accounting..... 5	E.B. 100. Statistical Analysis 5
Elective 5	Elective 5	Elective 5

[1] Students who have not had two high school units of the language chosen to satisfy this requirement, must take 20 credits in the University, 10 credits of which will count as electives.

UPPER DIVISION REQUIREMENTS

	Credits
E.B. 103. Money and Banking	5
E.B. 104. Public Service Industries	5
E.B. 105. Economics of Labor	5
E.B. 106. Economics of Marketing and Advertising	5
E.B. 107. World Economic Policies	5
E.B. 121. Corporation Finance	5
E.B. 171. Public Finance and Taxation I	5
E.B. 175. Business Fluctuations	5
E.B. 185. Advanced Economic Theory	5
General Requirements	45
Special Requirements	15
Electives	30

The lower division provides for the introductory economics courses, the tool subjects in business, and for the minimum requirements in the cultural subjects, outside of economics and business, which are necessary to give breadth and vision. The electives also provide for students who wish to take a year of foreign language or who elect a science which requires a year's work. In the third quarter of the sophomore year students may elect the introductory course for their special field of concentration in order to prepare for the proper sequence of upper division courses.

The forty-five credits of general requirements in the upper division enable the student to view the economic and business structure as an integrated whole. Substitutions will be permitted only with the consent of the adviser and dean. By the time these requirements are completed a sufficiently broad foundation has been established for any business profession, regardless of the particular field in which the student may later be interested.

The thirty credits of electives provide for the student who wishes to take some intermediate or advanced courses in other major fields, but he must have the proper prerequisites for the courses he elects. His electives may also be used to meet the need for more courses in specialized fields such as accounting and marketing or they may be used for courses in philosophy, the humanities, or any other department of the University for which he has the proper prerequisites. Students will consult their adviser in regard to the use of their electives, and as to the courses to be included in the minimum of fifteen credits which will be approved as meeting the special requirements.

REQUIREMENTS FOR GRADUATE DEGREES

A graduate degree is not conferred as a reward for the accumulation of any specified number of credits. The candidate's fitness for such a degree is determined by a committee whose judgment is based partly upon the candidate's general personal qualifications and partly upon the successful completion of the courses which the committee approves for the particular candidate, an acceptable thesis, and a searching examination of the candidate.

I. MASTER'S DEGREE

1. *Master of Arts* (M.A.). This is a non-professional degree. The candidate must have a reading knowledge of a foreign language. He must present a major in economics (see IV-1 below) and he may select a minor from some other department.

2. *Master of Business Administration* (M.B.A.). This is a professional degree. The candidate is not required to have a reading knowledge of a foreign language. He must present a major in a business administration field (see IV-2 below) and all of his work is done in the College of Economics and Business.

II. BACKGROUND

Candidates for either of the above degrees must submit, in addition to the work required for the master's degree, a background equivalent to that possessed by those who have completed at least 35 approved credits in economics and business. These must include at least three intermediate courses with numbers between 101 and 109, inclusive, or their equivalent.

Students who enter upon candidacy for the M.A. degree will be expected to have had a broad preparation in the allied social sciences. Candidates for the M.B.A degree must include training in accounting, statistics, and business law as a part of the background. Background subjects must be approved by the committee having supervision over the work of the candidate, but the committee may, at its discretion, approve the substitution of courses in history, sociology, political science, or business, as may be deemed necessary to establish a satisfactory background for the graduate work being undertaken.

III. CANDIDATE'S COMMITTEE: PRELIMINARY CONFERENCE

During his first or second quarter in residence a candidate for the master's degree should have the preliminary conference required by the Graduate School. The purpose of this conference is to decide upon the candidate's qualifications to do work leading to the master's degree and to plan the student's course of study. The courses which will be approved will be those which seem best for the purpose of rounding out the student's knowledge in the field or fields which he has selected. These courses need not necessarily be confined strictly to the field of concentration, and the minor field, if there is one, but should have a bearing upon those fields. The candidate's committee has power to make any adjustments that seem desirable in a candidate's program. If the committee decides that the candidate is qualified to do graduate work and if a satisfactory program is arranged, his formal petition to be admitted as a candidate for a master's degree will be approved.

IV. REQUIREMENTS

Note: No courses will be accepted toward fulfillment of the minimum course requirements unless the grade earned is "A" or "B." Intermediate courses cannot be taken for graduate credit unless by special permission of the candidate's committee.

1. *Requirements for the Master of Arts Degree.* At least three full quarters or their equivalent spent in undivided pursuit of advanced study. If a candidate has done graduate work elsewhere, his program may be slightly less exacting, but this work must pass review in the examination, and shall not reduce the residence requirement at this University. A candidate for the master of arts degree shall select a field of concentration which must be approved by his committee.

A candidate for the master of arts degree must meet the following requirements:

(a) He shall complete a minimum of 45 credits of work approved for graduate credit, including a master's thesis.

(b) He shall, some time previous to the final examination, formally demonstrate that he has a reading knowledge of a foreign language.

(c) With the approval of his committee the student may complete all of his 45 credits of work in the College of Economics and Business or he may select a minor in a related field. In general, approval will be granted for carrying all of the work in economics and business only if the student has a satisfactory undergraduate background of courses in allied fields. A student

who chooses a minor in another department must complete a minimum of 12 credits of approved graduate work in that field in addition to satisfying the background requirements prescribed by the minor department.

(d) In satisfying the requirements for the master's degree the student, all of whose 45 credits are in the College of Economics and Business, must present at least 20 credits in courses listed for graduates only. If he presents a minor in another department of the University at least 15 credits of the required work in economics and business must be in courses listed for graduates only.

2. *Requirements for the Master of Business Administration Degree.* A candidate for the master of business administration degree will select a field of concentration which must be approved by his committee. He must then meet the following requirements:

(a) He shall complete a minimum of 45 credits of approved graduate work in economics and business including a master's thesis.

(b) He shall present at least 20 credits of advanced work listed for graduates only, or research courses (Nos. 190-199); provided that not more than 6 credits of the 20 may be in research courses open to undergraduates and graduates.

3. *Requirements for a Master's Degree Combining Economics and Business with Education.* Education may be offered as a major or a minor in combination with economics and business. All of the requirements for a commercial teaching major must be met by candidates who wish to be certified as commercial teachers. All other requirements are the same as those outlined for the master of arts degree.

V. THESIS

A thesis shall be required of every candidate for the master's degree. A maximum of nine credits is allowed for the thesis. If the thesis is part of the work required in a research course or seminar, no additional credit will be granted for the thesis. The work on the thesis shall be spread over at least two full quarters, but may be extended over three quarters. The thesis shall be in charge of the committee named above. (Section III.)

At least two weeks before the date on which the candidate expects to take the degree two copies of the thesis in typewritten form shall be deposited with the librarian for permanent preservation in the University archives. The thesis must meet with the approval of the librarian as to form, and the cost of binding must be deposited with the thesis.

VI. FINAL EXAMINATION

All candidates for the master's degree shall be given a written examination. The examining committee may call candidates for a supplementary oral examination if deemed desirable. The written examination will be designed to test the candidate's general knowledge in the whole field of concentration and will not necessarily be confined to the particular courses presented for credit. A candidate who has completed the courses prescribed in his program may apply to the chairman of his committee for the privilege of taking the written examination. The chairman will make the necessary arrangements for the examination.

The examination for the master of arts degree shall consist of:

1. An examination in the candidate's special field of concentration and the field of economic theory.

2. An examination in a third field of economics and business or in the minor department.

The examination for the master of business administration degree shall consist of:

1. An examination covering the field of concentration.

2. An examination in two supporting fields approved by the candidate's committee.

VII. MINOR IN ECONOMICS AND BUSINESS

Candidates for the master's degree with economics and business as a minor shall present a background equivalent to that possessed by those who have completed at least eighteen approved credits in economics and business. In addition, the candidate must present not less than twelve credits in approved advanced courses in economics and business.

VIII. THE DOCTOR OF PHILOSOPHY (PH.D.) DEGREE IN ECONOMICS AND BUSINESS

A candidate for the doctor's degree in economics and business must have a reading knowledge of French and German. Upon recommendation of the candidate's committee, approved by the dean of the Graduate School and the dean of the College of Economics and Business, any other Germanic language may be substituted for German and any other Romance language for French. The candidate must be as well grounded in history, economics, political science, and such other technical, scientific or philosophic subjects as may be necessary for an intelligent pursuit of the studies in which he plans to specialize. He should include, in either undergraduate or graduate work, E.B. 170, *Advanced Statistical Analysis;* E.B. 110, *Accounting Analysis and Control;* and E.B. 181, *Economic Development of the United States,* or their substantial equivalents.

The candidate is expected to concentrate his graduate work in at least four specific fields, to be determined in conference. Economic theory, considered historically and critically, shall always be included. Candidates whose major and minor are both in the College of Economics and Business must select five fields. The following fields are recognized for this purpose: (1) Economic Theory and History of Economic Thought, (2) Money, Banking, and Prices, (3) International Economic Policies, (4) Marketing, (5) Public Finance and Taxation, (6) Public Utilities and Transportation, (7) Labor and Consumption, (8) Accounting and Management. In order to develop a program of work which best meets the needs of the individual student, it may be necessary to require the election of courses in other departments, which may be counted in one of the candidate's fields but are not alone of sufficient number to constitute a separate field. The general requirements for this degree are fully outlined in the Graduate School bulletin. A special memorandum for Ph.D. candidates in economics and business is available on request.

IX. MINOR FOR DOCTOR OF PHILOSOPHY DEGREE

A candidate for the doctor of philosophy degree who presents two minors, one of which is in economics and business, must have a background equivalent to at least 18 approved credits in the field which he has selected. In addition to this, he must present for graduate credit not less than three approved courses in economics and business.

A candidate for the doctor of philosophy degree who presents one minor which is in economics and business shall have a background equivalent to at

least 35 approved credits in the field which he has selected. In addition to this, he must present for graduate credit not less than six approved courses in economics and business.

The background subjects and the graduate courses need not necessarily be confined strictly to the specific field which the student has selected, but they should have a bearing upon that field and must be approved by the committee. The background subjects and graduate courses together must be adequate to give a satisfactory knowledge of the field.

THE COURSE IN GOVERNMENT SERVICE

General Statement

The College of Economics and Business, in cooperation with the Department of Political Science, the School of Law, and the Graduate School of Social Work, has outlined a curriculum to meet the growing need for trained men and women in governmental service. The expansion of the personnel in bureaus, divisions, and departments of government during recent years provides an opportunity for students who are trained for public service administrative work. With the government broadening its functions on both extensive and intensive margins, future opportunities for adequately trained students will become even greater. Successful governmental administration, in large measure, is a problem of personnel. There is more and more insistence upon the use in government of experts who have a background of scientific training and whose efforts are characterized by the scientific attitude and method. Our institutions of higher education are in a position to make a substantial contribution to economic and social progress, to public well-being, and to the success of our political institutions by providing a trained personnel for government work. The curriculum outlined herein provides for basic courses in the social sciences during the first three years of undergraduate work, which are designed to equip selected students possessing a high order of scholarship with a sound philosophy of government and a scientific attitude and method of approaching social and economic problems. Not later than the end of the third year the student will select a field of interest for specialization in the fourth and graduate years.

Special Features

The curriculum for Government Service differs from an ordinary major in economics and business, political science, or sociology in the following respects:

(1) Students may select this major in their first quarter of the freshman year by adhering to the requirements of the Government Service curriculum.

(2) Students are expected to maintain a grade standard of not less than 3.0 ("B"). A student in the lower division who is unable to maintain this standard should shift his course work to other objectives.

(3) A student may be registered in either the College of Economics and Business or in the College of Arts and Sciences with a major in Government Service.

(4) The curriculum for the first two years closely parallels the requirements of the College of Economics and Business and the College of Arts and Sciences. Should a student desire to change his major either to or from Government Service within the first two years, the change may be effected without his having to make up very many requirements.

(5) Admission to the public service curriculum as a recognized major will occur at the beginning of the junior year upon application by the student and acceptance by an inter-departmental committee. Candidates must meet the requirements of scholarship and the lower division prerequisites set forth herewith. Thereafter, failure to maintain a grade standard of 3.0 will result in dropping the student from his major.

(6) When the student selects his field of major interest he will be assigned to an adviser, or advisers, who will aid him in planning his program for the fourth and graduate years. The junior year curriculum permits some latitude in the selection of courses.

(7) The senior and graduate years are under the direction of the department selected by the student, in accordance with his major interest.

(8) Seminars jointly conducted by two or more departments and in some instances field experience under the supervision of an appropriate instructor may be arranged in accordance with the interests and vocational expectations of students.

(9) The degree of bachelor of arts in economics and business will be awarded, or a bachelor of arts degree in economics, political science, or sociology if the student is registered in the College of Arts and Sciences, at the end of the fourth year. The work done in the fifth year may be applied toward a master's degree and those who have met all of the requirements of that degree by the end of the fifth year will receive it at that time.

Government Service in Economics and Business

The College of Economics and Business prepares students for public as well as private business. Government, in assuming new responsibilities and duties, has found it necessary to canvass all available material capable of directing and coordinating its many functions and services. Adequately trained men and women with ability to organize and direct are in constant demand by federal, state, and local governments. Not only is there competition between these respective governmental units for the able administrator, but also competition between various agencies within the same unit.

Opportunity in the public service includes executive, technical, and administrative departmental positions. Almost every subdivision of government offers opportunity in accounting and auditing. The U. S. Department of Labor requires trained coordinators and investigators. A planned economy requires trained economists in many branches of government service to assure proper integration. Regulatory bodies which supervise public utilities and transportation units require experts to formulate and execute policies. In the State of Washington the Department of Public Service is illustrative of such work. State departments of insurance demand the application of scientific principles in the discharge of duties. Trained statisticians are needed in almost every phase of government work to aid administrators in interpreting the complexity of government in its relation to the citizen. Without finance, government would be helpless. Taxation, therefore, presents an interesting opportunity.

Experience has demonstrated that public servants who have gained the necessary experience and are eminently qualified in their field are in great demand by private industry, which is able to outbid government. Often government service is an apprentice period to ultimate employment in private industry.

Employment is obtained and held on the theory of professional training for particular fields, rather than reliance upon skills which may be readily ac-

quired. Therefore, men and women professionally trained are less susceptible to political pressure. The federal government fosters and encourages civil service ranking and promotion to those qualified. The State of Washington has recently adopted a Merit Plan and rating in the Department of Social Security. The trend is toward greater assurance in tenure of office.

First and Second Year Curriculum in Public Service

ENGLISH

	Credits
Comp. 1. Composition	5
Comp. 2. Composition or Comp. 37. Argumentation	5
Speech 40. Essentials of Speaking	5
Lit. 73. Introduction to Modern Lit. or English Lit. elective	5

SOCIOLOGY

1. Survey of Sociology	5
66. Group Behavior	5

POLITICAL SCIENCE

1. Survey of Political Science	5
52. Introduction to Public Law	5
61. Municipal Government	5

HISTORY

57. American History	3
58. American History	3
59. American History	3
or 10 credits of other approved History.	

PSYCHOLOGY

1. General Psychology	5

ECONOMICS AND BUSINESS

1-2. Principles of Economics	10
62. Principles of Accounting	5
Choice of five credits from:	
a. E.B. 100. Statistical Analysis	5
b. Math. 13. Elements of Statistical Analysis	5
c. Soc. 131. Social Statistics	5
d. Psych. 108. Essentials of Mental Measurement	5

Electives. Of the ninety credits normally earned during the freshman and sophomore years, eleven credits remain at the disposal of the student. By using these credits for a physical science, a language or mathematics, greater flexibility is assured the student in case of a shift in objectives.

Third Year Curriculum in Public Service

ECONOMICS AND BUSINESS

	Credits
103. Money and Banking	5
105. Economics of Labor	5
171. Public Finance and Taxation	5
Choice of five credits from:	
a. E.B. 170. Advanced Statistical Analysis	5
b. Math. 113. Mathematical Statistics	5
c. Soc. 132. Methods of Social Research	5
d. Psych. 109. Advanced Mental Measurement	5

POLITICAL SCIENCE

155. Public Administration or Pol. Sci. 154. The Public Service..... 5
163. State Government and Administration..... 5
Choice of five credits from:
a. Pol. Sci. 153. Introduction to Constitutional Law. 5
b. Pol. Sci. 112. American Political Theory..... 5
c. Pol. Sci. 151. Probs. in American Federal Govt... 5

PSYCHOLOGY

118. Social Psychology..... 5

SOCIOLOGY

194. Public Opinion 5

Fourth and Fifth Year Curricula in Public Service

The function of the adviser in the fourth and fifth years is to plan with the individual student a program suited to the objectives of the student. The adviser will in effect be the major professor in whose field the student will concentrate, such as taxation, labor, accounting, economics, political theory and jurisprudence, international relations, politics and administration, social work, or law. The entire curriculum for these two years will therefore be drawn up by the adviser in collaboration with the student. The courses selected will then become the requirements for graduation. The following courses, however, are required in the fourth or fifth year:

	Credits
Law 119. Constitutional Law	5
Law 120. Constitutional Law.....	3

Fifth year students who have satisfactorily completed Law 119 and Law 120 may, with the approval of the dean of the Law School in each case, be admitted to the following additional law courses:

	Credits
Law 121. Administrative Law	4
Law 125. Trade Regulation	3
Law 133. Public Utilities	5
Law 146. Taxation	3

The degrees to be awarded for graduate work will rest with the departments, colleges, or schools in which the student has majored during his fourth and graduate years. Opportunities for field experience or apprenticeship training during the student's period of graduate study, likewise will depend upon the requirements of the major field. Opportunities for practical experience in government positions, with or without compensation, sometimes present themselves prior to the student's graduation. Under appropriate circumstances such employment is to be encouraged, and, if undertaken with the advice and consent of the instructor, University credit may be given therefor on the basis of such evidence of achievement as the instructor may determine. In general, however, practical experience with or without University credit is regarded as an important part of the preparation of the student for a position later, and in some instances will be an intrinsic part of the course of study.

Inquiries in regard to the curricula for Government Service should be addressed to Mr. Stephen D. Brown who will be adviser until the student has definitely selected his field of major interest. Should the student be working with a departmental adviser prior to a selection of a major interest in Government Service such contact should be preferred and maintained if possible.

COLLEGE OF ARTS AND SCIENCES

Majors in economics in the College or Arts and Sciences must meet the general requirements of that college. They must take E.B. 1-2, 100, 105, 185, 181, or 187, and four additional courses selected from the list below.

A minor in economics in the College of Education consists of E.B. 1-2, 185, and one other course selected from this list.

*103. Money and Banking
*104. Public Service Industries
*105. Economics of Labor
*106. Economics of Marketing & Advertis.
*107. World Economic Policies
*108. Risk and Risk Bearing
*109. Principles of Real Estate
120. Business Organization & Combination
121. Corporation Finance
125. Advanced Money and Banking
131. Principles of Foreign Trade
141. Regulation of Public Utilities
142. Advanced Economics of Pub. Utilities
161. Labor Legislation
162. European Labor Problems
163. Economics of Consumption
164. Labor Relations
171. Public Finance and Taxation I
172. Public Finance and Taxation II
175. Business Fluctuations
181. Economic Development of the U.S.
185. Advanced Economic Theory
187. Development of Economic Thought
188. Institutional Economics

*Courses starred are intermediate courses introductory to special fields and may be taken in the third quarter of the sophomore year.

DESCRIPTION OF COURSES

For description of courses offered by the College of Economics and Business, see Departments of Instruction section, pages 242-249.

COLLEGE OF EDUCATION

General Plan. During the freshman year, students who have decided to enter the teaching profession register as pre-education freshmen in the College of Arts and Sciences. They must confer with the advisory officers in the College of Education for admission to this college as sophomores. These conferences are to assist students in the selection of suitable combinations of teaching subjects and also to direct the students in the selection of suitable courses for their proposed five-year preparation for teaching.

The degrees granted by the College of Education are the bachelor of arts and the bachelor of science. After earning a total of 225 credits, including the requirements stated below, students may be granted a three-year normal diploma. Three-fourths of the fifth-year work must be earned in residence, and the entire fifth year must be approved in advance by the College of Education.

Professional work in education begins in either the freshman or sophomore year with Education 1. Later courses in education are open to students who have completed satisfactorily two years of college work, and who have a grade-point average of 2.5.

GENERAL REQUIREMENTS

Composition 1-2; 10 credits after passing Preliminary Freshman English test.

Men: Physical Education 15, 2 credits, plus Military or Naval Science (6 quarters) plus physical education activities (5 quarters).

Women: Physical Education 10, 5 credits; or Physical Education 4, 6, 8, 6 credits, plus physical education activities (5 quarters).

ELECTIVE DEPARTMENTAL CURRICULA

Minimum requirements for first two years:

30 credits in one group
20 credits in a second group
10 credits in the remaining group

The departments and schools in College of Arts and Sciences are grouped as follows:

Group I	Group II	Group III
Architecture	Anthropology	Anatomy
Art	Economics	Astronomy
Classical Languages	Geography	Bacteriology
English	History	Botany
General Literature	Home Economics	Chemistry
Germanic Languages	Nursing Education	Fisheries
Journalism	Philosophy	Geology
Liberal Arts	Physical Education	Mathematics
Librarianship	Political Science	Physics
Music	Psychology	Zoology and Physiology
Oriental Studies	Sociology	
Romanic Languages		
Scandinavian Languages		

Scope and Aim. The curriculum in education assumes that teachers should have a broad and liberal education, supplemented by professional training, including knowledge of the pupils to be taught and the problems to be met. An attempt is made to professionalize the subjects of instruction and

the fundamental principles of teaching. Prospective teachers should be masters of the subjects they expect to teach.

General Academic Work. Owing to the variety of work that every beginning teacher is likely to be required to do, and to fulfill the requirements for the normal diploma, each teacher must have thorough preparation in at least two or more additional fields. The following combinations are most frequently demanded: English, history, civics—a foreign language is often included in this combination; English, French; English, French, Latin; English, Latin, history; French, German, Spanish; chemistry, mathematics, physics; biology—a combination of botany and zoology is frequently joined with the physical sciences—and mathematics; home economics in connection with one or two other subjects; commercial subjects with other subjects; athletics, drawing, or music in combination with other work. Public speaking, dramatics, and journalism are desirable as part of the preparation for teaching English. Library science is needed also by many teachers.

Professional Work. The requirements for the academic majors and minors assure a proper distribution of academic subjects. The professional work consists of (a) courses in education and (b) the teachers' courses in the various academic departments. Foundations of general methods based on the principles of learning and teaching are developed in education. Work in special methods relating to particular subjects is given by instructors dealing directly with the subject matter. By an arrangement between the University and the schools of Seattle, students may observe the regular work in certain schools (at present 24 are used) and do directed teaching under the direction of the regular teachers of the school and University professors in charge of that work.

Industrial Arts and Vocational Education. Owing to the excellent industrial arts work in the Seattle public schools, students have unusual facilities for observing the superior organization and equipment. Many industrial centers and vocational classes are maintained in various parts of the city.

Physical Education. The requirement in the health and physical education program in secondary schools has created a demand for well-trained teachers of health and physical education. There is also an increasing demand for elementary school physical education teachers and for playground and recreation leaders.

Public School Music. There is a demand for specially trained supervisors of music in the schools, and every school needs teachers who can assist in the general musical activities of the school and community. Students who have musical ability should participate in University musical organizations.

Debating, Dramatics, Public Speaking. Every teacher will be asked to assist in the incidental work of the school. Small towns cannot afford special teachers of public speaking and debate, and, consequently, the teacher who prepares to assist in these activities increases his usefulness. Students should participate in some of these activities throughout their college careers and take courses in these subjects.

Librarianship. Many schools that do not require full-time librarians have libraries that must be administered by some member of the teaching staff. By electing courses in the School of Librarianship, students can qualify themselves for this work. A summer course in Librarianship is offered to provide teacher-librarians. Students who pursue this work should have a good knowledge of books, human interest and sympathy and an intelligent desire to stimulate the reading of young people. (See *Librarianship*, page 132.)

Journalism in High Schools. Newspaper writing is offered in some of the large high schools as a part of the English course. The teacher who undertakes this work needs to be especially well trained in English and journalism. For a proper combination of courses the student should consult advisers in education, English and journalism.

Commercial Subjects. To prepare for this work the student should include courses in bookkeeping, typewriting, stenography, commercial law, commercial policies, commercial geography, and economics.

College Teaching. Many advanced students plan to teach in colleges, universities or technical schools. Professional training in education is offered for such students.

Remedial Education. Experienced teachers who desire special training for remedial teaching in elementary and high schools are requested to consult advisers in the College of Education before beginning such training.

The Study of Education and Citizenship. Courses in education are available for students who expect to become useful citizens of any community. Many courses in education, therefore, are pursued by students not expecting to become teachers. Students in other departments, colleges or schools of the University may elect courses in education according to conditions fixed by those colleges and not inconsistent with regulations in education.

Saturday and Evening Classes. To accommodate teachers of Seattle and vicinity, classes in education are scheduled on Saturday and during the late afternoon and evening.

The Bureau of Appointments. This Bureau is maintained to assist qualified students and graduates in obtaining educational positions. Calls are received for college instructors, administrators, supervisors, and teachers in elementary and secondary schools. Students who wish to avail themselves of this service should have recommendations collected before leaving this University while their work and personal qualities are clear in the minds of their instructors. These records will then be available for use when needed. The Bureau is located in 250 Education Hall, on the mezzanine floor.

Educational Societies. Chapters of Phi Delta Kappa, men's national honorary educational fraternity, Pi Lambda Theta, women's national honorary sorority, and an Education club, open to all students in Education, are maintained.

Admission to Professional Courses and the Fifth Year

The requirement for admission to undergraduate professional courses beyond Education 1 is the completion of 90 academic credits of college work earned in the University of Washington or in an accredited institution of equal rank, including the usual undergraduate requirements in physical education and military or naval science, and a grade-point average of 2.5

Students admitted from the undergraduate curricula of other colleges of the University must have satisfied the requirements of their respective colleges except in foreign language up to the time of the transfer to the College of Education.

Admission of Teachers' College Graduates to Advanced Standing

Advanced credit for work taken in approved teachers' colleges or normal schools by students previously graduated from an accredited four-year secondary school will be allowed at the rate of 45 credits for each full year's work completed in such schools, the minimum amount accepted as a year's

work being 36 weeks of attendance with at least 45 quarter credits, not more than 19 of which shall have been earned in one quarter. Claims for exemption from specific requirements, based on work in such schools, are passed on by the Registrar and the dean of the college.

Fifth-year standing cannot be attained until after the completion of Education 1, 9 and 70. Education 1 cannot be taken for credit after the beginning of the junior year. Students without teaching experience are accepted in the fifth year as candidates for the master's degree only if they have been graduated with merit (average of 2.5). Senior standing is attained when 135 academic credits have been earned.

Graduation

A minimum of three full quarters in residence in the senior year is required for any degree granted by the University. College of Education candidates for the bachelor's degree must satisfy the graduation requirements of the College of Arts and Sciences except in foreign language. If foreign language is omitted, 20 credits selected from general literature and English must be substituted. Such substitutions must be in addition to the regular requirements of the College of Arts and Sciences in English. Also, certain College of Education academic major teaching subjects may be substituted for those of the College of Arts and Sciences. In the total of 180 credits required of students with a grade average of at least 2.5, or 225 credits required of other students by the College of Education for graduation of all except teachers' college graduates, who are not candidates for the teaching diploma, the following must be included:

Academic major—36 or more credits (see departmental requirements).

The education courses required for graduation shall include the following.

	Credits
1. Orientation in Education	2
9. Psychology of Secondary Education	3
70. General Methods	5

The degrees awarded are bachelor of arts or, at the student's option, bachelor of science, according to the character of the academic major work. Applicants selecting majors from Group I or II will receive the bachelor of arts degree while those selecting majors from Group III may receive the bachelor of science degree.

Students who transfer from other institutions must earn at least nine approved credits in education at the University of Washington, and attain a grade-point average of at least 2.5.

Certification

A. THREE-YEAR CERTIFICATES

The University normal diploma, based on a degree from the University of Washington, will be valid for three calendar years from date of issue. Applicants for this diploma must fulfill the following requirements:

1. Earn 225 university academic credits in approved courses.

2. Show evidence of such general scholarship and personal and moral qualities as give promise of success and credit in the teaching profession.

3. Present a health certificate, based upon an examination taken within six months of the time that the normal diploma is to be received.

4. Pass a speech test.

5. Earn a minimum of 15 credits in courses dealing with contemporary social problems. These courses must be approved by the College of Education.

6. Present (a) as a teaching major a subject now included in the curriculum of at least two of the larger public high schools of the State, and (b) as a teaching minor either (1) a second teaching subject included in the curriculum of at least two of the larger public schools of the State, or (2) a minor definitely reinforcing the major. The list of acceptable majors and minors follows:

Botany	Health Education	Physics
Chemistry	History	Physiology
Civics	Home Economics	Political Science
Commercial Teaching	Industrial Arts	Psychology
Drama	Journalism	Public School Art
Economics	Latin	Public School Music
English	Mathematics	Sociology
French	Physical Education for Men	Spanish
Geography	Physical Education for Women	Speech
Geology		Zoology
German		

Major students in one field of music may minor also in another field of music; the same is true of art and home economics. One year of library science will be accepted in lieu of a second academic minor.

7. Earn a minimum of 28 credits (26 for students who take Education 1 for no credit) in the following courses in education (not more than two credits for Education 75 may be counted toward this requirement):

	Credits
1. Orientation in Education	2
9. Psychology of Secondary Education	3
70. General Methods	5
90. Measurement in Secondary Education	2
60. Principles of Secondary Education	3
75. Special Methods	2
71–72. Practice Teaching	8
120. Educational Sociology	3

8. Students who transfer from other institutions must earn at least nine credits in courses dealing specifically with secondary education and such graduates must complete all the above required education courses not previously taken.

9. Students who transfer from other institutions must earn a degree from the University of Washington.

10. Students who transfer from other institutions are normally required to earn ten credits in the academic major and five credits in the academic minor at the University of Washington.

B. SIX-YEAR STANDARD SECONDARY CERTIFICATES

Holders of the University three-year normal diploma who desire further certification must comply with the following requirements:

1. Give evidence of successful teaching experience for two years (eighteen months).

2. Pass a medical examination within six months of the granting of the certificate.

Grades Required for the Three-Year Normal Diploma and Six-Year Standard Certificate

(a) A 2.5 grade-point average or better in all university courses.

(b) "C" average or better in all education courses, with "C" or better in Education 71-72, *Cadet Teaching.*

(c) "C" average or better in the minor teaching subject with no grade below.

"C" in required courses except as indicated in departmental statements.

(d) In the major teaching subject there shall be such general average in individual departments as shall be approved by the general faculty and no grades below "C" in required courses.

C. ADMINISTRATIVE REQUIREMENTS IN ACCREDITED DISTRICTS

Elementary Principal's Credential

For the issuance of the elementary principal's credential, the following requirements are set forth:

(a) At least two years of successful teaching experience in the elementary school or the junior high school.

(b) Twelve quarter credits of professional courses relating to elementary administration and supervision in addition to the requirements for standard elementary certification at the time application for the credential is made.

Junior High School Principal's Credential

For the issuance of the junior high school principal's credential, the following requirements are set forth:

(a) Completion of not less than four years of professional preparation.

(b) At least two years of successful teaching experience in the common schools.

(c) Twelve quarter credits of professional courses relating to junior high school administration and supervision in addition to the requirements for junior high school certification at the time application for the credential is made.

Senior High School Principal's Credential

The principal of an accredited high school shall have had at least two years of thoroughly successful teaching experience on the secondary school level, and also shall have earned a minimum of 12 quarter credits of work in professional courses relating to secondary organization, administration and supervision, in addition to the minimum hours in education required for certification.

Superintendent's Credential

The superintendent of a district having an accredited high school and also an elementary school or schools shall qualify under the following provisions:

(a) A minimum of two years of successful experience in an elementary school; and

(b) A minimum of two years of successful experience in an accredited high school; *provided,* that not less than two years of such successful experience shall have been in the capacity of principal on either level; and *provided, further,* that in lieu of (a) 24 quarter credits of professional courses relating to secondary organization, administration and supervision, in addition to the minimum number of credits in education required for certification, conforming with the regulation of the State Board of Education as stated above under the Senior High School Principal's Credential, may be substituted. Professional work may be substituted for (a) or (b), but not for both.

COURSES IN THE DEPARTMENT OF EDUCATION

Before registering for their first course in education, students must consult a departmental adviser.

Courses in education required for certification by the University of Washington are divided into three classes, excepting Education 1, which is required of freshmen and sophomores. Courses numbered from 9 to 99 are open to juniors and seniors. Courses numbered from 100 to 199 are open only to juniors, seniors, and graduate students. Courses numbered from 200 to 300 are open only to graduate students.

The courses in education are divided also as to content and function into eight divisions as follows:

A. Educational psychology
B. Educational sociology
C. Educational administration and supervision
D. Elementary education, including remedial education
E. Secondary education { General / Curriculum / Guidance }
F. Classroom techniques
G. History and philosophy of education and comparative education
H. Educational measurements and scientific techniques

Candidates for a master's degree must specialize in at least two of these divisions, while students who are working toward the doctorate must prepare themselves thoroughly in at least three divisions. They should elect courses from these divisions according to their interests, abilities, and the activities in which they expect to be engaged.

Graduate students should plan a generous sampling of courses numbered above 200.

Before completing their registrations, graduate students must consult either the executive officer in education or a designated adviser in selecting proper divisions of education and necessary courses in these divisions.

Requirements Made for Academic Majors and Minors by Academic Departments

BOTANY

Major	*Credits*
1. Elementary Botany	5
3. Elementary Botany	5
101. Ornamental Plants	5
105, 106, or 107. Morphology and Evolution	10
140, 141, 142. General Fungi *or* 143, 144, 145. Plant Physiology	15
Minimum total	40

Minor	*Credits*
1. Elementary Botany	5
3. Elementary Botany	5
101. Ornamental Plants	5
105, 106, or 107. Morphology and Evolution	10
Minimum total	25

CHEMISTRY

Major	*Credits*
1-2. General Inorganic Chemistry *or* 21-22. Gen. Inorganic Chemistry	10
23. Elementary Qualitative Analysis	5
101. Advanced Qualitative Analysis	5
111. Quantitative Analysis	5
131, 132. Organic Chemistry	10
140-141. Elementary Physical Chem.	6
Minimum total	41

Minor	*Credits*
1-2. General Inorganic Chemistry *or* 21-22. Gen. Inorganic Chemistry	10
23. Elementary Qualitative Analysis	5
101. Adv. Qualitative Analysis and 111. Quantitative Analysis *or* 131. Organic Chemistry and 132. Organic Chemistry	10
Minimum total	25

For the minor, students should have had at least high school physics; for the major they should have had a year of college physics. Grades of "C" or above must be obtained in all required chemistry courses; for a major, one-third of the grades in upper division courses must be "B" or above.

Applicants for teaching certificates who are transfers from other institutions must earn a minimum of nine credits in the University of Washington in order to secure a departmental recommendation.

CIVICS

Major	*Credits*
Pol. Sci. 1. Comparative Government	5
E.B. 4. General Economics	5
Soc. 1. Introductory Sociology	5
Pol. Sci. 101. Constitutional Govt.	2
Pol. Sci. 152. Political Parties	5
Electives in Political Science	13
Electives in Economics or Sociology	5
Minimum total	40

Minor	*Credits*
Pol. Sci. 1. Comparative Government	5
E.B. 4. General Economics *or* Soc. 1. Introductory Sociology	5
Pol. Sci. 101. Constitutional Govt.	2
Electives in Political Science	13
Minimum total	25

COMMERCIAL TEACHING

The courses in commercial teaching are planned to prepare students for teaching positions in commercial departments of secondary schools. The requirements are as follows:

1. Satisfaction of the lower division requirements as outlined in the College of Economics and Business section, page 141.

2. E.B. 16- 17- 18. *Secretarial Training;* nine credits. This requirement may be satisfied in either lower or upper division, or by passing a satisfactory examination. In case of exemption by examination, university credit is not given.

3. Thirty credits of the upper division general requirements in Economics and Business, including E.B. 106 and E.B. 185. The remaining fifteen credits of this requirement may be postponed until the fifth year.

4. The special requirement must include ten credits of upper division accounting.

5. Twenty-eight credits of education courses, including Education 75E or Education 75F.

6. Students majoring in commercial education in the College of Education are required to take E.B. 1-2 or 4, General Economics, and Geography 7, Economic Geography, and in addition the following courses:

	Credits
E.B. 16-17-18. Secretarial Training	9
E.B. 54, 55, 56. Business Law	9
E.B. 115. Business Correspondence	5
E.B. 62, 63. Principles of Accounting	10
Upper Division Accounting	10
Marketing	5
	48

7. Students minoring in commercial education in the College of Education are required to take:

E.B. 4. General Economics	5
E.B. 16-17-18. Secretarial Training	9
E.B. 62, 63, 110. Principles of Accounting	15
E.B. 115. Business Correspondence	5
	34

ECONOMICS

Students choosing economics as either their major or minor should consult with the executive officer of the department of economics or the professor in charge of advanced economics with regard to a proper selection of courses. An academic major or minor in economics must include the following:

Major	*Credits*
E.B. 1-2. General Economics	10
E.B. 100. Statistical Analysis	5
E.B. 105. Economics of Labor	5
E.B. 185. Advanced Economic Theory.	5
E.B. 187. Develop. of Econ. Thought.	5
Additional credits chosen from the following list	20
	50

Minor	*Credits*
E.B. 1-2. General Economics	10
E.B. 185. Advanced Economic Theory.	5
Additional credits chosen from the following list	5
	20

Electives from which to choose additional credits:

	Credits
E.B. 102. Business Organization and Combination	5
E.B. 103. Money and Banking	5
E.B. 104. Public Service Industries	5
E.B. 105. Economics of Labor	5
E.B. 106. Economics of Marketing and Advertising	5
E.B. 107. World Economic Policies	5
E.B. 108. Risk and Risk Bearing	5
E.B. 121. Corporation Finance	5
E.B. 131. Principles of Foreign Trade	5
E.B. 141. Regulation of Public Utilities	5
E.B. 142. Advanced Economics of Public Utilities	5
E.B. 161. Labor Legislation	5
E.B. 162. European Labor Problems	5
E.B. 163. Economics of Consumption	5
E.B. 171. Public Finance and Taxation I	5
E.B. 172. Public Finance and Taxation II	5
E.B. 175. Business Fluctuations	5
E.B. 181. Economic Development of the United States	5
E.B. 185. Advanced Economic Theory	5
E.B. 187. Development of Economic Thought	5
E.B. 188. Institutional Economics	5

Minimum total for academic major.....50 credits
Minimum total for academic minor.....20 credits

ENGLISH

The schedules given below present the courses required in addition to Composition 1 and 2. These are general courses and may not be counted toward a major or minor.

For either a major or minor, it is required that a student earn the grade of "B" in three-fourths of his upper division work.

All English majors are required to take the senior major examination.

For a recommendation to teach English literature, drama, and composition, majors must have credit for Education 75H.

Substitutions in the following lists are allowed to fit a student's plan of study, if approved in writing by the department of English.

Literature

The major courses in Literature are grouped as follows:

Group I

Lit. 150, 151. Old and Middle English
Lit. 153, 154. English Literature: 1476-1642
Lit. 180, 181. Old English Language

Group II

Lit. 170, 171. Shakespeare
Lit. 167, 168. Seventeenth Century Literature
Lit. 144, 145. Eighteenth Century Literature

Group III

Lit. 177, 178. Early Nineteenth Century Literature
Lit. 174, 175. Late Nineteenth Century Literature
Lit. 161, 162. American Literature

Major	*Credits*
Lit. 57. Introduction to Poetry	5
Lit. 58. Introduction to Fiction	5
Lit. 64, 65. Literary Backgrounds	10
*Speech 79. Oral Reading of Lit.	3
Lit. 117. History of the English Lang.	5
Advanced Composition	4
One major course from each major group	15
A continuation of one of the above major courses	5
Electives	5
Senior Major Examination	0
	57

Minor	*Credits*
Lit. 57. Introduction to Poetry	5
Lit. 58. Introduction to Fiction	5
Lit. 64, 65. Literary Backgrounds	10
*Speech 79. Oral Reading of Lit.	3
Lit. 117. History of the English Language or Advanced Composition	5
Two major courses	10
	38

*Speech 79 is preceded by a placement examination which places students in four groups: those exempted, those required to take Speech 43 and 79, those required to take Speech 79 only, and those required to take Speech 79 and 179.

Drama

Admission to this division is granted only when the student has a good record and has been accepted by the director of drama and the department of English. Normally, supplementary studies in literature are required. These should include Lit. 58, 64, 65 and two courses from 170, 171, 177, 178, 174, 175, 161, 162.

Major	*Credits*
Drama 1, 2, 3. Introduction to the Theatre	6
Speech 43. The Speaking Voice	3
Drama 47, 48. Theatre Speech	6
Drama 51, 52, 53. Acting	9
Drama 103. Scene Construction	3
Drama 104. Scene Design	3
Drama 105. Theatrical Costume Design and Construction	3
Drama 106. Make-up	3
Drama 121, 122, 123. Advanced Acting and Directing (2 quarters)	6
Drama 127, 128, 129. History of the Theatre	6
Drama 151, 152, 153. Representative Plays	9
Drama 197. Theatre Organization and Management	2
Senior Major Examination	0
	59

Minor	*Credits*
Drama 1, 2, 3. Introduction to the Theatre (two quarters)	4
Speech 43. The Speaking Voice	3
Drama 47, 48. Theatre Speech	6
Drama 51, 52, 53. Acting (2 quarters)	6
Drama 103. Scene Construction Drama 104. Scene Design Drama 105. Theatrical Costume Design and Construction Drama 106. Make-up	6
Drama 127, 128, 129. History of the Theatre *or* Drama 151, 152, 153. Representative Plays (2 quarters)	6
Drama 197. Theatre Organization and Management	2
	33

Speech

Work in the division of speech is designed to contribute both to the practical needs of the individual and to the attainment of such general educational objectives as personality adjustment, analytical power, clear thinking and emotional control. Courses in speech fall into five main groups:

Group I. Public Address and Argumentation
Courses 38, 40, 41, 101, 103, 138, 139, 188, 211, 217, 218

Group II. Voice Science and Voice Training
Courses 43, 44, 187, 214

Group III. Oral Interpretation of Literature
Courses 79, 179, 215

Group IV. Speech Pathology and Correction
Courses 19, 50, 51, 190, 191, 192, 193, 194, 216

Group V. General and Special Courses
Courses 161, 162, 163, 186, 220, Education 75X

Admission to this division as a major is granted only when the student has a good record and has been accepted by the director of speech and the department of English.

Major	*Credits*
Speech 40. Essentials of Speaking....	5
Speech 41. Adv. Speaking or 188....	5
Speech 38. Essentials of Argumentat'n	5
Speech 43. The Speaking Voice.....	3
Speech 44. Voice and Articulation...	3
Speech 79. Oral Reading of Literature	3
Speech 139. Forms of Public Address..	5
Speech 186. Backgrounds in Speech...	5
Speech 187. Voice Science	5
Speech 190. Speech Pathology	5
Speech 191. Speech Correction	3
Speech 194. Methods of Lip Reading..	2
Comprehensive Senior Examination....	0
	49

Minor	*Credits*
Speech 40. Essentials of Speaking....	5
Speech 43. The Speaking Voice.....	3
Speech 186. Backgrounds in Speech...	5
Speech 191. Speech Correction	3
Speech 79. Oral Reading of Literature	3
Speech 38. Essen. of Argumentation..	5
U.D. Speech Elective.....	5
	29

Speech majors should elect the following courses related to speech work as a part of the College of Arts and Sciences requirements:

Literature 64, 65.....	10 credits
Literature 117	5 credits
Psychology 1	5 credits
Philosophy 2	5 credits
Physiology 7 or 11.....	5 credits

For a recommendation to teach speech, the student must have credit for Educ. 75X.

Composition

Students with special abilities and interests in composition may arrange a major in composition combined with sufficient literature to give a training that will prepare for regular and special classes in the high school. As the individual objectives are so varied, no formal major in composition is outlined. In general the requirements include a minor in literature (including Lit. 117) and 21 credits in advanced composition selected from the following courses:

Composition 51, 52, 53. Advanced Composition
Composition 54, 55, 56. Advanced Composition: Criticism and Narration
Composition 57, 58, 59. Narrative Writing
Composition 61, 62 63. Verse Writing
Composition 110, 111, 112. Advanced Verse Writing
Composition 156, 157, 158. Advanced Narrative Writing
Composition 184, 185, 186. Professional Creative Writing
Drama 111, 112, 113. Playwriting
Drama 144, 145, 146. Dramatic Writing for Radio
Journalism 173, 174, 175. Short Story Writing

Majors and minors in composition are also advised to take Education 168I.

GEOGRAPHY

Major	*Credits*
Geog. 1. Surv. of World Geog., *or* Geog. 101. World Region'l Geog., *or* Geog. 7. Economic Geography	5
Geog. 11. Weather & Climate, *or* Geog. 111. Climatology	5
Geog. 102. United States	5
Geog. 140. Geog. in the Social Studies	3
Geog. 155. Influence of Geographical Environment	5
Geog. 170. Conservation	5
Approved electives	17
Minimum total	45

Minor	*Credits*
Geog. 1. Surv. of World Geog., *or* Geog. 101. World Region'l Geog., *or* Geog. 7. Economic Geography	5
Geog. 11. Weather & Climate, *or* Geog. 111. Climatology, *or* Geog. 102. United States	5
Geog. 170. Conservation	5
Geog. 140. Geog. in the Social Studies	3
Approved electives	5
Minimum total	23

GEOLOGY

Major	*Credits*
Geol. 5 or 105. Rocks and Minerals	5
Geol. 6 or 106. Physiography	5
Geol. 7 or 107. Historical Geology	5
Geol. 112. Physiography of Eastern United States	5
Geol. 113. Physiography of Western United States	5
Approved electives	11
Minimum total	36

Minor	*Credits*
Geol. 1. Introduction to Earth Science	5
Geol. 5 or 105. Rocks and Minerals	5
Geol. 6 or 106. Physiography	5
Approved electives	5
Minimum total	20

GERMAN

Students becoming academic majors or minors in the German department should have had college German 1, 2, 3, plus 3 credits of second year German, or German 1, 2, 3, grade "A" or the high school equivalent, to be determined by the executive officer of the department.

The minimum requirements are as follows:

Major	*Credits*
Ger. *4, 10, 30, 60. Second Year Work	about 5
Ger. 113, 114, 115. U.D. Scientific German Ger. 119. Hist. of German Lang. Ger. 120. Introduction to Schiller Ger. 121. Introduction to Goethe Ger. 122. Introduction to Keller Ger. 123. Introd. to Heimatkunst Ger. 124. 19th Century Novelle Ger. 125. Recent Novellen Ger. 133-135. Modern Novels Ger. 136-138. Modern Drama Ger. 139, 140. Studies in German Literature Ger. 141. History of German Lit. Ger. 142. Lyrics and Ballads Ger. 150. Lessing Ger. 152. Goethe's Lyric Poetry Ger. 153. Goethe's Dramatic Wks. Ger. 165. Schiller's Hist. Dramas Ger. 166, 167. Goethe's Faust, Parts I and II Ger. 180-185. 19th Century Lit.	at least 23
Ger. 110, 111, 112. Grammar and Composition	6
Ger. 118. Phonetics	2
Minimum total	36

Minor	*Credits*
Ger. ** 4, 10, 30, 60. Second Year Work	about 5
Ger. 113, 114, 115. U.D. Scientific German Ger. 119. Hist. of German Lang. Ger. 120. Introduction to Schiller Ger. 121. Introduction to Goethe Ger. 122. Introduction to Keller Ger. 123. Introd. to Heimatkunst Ger. 124. 19th Century Novelle Ger. 125. Recent Novellen Ger. 133-135. Modern Novels Ger. 136-138. Modern Drama Ger. 139, 140. Studies in German Literature Ger. 141. History of German Lit. Ger. 142. Lyrics and Ballads Ger. 150. Lessing Ger. 152. Goethe's Lyric Poetry Ger. 153. Goethe's Dramatic Wks. Ger. 165. Schiller's Hist. Dramas Ger. 166, 167. Goethe's Faust, Parts I and II Ger. 180-185. 19th Century Lit.	at least 7
Ger. 110, 111, 112. Grammar and Composition	6
Ger. 118. Phonetics	2
Minimum total	20

*Two credits of this 5-credit course can count toward a major.
**Two credits of this 5-credit course can count toward a minor.

A German major may count not more than 6 credits of Scientific German toward his major, and a minor may count not more than 3 credits of Scientific German toward his minor.

Grades of "C" or above must be obtained in all required German courses; for a major one-third of the grades in upper division courses must be "B" or above.

All students who wish a major or minor recommendation in German must present Education 75L, the teachers' course. Students presenting a minor in German with a major in another foreign language, may, with special permission, be excused from this requirement.

FOR HEALTH EDUCATION MINOR, SEE SCHOOL OF PHYSICAL EDUCATION AND HYGIENE SECTION, PAGE 125.

HISTORY

Major	*Credits*
1. *Required:* a total of 50 credits.	
Hist. 1-2. Medieval and Modern European History	10
Hist. 5-6. English History	10
Hist. 72-73. Ancient History	10
Choice between:	
Hist. 57-58-59. American History from 1607 to the Present	9
or	
Hist. 140. American Colonial History (5); 141. American Revolution and Confederation (5)	10
or	
Hist. 144. U. S. 1789-1829 (5); 145. U. S. 1829-1860 (5)	10
or	
Hist. 145. U. S. 1829-1860 (5); 147. Civil War (3); 148. Reconstruction (3)	11
or	
Hist. 147. Civil War (3); 148. Reconstruction (3); 149. National Development, from Reconstruction to 1900 (5)	11
or	
Hist. 149, 150. National Development, from Reconstruction Period to the Present (10)	10
2. *Preferential* group: additional credits to be selected from U.D. courses, of which five hours must be in American history.	
Minimum total	50

Minor	*Credits*
1. *Required:* 1-2. Medieval and Modern European History (or its equiv.)	10
2. *Choice between:*	
Hist. 140. American Colonial History (5); 141. American Revolution and Confederation (5)	10
or	
Hist. 144. U. S. 1789-1829 (5); 145. U. S. 1829-1860 (5)	10
or	
Hist. 145. U. S. 1829-1860 (5); 147. Civil War (3); 148. Reconstruction (3)	11
or	
Hist. 147. Civil War (3); 148. Reconstruction (3); 149. National Development, from Reconstruction to 1900 (5)	11
or	
Hist. 149, 150. National Development, from Reconstruction Period to the Present (10)	10
or	
Hist. 72-73. Ancient History (10), plus five credits	15
or	
Upper division European History (including English)	15
Note: Students electing a sequence in American history must take five additional hours in the American history field.	
Minimum total	25

MAJOR IN ALL FIELDS OF HOME ECONOMICS

Students in Home Economics may satisfy the requirements for both a major and a minor recommendation by work in Home Economics only.

	Credits
Home Ec. 12. Costume Design and Construction	5
Home Ec. 15. Food Preparation	5
Home Ec. 25. Textiles	5
Home Ec. 47. Home Furnishings	5
Home Ec. 107-108. Nutrition	8
Home Ec. 112, 113, 114. Costume Design and Construction	9
Home Ec. 115, 116. Food Preparation	8
Home Ec. 141. Household Management	5
Home Ec. 144, 145. Household Management & Family Relationships	6
Home Ec. 148. Home Management House	2
Home Ec. 181. Consumer Buying	3
Home Ec. 190. Child Nutrition and Care	5
Minimum total	66

Prerequisites: Art 9, Chemistry 1 and 2, Chemistry 135-136, Physiology 7.

Related courses that should be included: Physics 89-90-91; Architecture 1-2; Bacteriology 101; Nursing 5; Zoology 17; Economics 4; Sociology 1; Psychology 1.

Major must include Education 75NA.

Major and Minor in Textiles and Clothing

Major	*Credits*
Home Ec. 12. Costume Design and Construction	5
Home Ec. 25. Textiles	5
Home Ec. 47. Home Furnishing	5
Home Ec. 112, 113, 114. Costume Design and Construction	9
Home Ec. 133. History of Costume	5
Home Ec. 144, 145. Household Management, and Family Relationships	6
Home Ec. 148. Home Management House	2
Home Ec. 160, 161. Advanced Costume Design and Construction	10
Home Ec. 181. Consumer Buying	3
Home Ec. 188. Advanced Textiles *or* Home Ec. 198. Historic Textiles	3
Minimum total	50

Minor	*Credits*
Home Ec. 12. Costume Design and Construction	5
Home Ec. 25. Textiles	5
Home Ec. 47. Home Furnishing	5
Home Ec. 112, 113, 114. Costume Design and Construction	9
Minimum total	24

Prerequisites:

For Major	*Credits*
Art 5, 6. Drawing	6
Art 9, 10, 11. Art Structure	9
Art 169, 170. Costume Design	4
	19

For Minor	*Credits*
Art. 9. Art Structure	3

Students should have had at least one year of high school clothing. The above shall be considered as comprising a teaching major or minor.

INDUSTRIAL ARTS

Students who wish to major or minor in industrial arts should supplement such specialized training as they can receive at the University of Washington by courses which can be taken at the normal schools or at other institutions. Such courses are offered also at the University of Washington during the summer session. Twenty credits are required for a minor and 36 for a major.

JOURNALISM

Major students in education who have had Jour. 1, 2, and 51, as prerequisites may obtain a major in journalism by completing the work in Jour. 147-148-149. An average class grade of "B" or better must be earned in all journalism subjects by education students majoring in journalism.

Minor in Journalism. Students wishing to minor in journalism must include the following courses in their minor: Jour. 1, 2, 51, 150, plus a minimum of ten credits of electives to be selected from the sophomore and senior courses in the School of Journalism.

LATIN

Major	*Credits*
Greek 1-2-3. Elementary Greek	15
Thirty-five credits selected from the following or equivalent courses (at least 18 credits in upper division courses).	
Latin 21. Cicero: De Senectute; Latin Literature (MacKail)	5
Latin 22. Catullus; Latin Literature (MacKail)	5
Latin 23. Virgil: Georgics and Bucolics; Latin Literature (MacKail)	5
Latin 24. Sallust: Cataline and Jugurtha; Latin Literature (MacKail)	5
Latin 25. Ovid: Metamorphoses	5
Latin 100. Livy	5
Latin 101. Horace	5
Latin 102. Tacitus	5
Latin 103. Plautus and Terence	5
Latin 106. Syntax & Prose Comp.	3
Latin 107. Cicero's Letters	3
Latin 109. Pliny's Letters	3
Latin 113. Roman Home Life and Religion	3
Senior Examination	0
Minimum total	50

Minor	*Credits*
Twenty credits selected from the following or equivalent courses, but 106 must be included.	
Latin 21. Cicero: De Senectute; Latin Literature (MacKail)	5
Latin 22. Catullus; Latin Literature (MacKail)	5
Latin 23. Virgil: Georgics and Bucolics; Latin Literature (MacKail)	5
Latin 24. Sallust: Cataline and Jugurtha; Latin Literature (MacKail)	5
Latin 25. Ovid: Metamorphoses	5
Latin 100. Livy	5
Latin 101. Horace	5
Latin 102. Tacitus	5
Latin 103. Plautus and Terence	5
Latin 106. Syntax & Prose Comp.	3
Latin 107. Cicero's Letters	3
Latin 109. Pliny's Letters	3
Latin 113. Roman Home Life and Religion	3
An examination planned to test the student's knowledge of the Latin ordinarily taught in a standard four-year high school.	0
Minimum total	20

The prerequisite for any work toward either a major or a minor in Latin is three and one-half years of high school Latin or its equivalent.

Latin courses 1-2, 3, 4, 5, 6, 11, 13, do not count toward a major or a minor.

LIBRARIANSHIP

State standards for library work in accredited high schools divide the schools into five classes: Class 1 covering schools with enrollment of 100 or less; Class 2, 100 to 200; Class 3, 200 to 500; and Classes 4 and 5, over 500.

Applicants for the normal diploma desiring to qualify for library work in accredited high schools of the fourth and fifth classes may take a fifth year in the School of Librarianship. Consult with advisory officers of both departments.

Teacher-librarians in accredited high schools of 100 or less (Class 1) must have at least 7½ credits in librarianship.

Teacher-librarians in accredited high schools of 100 to 200 (Class 2), and of 200 to 500 (Class 3) must have at least 15 credits in librarianship.

Teacher-librarians in accredited high schools in Class 4 (500 to 1000) and Class 5 (over 1000) are recommended to have one year's preparation in an approved library school.

Courses open to teacher-librarians in autumn, winter, and spring:

	Credits
Lib. 170. Introduction to Children's Work.....autumn, winter	3
Lib. 175. Cataloging, Classification, Subject Headings, autumn, spring	4
Lib. 177. Bibliography and Reference.....autumn, spring	3
Lib. 182. School Library Administration.....autumn, spring	3
Lib. 195. Book Selection for High School Libraries.....winter, spring	3

A half-quarter summer course covers qualifications for Class 1; a one-quarter course for Classes 2 and 3.

MATHEMATICS

Major	*Credits*
4. Plane Trigonometry	5
5. College Algebra	5
6. Analytical Geometry	5
107, 108, 109. Differential and Integral Calculus	15
Approved Electives in Math.	15
Minimum total	45

Minor	*Credits*
4. Plane Trigonometry	5
5. College Algebra	5
6. Analytical Geometry	5
U.D. Electives in Mathematics	10
Minimum total	25

The above schedule is based upon the assumption that the student has had one and one-half years of algebra, and one year of plane geometry, or one year of plane and one-half year of solid geometry before entering the University. If a student has not had the third one-half year of algebra in high school, Math. 1 must be elected during the freshman year in addition to the above schedule. If the student has not had solid geometry, he should take Math. 2 in addition to the above schedule.

Mathematics 1 can be taken concurrently with Mathematics 4; Mathematics 2 can be taken concurrently with 4, 5, 6, 107, and 102.

Mathematics 11 will not count toward a teaching major or minor.

Students who select mathematics as an academic major or minor must earn a grade of "C" or higher in a total of 45 and 25 hours respectively, exclusive of courses 1 and 2.

MUSIC

All education students majoring in music must:

(a) Satisfy the requirements of Music 15, 16, 46, 72.

(b) Satisfy the music department as to their proficiency in piano and voice.

(c) Take Education 71-72, *Cadet Teaching in Music.*

(d) Earn the grade of "B" in three-fourths of their upper division music courses and no grade lower than "C" in any music course.

Major	*Credits*
Music 51, 53. Elementary Harmony...	9
Music 40, 42. Orchestral Instruments.	6
Music 73, 74. Music Lit. & History...	6
Music 101. Advanced Harmony	5
Music 113. Elementary School Music..	5
Music 116. Junior High School Music.	3
Music 127, 128. Choral Literature.....	4
Music 136. Technique of Conducting..	3
Music 154. Senior High School Music.	2
Music 155. Music Supervision	3
Music 180. Orchestral Conducting	3
or	
Music 195. Choral Conducting	3
Vocal and Instrumental Music....	12
Minimum total.....	61

(For non-music majors)

Minor	*Credits*
Music 40 or 42. Orchestral Instruments	3
Music 51, 53. Elementary Harmony...	9
Music 113. Elementary School Music..	5
Music 116. Junior High School Music.	3
or	
Music 154. Senior High School Music.	2
Music 127. Choral Literature	2
Music 136. Technique of Conducting..	3
Music 180. Orchestral Conducting	3
or	
Music 195. Choral Conducting	3
Vocal and Instrumental Music....	6
Minimum total.....	33 or 34

(For majors in Music)

Minor	*Credits*
Music 109. Counterpoint	5
Music 112. Musical Forms	5
Music 117. Composition	5
Music 104, 105, 106, 151, 152, 153, 192, Modern Music	6
Minimum total.....	21

PHYSICAL EDUCATION

Major in Physical Education

Required foundation and related courses:

	Credits
Zool. 1. Animal Biology	5
Zool. 2. General Zoology	5
Zool. 16. Evolution	2
Zool. 17. Eugenics	2
Chem. 1-2. General Chemistry (Unless taken in high school)	10
Anat. 100. Anatomy Lectures	2
Physiology 50. Physiology	6
*Home Ec. 104. Nutrition for Non-Majors	2
Liberal Arts 1	5
†P.E. 10.	5
Comp. 1-2.	10
Soc. 1. Survey of Sociology	5
Psych. 1. General Psychology	5
Speech 40. Essentials of Speaking	5
†P.E. 11-12-13. Physical Education Activities for Freshman Majors	6
†P.E. 51-52-53. Physical Education Activities for Sophomore Majors	6
*P.E. 6, 7, 8, 9, 10, 11. Physical Education Activities for Majors	6
†Required of women only.	†68+12
*Required of men only.	*70+ 6

Required professional courses:

Men—

	Credits
107. Personal and General Hygiene	3
110. First Aid and Safety	3
113. Principles of Recreation	3
115. Physiology of Muscular Exercise	5
122. Kinesiology	3
127. Tests and Measurements	3
135. Adapted Activities	3
145. Principles of Health and Physical Education	5
150. Physical Education Administration	5
153. Methods and Materials in Health Teaching	3
158. Methods in Teaching Apparatus, Tumbling, and Stunts	2
161. Methods in Teaching Boxing and Wrestling	2
162. Methods and Materials in Teaching Folk, Tap, and Clog Dancing	2
163. Methods and Materials in Teaching Sports	2
164. Methods in Teaching Swimming	2
165. Administration of Health Education	3
Athletic Coaching	6
Total credits required	55

Women—

	Credits
101. Methods and Materials in Gymnastics, Stunts, and Tumbling	3
110. First Aid and Safety	2
111. Rhythmic Activities for Small Children	2
112. Elementary School Athletic Program	3
113. Principles of Recreation	3
115. Physiology of Muscular Exercise	5
118. Analysis of Rhythm	3
122. Kinesiology	3
127. Tests and Measurements	3
128. Administration and Organization of Camp Programs	3
131, 132, 133. Principles and Methods in Posture Education	9
145. Principles of Health and Physical Education	5
150. Physical Education Administration	2
153. Methods and Materials in Health Teaching	3
156. Methods and Materials in Teaching Dance	2
162. Methods and Materials in Teaching Folk, Tap, and Clog Dancing	2
163. Methods and Materials in Teaching Sports	3
164. Methods in Teaching Swimming	3
165. Administration of Health Education	3
Coaching	0
Total credits required	62

II. Minor in Physical Education

Required foundation course:

Physiol. 50. Physiology..... 6

Required professional courses:

Men—

	Credits
107. Personal and General Hygiene	3
110. First Aid and Safety	3
145. Principles of Health and Physical Education	5
158. Methods in Teaching Apparatus, Tumbling and Stunts	2
161. Methods in Teaching Boxing and Wrestling	2
162. Methods and Materials in Teaching Folk, Tap and Clog Dancing	2
163. Methods and Materials in Teaching Sports	2
165. Administration of Health Education	3
Athletic Coaching	4
Total credits required	26

Women—

	Credits
51. Physical Education Activities for Sophomore Majors	+2
52. Physical Education Activities for Sophomore Majors	+2
112. Elementary School Athletic Program	3
145. Principles of Health and Physical Education	5
150. Physical Education Administration	2
153. Methods and Materials in Health Teaching	3
162. Methods and Materials in Teaching Folk, Tap, and Clog Dancing	2
163. Methods and Materials in Teaching of Sports	3
165. Administration of Health Education	3
Electives	5
Total credits required	26+4

Electives to be selected from:

	Credits
101. Methods and Materials in Gymnastics, Stunts and Tumbling	3
113. Principles of Recreation	3
118. Analysis of Rhythm	3
128. Organization and Administration of Camp Program	3
156. Methods and Materials in Teaching Dance	2
164. Methods in Teaching Swimming	3

Substitutions subject to approval of head of department.

Minor in Health Education

Required foundation and related courses:

	Credits
Zool. 1. Animal Biology	5
Zool. 17. Eugenics	2
Physiol. 50. Physiology	6
	13

Required professional courses:

	Credits
†P.E. 10. Health Education	5
*H.E. 104. Nutrition	2
*P.E. 107. Personal and General Hygiene	3
Psych. 2. Psychology of Adjustment (5) *or*	
Soc. Wk. 231. Psychiatric Information for Social Workers (2)	5 or 2
Nursing Educ. 104. Public Health Administration and Epidemiology	2
P.E. 110. First Aid and Safety	2–*3
P.E. 145. Principles in Health and Physical Education	5
P.E. 153. Methods and Materials in Health Teaching	3
P.E. 165. Administration of Health Education	3
Total credits required	†22 or 25 *23 or 26

†Required of women only. *Required of men only.

PHYSICS

Major	*Credits*
Physics 1-2, 3. General Physics *or* Physics 4, 5, 6. General Physics	15
Physics 101-102. Introduction to Modern Theories	6
Physics 105-106. Electricity and Magnetism	6
Physics 160. Optics	6
Physics electives	8
Minimum total	41

Minor	*Credits*
Physics 1-2, 3. General Physics *or* Physics 4, 5, 6. General Physics	15
Physics 101-102. Introduction to Modern Theories	6
Physics 105-106. Electricity and Magnetism	6
Physics 160. Optics	6
Minimum total	33

A teaching major or minor in physics should be supported by 15 credits of college mathematics.

For recommendations for a normal diploma a major or a minor is required with an average grade better than "C."

POLITICAL SCIENCE

Major	*Credits*
Pol. Sci. 1. Comparative Government.	5
Pol. Sci. 54. International Relations	5
Pol. Sci. 61. Municipal Government	5
Pol. Sci. 101. Constitutional Governm't.	2
Pol. Sci. 112. Amer. Political Theory	3
Pol. Sci. 151. American National Govt.	5
Electives in Political Science	15
Minimum total	40

Minor	*Credits*
Pol. Sci. 1. Comparative Government.	5
Pol. Sci. 101. Constitutional Governm't.	2
Electives in Political Science	18
Minimum total	25

PUBLIC SCHOOL ART

The following art courses are required for the degree of bachelor of arts in the College of Education. Both the major and minor are in art, and the candidate is expected to have a second minor in another field.

For a recommendation of the normal diploma, an average grade of "B" or better is required.

Applicants for the normal diploma are required to complete the curriculum of the current catalogue, unless the diploma is granted within five years from the date of entrance.

Samples of art work must be presented to the Director of the School of Art if advanced credit is desired.

Major	*Credits*
Art 53, 54, 55. Advanced Design	9
Art 56, 57, 58. Drawing and Painting	9
Art 20. Sculpture Appreciation	2
Art 100. Methods	2
Art 101. Elementary Interior Design	2
Art 102. Industrial Art	2
Art 103, 104. Pottery *or* Art 157, 158. Metal Jewelry	6
Art 105, 106. Lettering, Commercial Design	6
Art. 126. History of Modern Painting	2
Art 150, 151. Illustration	6
Art 160 or 161 or 162. Life	3
Art 166. Art Structure	3
Architecture 3. Appreciation of Architecture	2
Minimum total	54
Plus freshman art courses	18
	72

Special Minor Open to Home Economics Majors in Textiles and Clothing

	Credits
Art 5, 6. Drawing	6
Art 9, 10, 11. Design	9
Art 53, 54, 55. Advanced Design	9
Art 105. Lettering	3
Art 169, 170. Costume Design	4
Minimum total	31

ROMANIC LANGUAGES AND LITERATURE

The number of credits required for a major or a minor will depend on the high school preparation of the student. For this reason the requirements for a major, based upon the preparation of two years in college, or three in high school, amount to less than 36 credits, while for a minor they amount to more than 20 credits.

French

Major	*Credits*
French 41. Phonetics	3
French 101, 102, 103. Composition and Conversation	9
French 158, 159. Advanced Syntax	4
Educ. 75K. Teachers' Course in French	2
Six or nine credits from any of the following courses:	
French 121, 122, 123. The Novel	6
French 124, 125, 126. The Short Story	6
French 131, 132, 133. Lyric Poetry	9
French 141, 142, 143. French Drama	9
French 151, 152, 153. 19th Century Lit.	9
French 161, 162, 163. 18th Century Lit.	6
French 171, 172, 173. 17th Century Lit.	6
If only six credits have been earned in the above courses, then three more shall be required from the following courses:	
French 34, 35, 36, *or* 134, 135, 136. Comparative Literature, French, Italian, Spanish	9
French 118, 119, 120. Survey of French Literature	9
French 154, 155, 156. Contemporary French Literature	9
Minimum total	27

Minor	*Credits*
French 41. Phonetics	3
French 101, 102, 103. Composition and Conversation	9
French 158, 159. Advanced Syntax	4
Educ. 75K. Teachers' Course in French	2
Six or nine credits from any of the following courses:	
French 121, 122, 123. The Novel	6
French 124, 125, 126. The Short Story	6
French 131, 132, 133. Lyric Poetry	9
French 141, 142, 143. French Drama	9
French 151, 152, 153. 19th Century Lit.	9
French 161, 162, 163. 18th Century Lit.	6
French 171, 172, 173. 17th Century Lit.	6
If only six credits have been earned in the above courses, then three more shall be required from the following courses:	
French 34, 35, 36, *or* 134, 135, 136. Comparative Literature, French, Italian, Spanish	9
French 118, 119, 120. Survey of French Literature	9
French 154, 155, 156. Contemporary French Literature	9
Minimum total	27

Spanish

Major	*Credits*
Span. 101, 102, 103. Advanced Comp.	9
Span. 159. Advanced Syntax	3
Educ. 75Y. Teachers' Course in Span.	2
Six to nine credits from any of the following courses:	
Span. 121, 122, 123. The Novel	6
Span. 131, 132, 133. Spanish Lyrics	9
Span. 141, 142, 143. Spanish Drama	6
Span. 151, 152, 153. 19th Century Lit.	6
Span. 171, 172, 173. 17th Century Lit.	6
Span. 184, 185, 186. Spanish-American Literature	9
If only six or seven credits have been earned in the above courses, then three or two more (to make a total of nine) shall be required from the following courses:	
Span. 34, 35, 36, *or* 134, 135, 136. Comparative Literature, French, Italian, Spanish	9
Span. 118, 119. 120. Survey of Spanish Literature	6
Minimum total	23

Minor	*Credits*
Span. 101, 102, 103. Advanced Comp.	9
Educ. 75Y. Teachers' Course in Span.	2
Six to nine credits from any of the following courses:	
Span. 121, 122, 123. The Novel	6
Span. 131, 132, 133. Spanish Lyrics	9
Span. 141, 142, 143. Spanish Drama	6
Span. 151, 152, 153. 19th Century Lit.	6
Span. 171, 172, 173. 17th Century Lit.	6
Span. 184, 185, 186. Spanish-American Literature	9
If only six or seven credits have been earned in the above courses, then three or two more (to make a total of nine) shall be required from the following courses:	
Span. 34, 35, 36, *or* 134, 135, 136. Comparative Literature, French, Italian, Spanish	9
Span. 118, 119. 120. Survey of Spanish Literature	6
Minimum total	20

SOCIOLOGY

Major	*Credits*
Soc. 1. Survey of Sociology, *or*	
Soc. 150. General Sociology	5
Soc. 55. Human Ecology, *or*	
Soc. 155. Human Ecology	5
Soc. 66. Group Behavior, *or*	5 *or*
Soc. 190. Social Attitudes	3
Soc. 131. Social Statistics	5
Soc. 164. Social Education	2
Electives from courses offered in the department after consultation regarding the special field of interest	14 or 16
Minimum total	36

Minor	*Credits*
Soc. 1. Survey of Sociology, *or*	
Soc. 150. General Sociology	5
Soc. 140. Population Problems, or approved equivalent, *or*	
Soc. 190. Social Attitudes, or approved equivalent	3
Electives from courses offered in the department after consultation regarding the special field of interest	17
Minimum total	25

ZOOLOGY AND PHYSIOLOGY

Major	*Credits*
1, 2. Elements of Zoology *or* 53-54. Physiology	10
Zoology, Physiology Electives	26
Minimum total	36

Minor	*Credits*
1, 2. Elements of Zoology *or* 53-54. Physiology	10
Zoology, Physiology Electives	10
Minimum total	20

DESCRIPTION OF COURSES

For description of courses offered by the College of Education, see Departments of Instruction section, pages 249-253.

COLLEGE OF ENGINEERING

All curricula of the College of Engineering have a common freshman year, which is administered by the general engineering department. The work of the college beyond the freshman year comprises the curricula of six professional divisions; namely, aeronautical, chemical, civil, commercial, electrical, and mechanical engineering. Four-year curricula leading to degrees of bachelor of science in the respective professional branches of engineering are offered. The curricula consist largely of required courses, but a sufficient number of electives is provided in the junior and senior years to give each student the training that will best serve him, and to permit the inclusion of a limited number of cultural courses in his schedule.

General Engineering

The purpose of the work in general engineering is to provide early contacts with engineering situations in which the student can apply the fundamentals of mathematics and physics. To assist in developing initiative and self-confidence, individual work is insisted upon in all two-hour class periods, and the student is given much personal coaching by his instructors. *Engineering Problems* (G.E. 11, 12) are planned especially to accomplish these purposes and are a distinctive feature of the college.

During the student's first year in engineering, particular attention is given to his personal traits and aptitudes. This phase of the work is under the direction of the freshman adviser.

Aeronautical Engineering

A generous donation for an aeronautical engineering building from the Daniel Guggenheim Fund for the Promotion of Aeronautics has made possible the establishment of a complete four-year curriculum leading to the degree of bachelor of science in aeronautical engineering. The courses are arranged to give the student thorough knowledge of the principles of aerodynamics as applied to the locomotion of heavier- and lighter-than-air craft, extensive training in structural analysis and design, introduction to the operation and design of aeronautical power plants, and knowledge of the economic principles involved in aerial transportation.

Chemical Engineering

Chemical engineering deals with the unit processes and unit operations of chemical and related industries. Training in this field includes general courses in engineering, specific training in the various divisions of chemistry and a series of special courses in chemical engineering.

Civil Engineering

Courses are given leading to the following branches of civil engineering:

Surveying, including the making of city and geological surveys, and surveys for engineering constructions.

Highway and railway engineering, which deal with the location, construction, and maintenance of city streets, highways, and railways.

Hydraulic engineering, which deals with the laws governing the flow of water, waterpower development, design of hydraulic machinery, river and harbor improvement, and the reclamation of land by drainage and irrigation.

Sanitary engineering includes the design of water supply and sewage systems, of sewage disposal works, and the study of methods of garbage collection and disposal.

Structural engineering, which deals with the details of the design and construction of steel, concrete, and timber structures.

Material testing, which deals with the inspection and proper use of the materials of construction, including timber, steel, and concrete.

Commercial Engineering

The course in commercial engineering consists of a major in engineering, primarily mechanical, with a minor in business administration. Its purpose is to provide basic training in the fundamentals of economics, business law, accounting, management, and finance, as well as in engineering. The first two years of its curriculum are the same as in electrical and mechanical engineering. In the third and fourth years, selected subjects in business administration replace some of the more specialized engineering subjects. A group of approved electives permits specialization in the upper years.

Electrical Engineering

Mastery of the basic laws of direct currents, alternating currents, and electric transients is essential to progress in any branch of electrical engineering. Elective courses are offered in electric communication, including telephone, telegraph and radio; illumination; electric-machine design; electric railways; central stations; advanced circuit theory; and power transmission. Special attention is given to the economic generation, transmission and distribution of hydroelectric power, and to electric transients.

Mechanical Engineering

The department of mechanical engineering aims to prepare the student to enter the various branches of mechanical engineering, including design, operation, and superintendence of machinery; fuel economy; power plants; structural materials; heating and ventilation; gas engineering; refrigeration; and automotive engineering.

Military and Naval Science

(See pages 83-86.)

Engineering Laboratories

Aeronautical Engineering. The laboratory facilities available for instruction and research consist of the following: a new wind tunnel having a testing space eight feet by twelve feet and an air speed of more than 250 miles per hour; a three-foot wind tunnel in which an air speed of 100 miles per hour is obtained; a four-foot wind tunnel in which an air speed of 50 miles per hour is obtained; an aircraft room containing a variety of aircraft engines, propellers, instruments and aircraft parts, including a partially dismantled airplane. All the wind tunnels have automatic balance equipment for measuring the forces on airplane models, and the new wind tunnel has a special six-component balance from which permanent photographic records may be obtained of the simultaneous readings of all the instruments. The construction of the new wind tunnel was made possible by funds provided by the State of Washington, a substantial loan by the Boeing Airplane Company and a generous allotment of Federal funds. All the other laboratories, with exception of the four-foot wind tunnel, are housed in Guggenheim Hall, a gift from the Daniel Guggenheim Fund for the Promotion of Aeronautics. The four-foot tunnel is housed in a separate building which was built by W. E. Boeing, the founder of the Boeing Airplane Company.

Chemical Engineering. The chemical engineering laboratories contain small and large scale equipment for the study of unit operations, unit processes and technical analysis of industrial materials. Steam, electric current, gas, water, compressed air and fume ducts are included so that semi-plant equipment can be operated. A machine shop is operated in conjunction with this division.

The laboratory for unit operations has space for such tall equipment as absorption towers, fractionating columns and evaporators. Equipment for the study of crushing, grinding and separation of solids is located in a small adjacent room for the localization of any dust problem.

The importance of the pulp and paper industry in the Pacific Northwest and the need for adequate training of graduates entering that field led to the inclusion of a series of laboratories specially equipped for class work and research in the manufacture and testing of pulp.

Situated between the pulp laboratory and the unit-process laboratory is the control laboratory where chemical control tests are performed in the semi-plant processes being carried on in the other laboratories.

The unit-process laboratory contains the semi-plant equipment exemplifying the various unit processes in chemical industry.

The electrochemical laboratory is equipped with heavy power lines so that special work or research in the subject may be pursued.

A number of special laboratories are provided. A large laboratory for research in unit operations and high-pressure reactions adjoins the unit-operations laboratory. A high-pressure compressor furnishes compressed gases for hydrogenation and studies in high-pressure operations. A large-capacity blower furnishes air for submerged combustion investigations. Another laboratory contains space and facilities for research work sufficient to accommodate sixty undergraduate students. The control laboratory is designed for use by students doing research on pulp and paper or unit-process problems. Many small laboratories are available for individual students working on advanced problems.

Civil Engineering. The civil engineering laboratories comprise the following: hydraulic, material testing, cement, highway, soils and foundations, and sanitary engineering.

The hydraulic laboratory is housed in a laboratory building adjacent to Lake Union, where facilities are available for both medium and high-head experiments. For a medium-head, a free water surface, one acre in extent, is provided 100 feet above the laboratory floor. The high-head supply is furnished by a centrifugal pump having a capacity of 1,600 gallons per minute under heads of 0 to 400 feet. Flumes and channels are provided adjacent to this laboratory for river hydraulic studies by the use of models.

The materials testing laboratory contains five universal testing machines with capacities of from 30,000 to 300,000 pounds, one beam-testing machine and two impact machines with various hammers ranging in weight from 550 to 1,500 pounds, with the necessary auxiliary apparatus for general materials testing.

The cement laboratory is equipped for making all of the ordinary tests on Portland cement as specified by the American Society for Testing Materials.

The highway laboratory is equipped for making the standard tests on materials used in the construction of roads.

The soils and foundations laboratory has facilities for testing soils in accordance with recently developed methods for studying foundation, sub-grade and earthwork problems.

The sanitary engineering laboratory is equipped with the apparatus needed for making the routine chemical, bacteriological, and microscopic examinations of water and sewage.

The structural research laboratory is fully equipped for the testing of various forms of "unloaded" models as well as a complete range of photo-

elasticity studies. The photoelastic equipment has a field of ten inches and a wide latitude for various types of loading.

Electrical Engineering. The dynamo laboratory contains 27 alternating- and 45 direct-current generators and motors. The 30 power transformers range in voltage from 110 to 55,000. Power from 222 Edison storage batteries and fourteen lead cells is available at a separate switchboard in the dynamo laboratory.

Ten smaller rooms are used for the following purposes: (a) instrument calibrating and repairing, (b) laboratory shop and repair room, (c) instrument and stock room, (d) telephone laboratory, (e) electrolysis and special thesis problems, (f) storage battery rooms, (g) dark rooms for photometry work, (h) radio laboratory, (i) transmission line laboratory, (j) transients laboratory.

The high-tension laboratory is equipped for research and advanced instruction in high-tension phenomena.

Mechanical Engineering. In the mechanical engineering department are the manufacturing-methods laboratory and the steam and experimental laboratory.

The laboratory in manufacturing methods is organized into three major divisions, viz., foundry, welding and heat treating, and machine. The foundry is equipped with cupola, electric-arc, oil and coke-fired crucible furnaces, together with five types of molding machines. A sand control laboratory, core making and testing apparatus, sand conditioning and casting-cleaning equipment are other features. In the welding and heat treating divisions are three electric arc welding machines, one spot welder, manifold oxy-acetylene welding and cutting equipment, profile cutting machine, four heat treating furnaces equipped with temperature control, and a Brinell hardness testing machine. The machine division contains a complete range of basic machine tools in which engine lathes predominate. There is also a wide assortment of gauges, light-wave measuring apparatus and other instruments.

The steam and experimental laboratory is fully equipped with steam apparatus including engines aggregating 1,000 H. P., simple and compound, high-speed, and Corliss types; steam turbines; jet and surface condensers; injecter; centrifugal pumps; steam calorimeters; indicators; calibrating appliances; oil-testing machine; gas engines of stationary and automobile types; semi-Diesel 2-cylinder oil engine; Diesel 3-cylinder oil engine; Sprague electric dynamometer; Webster radiator-testing outfit for vacuum systems of heating; ventilation-fan equipment for tests; Nash vacuum pump; equipment for automobile testing; belt-and-pulley testing machine; gas-producer plant; refrigerating apparatus; compressed-air machinery for two-stage compression and Westinghouse full-train equipment; fuel-testing facilities, including Mahler Bomb, Junkers, and other calorimeters, with accessories for determining heating value and analysis of solid, liquid, and gaseous fuels.

Expenses

For information concerning University fees and expenses, see pages 58-66.

Requirements for Admission

Correspondence. Credentials and all correspondence relating to admission to any college or school of the University should be addressed to the Registrar, University of Washington. For detailed information concerning admission to the University, see pages 50-58.

Entrance Requirements

For admission to the College of Engineering, the student must present 12 units* of high school credit, belonging normally to the 10th, 11th and 12th years of the high school curriculum. At least six of these units must be in academic subjects and should include the following:

English ..... two units
Advanced algebra ..... one-half unit
Plane geometry ..... one unit
Solid geometry ..... one-half unit
Physics ..... one unit
Chemistry ..... one unit

The additional six units may be chosen from either academic or non-academic subjects. A student who does not present high school chemistry for entrance will normally be expected to earn fifteen credits instead of 12 credits in chemistry during the freshman year.

Students planning to major in chemical engineering should include two units of German in high school. Also, for those taking the structural or hydraulic option of civil engineering, German is very desirable.

A student is advised not to attempt to enter the University until he is able to register in his chosen college without deficiencies. Under certain circumstances and with the approval of the dean of the college concerned, however, certain deficiencies in specific college requirements may be removed after entrance to the University.

Naval R.O.T.C.

Students in any college electing work in the Naval Reserve Officers' Training Corps are required to fulfill the following requirements:

High school—Advanced algebra, plane and solid geometry, physics.
High school or college—Plane trigonometry, college algebra.

Scholarship Requirements

For general University scholarship rules, see page 66.

The scholarship rules of the College of Engineering provide that any freshman student whose grade point average for any quarter is less than 1.8 and any other undergraduate student whose grade point average for any quarter is less than 2.0 shall be placed on the low scholarship list and referred to the dean for appropriate action.

Preparation in Algebra

All students entering any department of engineering will be tested in high school algebra by class work and by an examination given shortly after the beginning of the first quarter. It is essential that students in the engineering courses possess a good working knowledge of algebra *at the begin-*

*A "unit" is applied to work taken in the high school. 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 school year of thirty-six weeks.

ning of their course. The purpose of the test is to secure this by requiring a review of the subject shortly before entering the University. Students failing in the test are not permitted to continue with regular freshman engineering mathematics, but are required to take a review of preparatory algebra (Mathematics 1, College of Arts and Sciences) during the first quarter.

Preparation in English

Proficiency in the mechanics of English should be acquired by the time a student begins university work. To aid him in maintaining a high standard, careful criticism is given of his written papers; unless his rating is satisfactory, he must pass a test in spelling, punctuation, and grammar before being admitted to the course in technical writing (Composition 100) required of all students in the College of Engineering. For those who fail in this test, which is given on the second Saturday of the autumn quarter, a non-credit course (Composition B) is provided, but is likely to result in irregularity of schedule. To avoid such difficulty, the student will do well to master the fundamentals of correct English while still in high school, and to make automatic their proper applications in both speech and writing.

Curricula and Degrees

The College of Engineering offers four-year curricula in the departments of aeronautical, chemical, civil, commercial, electrical, and mechanical engineering, leading to the degree of bachelor of science in these respective departments.

Degree with Honors. A degree with honors in engineering may be conferred upon any student of the College of Engineering who, upon vote of the engineering faculty and of the honors committee, may be declared worthy of unusual distinction.

Thesis. The graduating thesis, when required, will consist of research or design in some branch of engineering, or review of some existing construction. The subject must be approved by the professor in charge of the department under which it is classified.

Normal Diploma. Engineering students who plan to prepare for high school teaching should consult with the department of Education as soon as possible.

Advanced Degrees. The degree of master of science in aeronautical, chemical, civil, electrical, and mechanical engineering, respectively, will be conferred upon graduates of this college or of other engineering colleges of recognized standing, who complete in residence one year (45 credits) of prescribed graduate work (including a satisfactory thesis) with a grade of "A" or "B." The candidate must comply with the regulations of the Graduate School and must pass a formal examination open to all members of the faculty. The selection of work for this degree must in each case be approved by the head of the department in which the student majors and by the Graduate Council.

A graduate of the College of Engineering of the University of Washington, or of any other engineering college of equal standing, will be permitted to enroll for the degree of master of science in the respective engineering departments provided his grade average for his last year of undergraduate work (not less than 45 quarter credits) be not less than "B" (3.0). Also, at the discretion of an examining committee, any candidate from another university may be required to take a preliminary qualifying examination.

The foregoing rule is not intended to prevent a graduate student in engineering from taking any graduate or undergraduate course for which he has the necessary prerequisites. Such courses may be applied toward a bachelor's degree in some department other than the one in which he previously majored. In this manner a student having a bachelor of science degree in one department of the Engineering College (M.E., for example) may receive an additional bachelor of science degree in some other department (C.E., for example) upon the satisfactory completion of 45 additional credit hours approved by the department concerned.

The professional degrees, aeronautical engineer (A.E.), chemical engineer (Ch.E.), civil engineer (C.E.), electrical engineer (E.E.), and mechanical engineer (M.E.), will be conferred on graduates of this college holding the degree of bachelor of science or master of science in their respective departments, who give satisfactory evidence of having been engaged continuously in responsible engineering work for not less than four years and who present satisfactory theses.

In general, acceptable engineering work shall be interpreted to mean work equivalent to that required for associate membership in the national founder engineering societies. In case the applicant has rendered special services to the profession by accomplishments of undisputed merit, the thesis may be waived upon presentation of articles describing such work in publications of recognized standing. Teaching experience shall count in lieu of professional experience in the same ratio as now recognized by the engineering societies, provided that a minimum of two years of acceptable engineering work, other than teaching, be included.

Fellowships. Several University fellowships are available in the College of Engineering, open to graduate students who are approved by the dean. Award is made on the basis of need, scholarship, and general ability. The fellowships are primarily for the purpose of aiding alumni to pursue graduate study.

Loan Funds. Special engineering loan funds are available for assisting upperclass students. These are not open to freshman.

Non-technical Electives. In order to provide opportunities for greater breadth of education, each engineering curriculum has, in addition to the arts and science subjects which a student is required to take, electives provided in the senior year. About fifteen credits of non-technical electives are allowed in each course, and the student is advised to select appropriate courses in the College of Arts and Sciences which will introduce him to intellectual areas other than those included in his engineering curriculum. All electives must be approved in advance by the head of the department in which the student is taking his work. Not more than nine credits in advanced military and/or naval science will be allowed.

CURRICULA OF THE DEPARTMENTS OF ENGINEERING

(For the Freshman Year in all Departments)

Freshman

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
†Chem. 24. General	4	Chem. 25. General	4	Chem. 26. General	4
G.E. 1. Drawing	3	G.E. 2. Drawing	3	G.E. 3. Drafting	
G.E. 11. Engineering Problems	3	G.E. 12. Engineering Problems	3	Problems	3
Math. 31. Engineering Freshman Mathematics	5	Math. 32. Engineering Freshman Mathematics	5	‡G.E. 21. Surveying	3
Mil. Sci. and Phys. Edu. or Nav. Sci.	+	Mil. Sci. and Phys. Edu. or Nav. Sci.	+	Math. 33. Engineering Freshman Mathematics	5
				Mil. Sci. and Phys. Edu. or Nav. Sci.	+

†Students who expect to take chemical engineering should register for Chemistry 21, 22, 23.

‡Chemical engineering students may substitute 3 hours of electives for G.E. 21.

AERONAUTICAL ENGINEERING

Leading to the Degree of Bachelor of Science in Aeronautical Engineering

Freshman

(The same for all curricula. See above.)

Sophomore

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Physics 97. Engineering Physics	5	Physics 98. Engineering Physics	5	Physics 99. Engineering Physics	5
Math. 41. Engineering Calculus	3	Math. 42. Engineering Calculus	3	A.E. 83. General Aeronautics	3
M.E. 81. Mechanism	3	C.E. 91. Mechanics	3	C.E. 92. Mechanics	3
M.E. 82. Steam Engineering	3	E.B. 3. General Economics	3	Comp. 100. Technical Composition	3
M.E. 53. Manufacturing Methods	1	M.E. 54. Manufacturing Methods	1	M.E. 55. Manufacturing Methods	1
P.E. 15. Hygiene	2	Mil. Sci. and Phys. Edu. or Nav. Sci.	+	Mil. Sci. and Phys. Edu. or Nav. Sci.	+
Mil. Sci. and Phys. Edu. or Nav. Sci.	+				

Junior

A.E. 101. Aerodynamics	3	A.E. 100. Power Plants and Instruments	2	A.E. 103. Airplane Performance	3
A.E. 171. Aircraft Mechanics	3	A.E. 104. Laboratory Methods & Equipment	2	A.E. 173. Advanced Aircraft Mechanics	3
C.E. 141. Hydraulics	3	A.E. 172. Aircraft Mechanics	3	E.E. 121. Alternating Currents	4
M.E. 111. Machine Design	3	E.E. 101. Direct Currents	4	E.E. 122. Alternating Currents Laboratory	2
†Comp. 102. English for Engineers	3	E.E. 102. Direct Currents Laboratory	2	M.E. 167. Engineering Materials	3
		M.E. 112. Machine Design	3	M.E. 104. Manufacturing Methods	1

Senior

A.E. 111. Airplane Design	3	A.E. 102. Advanced Aerodynamics	3	M.E. 183. Thermodynamics and Refrigeration	5
A.E. 141. Aerial Propulsion	3	A.E. 112. Advanced Airplane Design	3	A.E. 190. Seminar	3
E.B. 57. Business Law	3	M.E. 198. Gas Engines	3	Electives*	8
A.E. 105. Wind Tunnel Laboratory	1	Electives*	7		
Electives*	6				

The total number of credits for graduation must include Physical Education 15 for men, or Physical Education 4, 6, 8 or 10 for women.

†Composition 101 may be substituted.

*Not less than 9 elective credits shall be obtained from additional aeronautical engineering courses.

Electives must in all cases be approved in advance by the head of the department.

CHEMICAL ENGINEERING

Leading to the Degree of Bachelor of Science in Chemical Engineering

Freshman

(The same for all curricula. See above.)

Sophomore

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Chem. 51. Industrial Chemical Calculations.	2	Chem. 52. Industrial Chemical Calculations.	2	Chem. 53. Industrial Chemical Calculations.	2
Physics 97. Engineering Physics	5	Physics 98. Engineering Physics	5	Physics 99. Engineering Physics	5
Math. 41. Engineering Calculus	3	Chem. 110. Quantitative Analysis	5	Chem. 101. Advanced Qualitative Analysis...	5
Chem. 109. Quantitative Analysis	5	M.E. 82. Steam Engineering	3	M.E. 83. Steam Engineering Laboratory...	3
Mil. Sci. and Phys. Edu. or Nav. Sci.	+	Phys. Edu. 15. Hygiene.	2	Mil. Sci. and Phys. Edu. or Nav. Sci.	+
		Mil. Sci. or Nav. Sci.	+		

Junior

Chem. 121. Chemistry of Engineering Materials.	5	Chem. 122. Inorganic Chemical Industries...	5	Chem. 123. Organic Chemical Industries...	5
Chem. 131. Organic Chemistry	5	Chem. 132. Organic Chemistry	5	C.E. 92. Mechanics	3
E.E. 101. Direct Currents	4	E.E. 121. Alternating Currents	4	Comp. 100. Technical Composition	3
E.E. 102. Direct Currents Laboratory	2	E.E. 122. Alternating Currents Laboratory..	2	M.E. 55. Manufacturing Methods	1
				M.E. 54. Manufacturing Methods	1
				Electives	3

Senior

Chem. 181. Physical and Theoretical Chemistry.	5	Chem. 182. Physical and Theoretical Chemistry.	5	Chem. 173. Unit Operations	3
Chem. 171. Unit Operations	5	Chem. 172. Unit Operations	5	Chem. 178. Chemical Engineering Thesis....	1
Chem. 176. Chemical Engineering Thesis...	2	Chem. 177. Chemical Engineering Thesis....	2	Electives	11
M.E. 111. Machine Design	3	Electives	4		

The total number of credits for graduation must include Physical Education 15 for men, or Physical Education 4, 6, 8 or 10 for women.

Electives must in all cases be approved in advance by the head of the department.

CIVIL ENGINEERING

Leading to the Degree of Bachelor of Science in Civil Engineering

Freshman

(The same for all curricula. See above.)

Sophomore

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Physics 97. Engineering Physics	5	Physics 98. Engineering Physics	5	Physics 99. Engineering Physics	5
Math. 41. Engineering Calculus	3	M.E. 82. Steam Engineering	3	C.E. 59. Advanced Surveying	4
C.E. 95. Mechanics	3	C.E. 58. Transportation Engineering	4	E.B. 3. Gen. Economics.	3
C.E. 57. Transportation Surveying	4	C.E. 96. Mechanics	3	Comp. 100. Technical Composition	3
Mil. Sci. and Phys. Edu. or Nav. Sci.	+	Mil. Sci. and Phys. Edu. or Nav. Sci.	+	Phys. Edu. 15. Hygiene.	2
				Mil. Sci. or Nav. Sci.	+

Junior

C.E. 142. Hydraulics.... 5
C.E. 171. Structural Analysis 3
E.E. 103. Direct Currents 3
E.E. 104. Direct Currents Laboratory.. 1
Geol. 105. Petrology as Applied to Engineering 5
C.E. 143. Hydraulic Engineering 5
C.E. 172. Structural Analysis 3
C.E. 162. Materials of Construction 3
E.E. 123. Alternating Currents 3
E.E. 124. Alternating Currents Laboratory.. 1
E.B. 57. Business Law.. 3
C.E. 121. Roads and Pavements 3
C.E. 150. Sanitary Engineering 3
C.E. 173. Structural Analysis 3
C.E. 163. Materials—Timber and Steel..... 3

Senior

C.E. 175. Structural Design 4
C.E. 158. Sewerage and Sewage Disposal *or*
C.E. 123. Highway and Railway Economics... 3
C.E. 145. Hydraulic Machinery, *or*
C.E. 157. Reclamation.. 3
C.E. Group Requirements 3
Non-technical electives*. 3
C.E. 176. Structural Design 4
C.E. 123. Highway and Railway Economics, *or*
C.E. 158. Sewerage and Sewage Disposal..... 3
C.E. 157. Reclamation *or*
C.E. 145. Hydraulic Machinery 3
C.E. Group Requirements 3
Non-technical electives*. 3
C.E. 177. Structural Design 3
C.E. Group Requirements 3
Non-technical electives*. 9

*Non-technical electives (12 credits) must include Composition 102 or Speech 103.

C.E. group requirements must be satisfied by *approved* elections from the following advanced courses offered by the department of civil engineering:

	Credits
C.E. 109. Engineering Relations	3
C.E. 124. Highway Design	3
C.E. 128. Transportation Administration	3
C.E. 147. Hydraulic Power	3
C.E. 154. Sanitary Design	3
C.E. 155. Water Supply Problems	3
C.E. 166. Soil Mechanics	3
C.E. 167. Soil Mechanics	3
C.E. 181. Advanced Structures	3
C.E. 182. Advanced Structures	3
C.E. 183. Advanced Structures	4
C.E. 191, 193, 195. Special Senior Courses	3-5

Electives must in all cases be approved in advance by the head of the department.

COMMERCIAL ENGINEERING

Leading to the Degree of Bachelor of Science in Commercial Engineering

Freshman

(The same for all curricula. See above.)

Sophomore

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Physics 97. Engineering Physics	5	Physics 98. Engineering Physics	5	Physics 99. Engineering Physics	5
Math. 41. Engineering Calculus	3	Math. 42. Engineering Calculus	3	M.E. 83. Steam Engineering Laboratory	3
M.E. 81. Mechanism	3	C.E. 91. Mechanics	3	Comp. 100. Technical Composition	3
M.E. 82. Steam Engineering	3	E.B. 3. Gen. Economics.	3	C.E. 92. Mechanics	3
M.E. 53. Manufacturing Methods	1	M.E. 54. Manufacturing Methods	1	M.E. 55. Manufacturing Methods	1
Mil. Sci. and Phys. Edu. or Nav. Sci.	+	Phys. Edu. 15. Hygiene.	2	Mil. Sci. and Phys. Edu. or Nav. Sci.	+
		Mil. Sci. or Nav. Sci.	+		

Junior

E.E. 101. Direct Currents 4	E.E. 121. Alternating Currents 4	E.B. 110. Accounting Analysis and Control. 5
E.E. 102. Direct Currents Laboratory 2	E.E. 122. Alternating Currents Laboratory.. 2	C.E. 142. Hydraulics.... 5
E.B. 54. Business Law.. 3	E.B. 55. Business Law.. 3	Electives 5
E.B. 62. Principles of Accounting..... 5	E.B. 63. Principles of Accounting 5	
Electives 3	Electives 3	

Senior

M.E. 167. Engineering Materials 3	M.E. 111. Machine Design 3	M.E. 112. Machine Design 3
E.B. 154. Cost Accounting 5	E.B. 101. Scientific Management 5	E.B. 121. Corporation Finance 5
Electives 6	E.B. 103. Money and Banking 5	Speech 103. Extemporaneous Speaking 3
	†Comp. 102. English for Engineers 3	Electives 5

The total number of credits for graduation must include Physical Education 15 for men, or Physical Education 4, 6, 8 or 10 for women.

Electives must in all cases be approved in advance by the head of the department.

Not less than 17 elective credits shall be technical (engineering).

†Composition 101 may be substituted.

ELECTRICAL ENGINEERING

Leading to the Degree of Bachelor of Science in Electrical Engineering

Freshman

(The same for all curricula. See above.)

Sophomore

Autumn Quarter *Credits*	*Winter Quarter* *Credits*	*Spring Quarter* *Credits*
Physics 97. Engineering Physics 5	Physics 98. Engineering Physics 5	Physics 99. Engineering Physics 5
Math. 41. Engineering Calculus 3	Math. 42. Engineering Calculus 3	E.E. 109. Direct Currents 4
M.E. 81. Mechanism.... 3	M.E. 83. Steam Engineering Laboratory... 3	E.E. 110. Direct Currents Laboratory..... 2
M.E. 82. Steam Engineering 3	C.E. 91. Mechanics..... 3	C.E. 92. Mechanics..... 3
M.E. 53. Manufacturing Methods 1	M.E. 54. Manufacturing Methods 1	M.E. 55. Manufacturing Methods 1
Mil. Sci. and Phys. Edu. or Nav. Sci..... +	Mil. Sci. and Phys. Edu. or Nav. Sci..... +	Phys. Edu. 15. Hygiene. 2
		Mil. Sci. or Nav. Sci ... +

Junior

E.E. 111. Direct Currents 4	E.E. 161. Alternating Currents 6	E.E. 163. Alternating Currents 6
E.E. 112. Direct Currents Laboratory..... 4	E.E. 162. Alternating Currents Laboratory.. 4	E.E. 164. Alternating Currents Laboratory.. 4
Comp. 100. Technical Composition 3	C.E. 142. Hydraulics... 5	E.E. 152. Electrical Machine Design 3
M.E. 111. Machine Design 3		M.E. 112. Machine Design 3
M.E. 167. Engineering Materials 3		

Senior

E.E. 195. Electric Transients 3	E.E. Group..... 6	E.E. Group 6
E.E. 196. Electric Transients Laboratory. 4	E.B. 3. Gen. Economics. 3	Electives 9
E.E. 181. Vacuum Tubes 4	Electives 7	
E.E. 182. Vacuum Tubes Laboratory 2		
†Comp. 102. English for Engineers..... 3		

The total number of credits for graduation must include Physical Education 15 for men, or Physical Education 4, 6, 8 or 10 for women.

Electives must in all cases be approved in advance by the head of the department.

†Composition 101 may be substituted.

E.E. group requirements must be satisfied by elections from the following advanced courses offered in the electrical engineering department:

	Credits
E.E. 141. Illumination	3
E.E. 154. Design of Electrical Apparatus	4
E.E. 171. Electric Railways	4
E.E. 173. Central Stations	4
E.E. 175. Power Transmission	5
E.E. 183. Radio	5
E.E. 184. Radio-Telephone Transmitter Practice	2
E.E. 185. Telephone Transmission	5
E.E. 188, 190, 192. Research (each)	2 to 5
E.E. 191, 193. Advanced Circuit Theory (each)	3
E.E. 194. Seminar	5
E.E. 197. Seminar	5
E.E. 198. Advanced Electric Transients	2 to 5

MECHANICAL ENGINEERING

Leading to the Degree of Bachelor of Science in Mechanical Engineering

Freshman

(The same for all curricula. See above.)

Sophomore

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Physics 97. Engineering Physics	5	Physics 98. Engineering Physics	5	Physics 99. Engineering Physics	5
Math. 41. Engineering Calculus	3	Math. 42. Engineering Calculus	3	M.E. 83. Steam Engineering Laboratory	3
M.E. 81. Mechanism	3	C.E. 91. Mechanics	3	Comp. 100. Technical Composition	3
M.E. 82. Steam Engineering	3	E.B. 3. Gen. Economics	3	C.E. 92. Mechanics	3
M.E. 53. Manufacturing Methods	1	M.E. 54. Manufacturing Methods	1	M.E. 55. Manufacturing Methods	1
Mil. Sci. and Phys. Edu. or Nav. Sci.	+	Phys. Edu. 15. Hygiene	2	Mil. Sci. and Phys. Edu. or Nav. Sci.	+
		Mil. Sci. or Nav. Sci.	+		

Junior

E.E. 101. Direct Currents	4	E.E. 121. Alternating Currents	4	C.E. 142. Hydraulics	5
E.E. 102. Direct Currents Laboratory	2	E.E. 122. Alternating Currents Laboratory	2	†Comp. 102. English for Engineers	3
M.E. 123. Engines and Boilers	2	M.E. 111. Machine Design	3	M.E. 112. Machine Design	3
M.E. 151. Experimental Engineering	3	M.E. 124. Engines and Boilers	3	M.E. 153. Experimental Engineering	3
M.E. 105 Advanced Manufacturing Methods	1	M.E. 152. Experimental Engineering	3	M.E. 107. Production Planning	1
Electives	3	M.E. 106. Advanced Manufacturing Methods	1		

Senior

E.B. 57. Business Law	3	M.E. 114. Machine Design	2	M.E. 115 or 199. Steam Engine Design or Gas Engine Design	3
M.E. 113. Machine Design	2	M.E. 167. Engineering Materials	3	M.E. 184. Power Plants	5
M.E. 183. Thermodynamics and Refrigeration	5	M.E. 182. Heating and Ventilation	3	M.E. 195. Thesis	3
Electives	5	M.E. 198. Gas Engines	3	Electives	5
		Electives	4		

The total number of credits for graduation must include Physical Education 15 for men, or Physical Education 4, 6, 8 or 10 for women.

Electives must in all cases be approved in advance by the head of the department.

When practicable, it is recommended that thesis be taken in the winter quarter.

†Composition 101 may be substituted.

DESCRIPTION OF COURSES

For description of courses offered by the College of Engineering, see Departments of Instruction section, pages 217, 233, 235, 254, 298.

SCHOOL OF FISHERIES

(See College of Arts and Sciences, page 101.)

COLLEGE OF FORESTRY

The College of Forestry, established in 1907, has exceptional advantages, offering splendid opportunities for field work in all phases of scientific and applied forestry. Washington is the leading lumber producing state in the country, and Seattle is in the center of the timber industry of Washington and the Northwest. In its many sawmills, wood-working industries and plants manufacturing woods and mill machinery, the student has unrivaled opportunities for studying wood utilization.

Buildings

The main forestry building, Alfred H. Anderson Hall, contains the lecture rooms, student laboratories, exhibition rooms, library, reading and Forest Club rooms and an assembly hall seating 250. Covering a ground area of 7,500 feet, it has three full floors and a large draughting room on the fourth floor. The appointments are unusually complete. This building was presented to the University by Mrs. Agnes H. Anderson at a cost of $260,000 to promote the cause of forestry in the State of Washington. The Forest Products Laboratory, which was erected by the University in 1921 at a cost of $85,000, is a modern two-story building designed for research work in forest products. A covered arcade connects this building with Alfred H. Anderson Hall.

Charles Lathrop Pack Demonstration Forest

A tract of more than 2,000 acres located at LaGrande, Washington, 69 miles from Seattle, and adjoining the Rainier National Park Highway, is a gift of the Charles Lathrop Pack Forestry Trust. The tract contains approximately 25,000,000 feet of timber and is most admirable for experimental and demonstration purposes.

It contains a resident manager's residence, an assembly hall for instruction in the spring and summer quarters, a dining hall with cook's quarters, frame cabins for housing the students, and instructors' quarters. The Demonstration Forest also has its own saw mill of about ten thousand feet B.M. daily capacity, a planer and a shingle mill of commercial size.

The Lee Field Laboratory. This is a tract of 120 acres partially covered with a second growth stand of approximately 40-year-old timber located at Maltby. The tract was donated to the College of Forestry by Ingie Marie Lee Hodgins, Edna Mae Lee Engle and George O. Lee, in memory of their parents, the late Mr. and Mrs. O. H. Lee. As the tract can be reached by auto in less than one-half hour from the University campus it is especially valuable in connection with the regular laboratory instruction in the courses in silviculture and mensuration, and for experimental work.

Field Instruction and Summer Work

Much of the instruction in forestry is given in the field, in nearby forests, logging camps, saw mills, woodworking plants, and plants that manufacture equipment. The spring quarter of the sophomore year, or the following summer quarter, is spent at the Charles Lathrop Pack Demonstration Forest, where a completely equipped camp has been provided. This work enables

the student to correlate theoretical class room instruction with its application in the field. During the spring quarter of the senior year, the students in forest management and logging engineering devote their entire time to intensive field studies. Seven or eight weeks are used for collecting the basic data and the remainder of the quarter in the preparation of the final reports.

Students in forestry are urged to spend their summer vacations in some line of practical work connected with the forest industries. The college cooperates with the U. S. Forest Service, National Park Service, other federal agencies and the industries in placing students and graduates in the positions for which they are best fitted.

Laboratories

Well equipped laboratories in dendrology, mensuration, timber physics, wood technology, micro-technique, wood preservation, kiln drying, and plywood are available. Laboratory work is extensively supplemented by studies in the field and at local commercial operations.

Organizations

All forestry students are eligible to membership in the Forest Club. It aims to promote acquaintance and good fellowship among students and instructors; to keep in touch with everyday problems in forestry and lumbering, and the leaders in these industries; to interest the public in the college and in the forestry and lumbering problems of the State. A technical magazine, *The Forest Club Quarterly,* is published by the club.

Xi Sigma Pi, national forestry honor society, was founded in 1908 at the University of Washington.

Admission and Expenses

For information concerning University fees, expenses, and complete admission requirements, see pages 49-86.

Entrance Requirements

For admission to the College of Forestry, the student must present 12 units* of high school credit, belonging normally to the last three years of the high school curriculum. At least six of these units must be in academic subjects and should include the following:

Advanced algebra	½ unit
Plane geometry	1 unit
**Modern foreign language	second unit of one

The College of Forestry further recommends that prospective students include a year of physics in their high school course of study.

Qualifying examinations are required in advanced high school algebra and elementary composition. Applicants who fail in these examinations must register in Math. 1 and Comp. A without credit.

In satisfying entrance requirements with college courses, a minimum of ten credits is counted as the equivalent of the entrance unit.

*A "unit" is applied to work taken in the high school. 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 school year of thirty-six weeks.

**The first unit may be completed in the ninth grade as a regular part of the junior high school curriculum. As such it does not carry entrance credit. If taken in the senior high school, it will count as a part of the 12 units required.

Scholarship Requirements

Freshmen in Forestry who fail to earn 1.8 times as many grade points as registered hours during their first two quarters in residence are reported to their dean for appropriate action. Appropriate action may involve dismissal from the University for one or two quarters or permission to remain in the University upon probationary status.

Similar action will apply at the end of the third quarter of the freshman year and at the end of any succeeding quarter for those who fail to earn 2.0 times as many grade points as registered hours. Grades in Military Science and Physical Education are not considered in determining grade point averages.

Degrees

Undergraduate Work. For the degree of bachelor of science in forestry the student must complete, in addition to required subjects outlined in the curriculum, enough electives to make a total of 180 credits, exclusive of the basic military or naval science or physical education. Electives may be selected from forestry, lumbering, engineering or the botanical, chemical, zoological, geological or economic sciences, the subjects to be approved by the student's class adviser. Ordinarily not more than 25 elective credits in any department other than forestry will be accepted for graduation.

Five-Year Course. In order to enable students to obtain a broader choice of electives in the liberal subjects as well as to secure a better opportunity for a minor in one of the pure sciences or in economics, provision has been made for a five-year undergraduate course. Students completing this course also will be awarded the degree of bachelor of science in forestry.

Graduate Work. Three advanced degrees are offered to students who have received the bachelor's degree at this University or other institutions of equal rank, and have a satisfactory knowledge of the fundamental sciences. The candidate for the degree of master of forestry (M.F.) must earn 225 credits at this University, of which at least 78 are in approved technical forestry subjects. The candidate for the degree of master of science in forestry (M.S.F.) must present a minor* in one or two subjects in science. In addition to these requirements, the candidate for either degree must present a thesis embodying results of independent research and pass an oral examination open to all members of the faculty. Only grades of "A" and "B" can be counted in graduate work.

Graduate students will be received as candidates in the College of Forestry for the degree of doctor of philosophy. Subject to the requirements of the Graduate School, advanced courses will be provided and announced as the need arises.

For more detailed information on graduate work, see Graduate School bulletin.

Special Opportunities for Advanced Work

The location of the University and the excellent physical equipment of the College afford special advantages to graduate students in forestry. The advanced courses include silviculture, management, wood technology, timber physics, wood preservation, advanced forest products, the business of lumbering, logging engineering, and research. A graduate from a college of forestry giving work equal in rank to that given at this University may complete the requirements for the

*A minor for the M.S.F. degree requires the completion of 12 to 15 credits of advanced work based on 20 to 25 hours of preparation in the same field.

master's degree in one year. Graduates from other institutions of equal rank which give no courses in technical forestry may complete the required work in two years, if they have had training in the fundamental sciences, mathematics and surveying.

Scholarships and Prizes

The Charles Lathrop Pack Prize. The late Charles Lathrop Pack, for many years president of the American Tree Association, provided an annual prize for the best essay by a student majoring in forestry. The subject must be chosen with reference to its value in interesting the general public in forestry matters.

Xi Sigma Pi Honor Roll. The University of Washington chapter of Xi Sigma Pi, national forestry honor fraternity, has provided a mounted silver scroll, upon which the name of the freshman member of the Forest Club attaining the highest scholastic average is inscribed yearly.

The Agnes Healy Anderson Forestry Trust Fund. The income from this fund, which was established in 1929, is chiefly available for graduate research fellowships awarded on a competitive basis. A limited amount is available for loans to needy students and for scholarships. The fund is thus divided into two parts, the Agnes Healy Anderson Research Fellowship Fund and the Agnes Healy Anderson Scholarship and Loan Fund.

Curriculum

The curriculum of the College of Forestry is organized to give the student a broad general training in his first two years' attendance with opportunity for specialization in the two final years. Enough elementary technical work is included in the lower division to give the student definite preparation for some practical field of work by the end of his sophomore year.

A fair degree of specialization can be had in the four-year undergraduate course, but a year of graduate work is advised for more explicit specialization. Work is offered for thorough specialization in (1) forest management, from the standpoint of both public and private forest holdings; (2) forest engineering; (3) lumber manufacturing; (4) forest products; (5) forestry sciences. Upon beginning work in the upper division, autumn quarter junior year students must elect to follow one of these specialties.

Specialization in forest pathology, forest entomology, recreation, range management, or any other lines into which a broad training in forestry enters, is provided under the head of forest sciences.

Credit in the requirement in composition is tentative. Student reports are reviewed during sophomore, junior, and senior years by the instructor in English. Any student whose work falls below standard is required to take additional work in composition.

Choice of Electives. In election of studies students should follow the sequence of subjects as outlined in the curriculum. Deviations from the prescribed order will not be allowed by class advisers unless such deviation is imperative.

LOWER DIVISION

First Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Bot. 10. Foresters'.....	4	Bot. 11. Foresters'.....	4	For. 1a. Dendrology....	3
For. 2. Introduction....	2	For. 3. Introduction....	2	For. 4. Protection.....	3
Math. 21. Trigonometry.	5	English 1. Composition..	5	Math. 13. Statistical Methods	5
Physics 1 or 4. General.	5	Physics 2 or 5. General.	5	Physics 3 or 6. General.	5
Military or Naval Science and Physical Education +		Military or Naval Science and Physical Education +		Military or Naval Science and Physical Education +	

Second Year

For. 1b. Dendrology....	3	For. 60. Mensuration...	4	*Sophomore Field Trip**	
For. 15. General Lumbering	5	G.E. 7. Engineering Drawing	3	For. 40. Silviculture....	2
Chem. 1 or 21. General.	5	Chem. 2 or 22. General.	5	For. 62. Mensuration...	6
Elective	3	For. 121. Silvics.....	3	C.E. 56. Forest Surveying	8
Military or Naval Science and Physical Education +		Military or Naval Science and Physical Education +		Military or Naval Science and Physical Education +	

*Owing to the impossibility of accommodating more than 50 students at the Pack Forest at one time enrollment will be limited to that number and the course will be repeated during the summer quarter.

The total number of required credits in Physical Education must include P.E. 15.

UPPER DIVISION

Beginning with the upper division the student will, with the approval of his faculty adviser, elect to follow one of the specialties in forestry. In registering for upper division courses he must include all electives required as prerequisites for the advanced specialized courses. (See prerequisites under description of courses, pages 267-270.)

FOREST MANAGEMENT CURRICULUM

Third Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
For. 10. Wood Technology	3	For. 11. Wood Structure	3	E.B. 3. Gen. Economics	3
For. 115. Protection.....	3	For. 158. Utilization....	5	For. 105. Wood Preservation	3
For. 122. Silvicultural Methods	5	For. 140. Forest Construction	4	Bot. 111. Forest Pathology	5
For. 104. Timber Physics	5	Elective 3-5		Elective	5

Fourth Year

For. 119. Forest Administration	3	For. 126. Forest Econom.	4	For. 153. Senior Field Trip, Management Students 16	
For. 151. Forest Finance	4	For. 152 Forest Organization	4		
For. 185. Forest Engineering	5	For. 171. Forest Geography	4		
Elective 3-5		Elective	4		

LOGGING ENGINEERING CURRICULUM

Majors in Logging Engineering will elect C.E. 57 preferably autumn quarter senior year, For. 186 winter quarter, and For. 187 spring quarter senior year; the latter in place of For. 153. In other respects the curriculum is the same as outlined for Forest Management.

FOREST PRODUCTS CURRICULUM

Third Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
For. 10. Wood Technology	3	For. 11. Wood Structure	3	E.B. 3. Gen. Economics.	3
E.B. 62. Accounting Principles	5	For. 158. Forest Utilization	5	Bot. 111. For. Pathology	5
M.E. 82. Steam Engineering	3	Elective	8	For. 105 Wood Preservation	3
For. 104. Timber Physics	5			For. 106. Wood Preservation Laboratory	2
				Elective	3

Fourth Year

For. 183. Milling	5	For. 126. For. Economics	4	For. 184. Manufacturing Problems	5
E.B. 57. Business Law	3	For. 171. For. Geography	4	For. 189. Wood Pulp	5
Elective	8	For. 188. Kiln Drying	3	Elective	6
		Elective	5		

GRADUATE YEAR

The following subjects are primarily for graduate students. Seniors will be allowed to elect them only upon recommendation of the dean and the instructor concerned. With the exception of the thesis, none of the subjects, strictly speaking, is required, but the student will elect all those belonging to one specialty as determined on consultation with his faculty adviser. A sufficient number will have to be taken to fulfill the requirements for the master's degree. Nine credits only will be allowed for total thesis credit.

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
For. 202. Thesis	3-6	For. 202. Thesis	3-6	For. 202. Thesis	3-6
For. 204. Forest Management Plans	3	For. 211. Graduate Studies	3-5	For. 212. Graduate Studies	3-5
For. 203. Advanced Wood Preservation	3	For. 214. Research	3-5	For. 215. Research	3-5
For. 210. Graduate Studies	3-5	For. 220. Advanced Forest Engineering	5		
For. 213. Research	3-5	For. 221. History and Policy	3		

FIVE-YEAR COURSE

Students are advised to look forward to a five-year course in preparation for the degree of bachelor of science in forestry. Progress in forestry is rapid, and competition for the higher places is becoming keen. Practically all of the better forestry colleges are looking forward to a five-year requirement. Five years will allow ample provision for a minor in one of the sciences, in engineering, or in economics, and a broader selection of the more purely cultural subjects. A limited amount of general election is advised, but the student should elect at least 15 credits in a field basic to his specialty so as to fulfill the requirements of a minor in one of the non-forestry groups. Five groups for undergraduate election are advised as follows:

1. Engineering: continuation of mathematics; E.B. 57; M.E. 82 and 85; G.E. 1 and 2; C.E. 58.
2. Pathology: Bot. 140, 141, 142, 151.
3. Physiology: Bot. 143, 144, 145.
4. Entomology: Zool. 1, 2, 111, 112.
5. Economics: E.B. 1-2, 57, 100.
6. Chemistry: 23, 111, 131, 132, 133.

DESCRIPTION OF COURSES

For description of courses offered by the College of Forestry, see Departments of Instruction section, pages 267-270.

GRADUATE SCHOOL

SPECIAL NOTE: The bulletin of the Graduate School gives courses and specific department requirements for advanced degrees.

The Aims of Graduate Study. The principal aims of graduate study are the development of intellectual independence through cultivation of the scientific critical and appreciative attitude of mind, and promotion of the spirit of research. The graduate student is therefore thrown more largely upon his own resources than the undergraduate, and must measure up to a more severe standard. The University is constantly increasing the emphasis on graduate work in order that it may be a strong center for advanced study.

Organization. The Graduate School was formally organized in May, 1911. The graduate faculty consists of members offering courses primarily designed for graduate students.

Fees

For detailed information concerning general fees and expenses, see pages 58-66.

Persons Registered for Thesis Only (must be certified by the Dean of the Graduate School). Candidates for the master's degree who have paid the appropriate fee charges for at least three quarters of graduate work at the University of Washington, and who have completed their course work, and candidates for the doctorate who have paid the appropriate fee charges for at least nine quarters of graduate work at the University of Washington and who have completed their course work, are permitted to continue their work in residence for the completion of their theses upon payment of the incidental fee of twelve dollars and fifty cents ($12.50) and any laboratory breakage charge incident thereto. A.S.U.W. membership fee optional.

Graduate Fee. Each recipient of a higher degree pays a graduation fee of five dollars ($5).

Publishing Fund. Each recipient of the degree of doctor of philosophy contributes fifty dollars ($50) to the publishing fund.

Each recipient of the master's degree contributes five dollars ($5) to the publishing fund.

Thesis Fee. Each such recipient pays a fee of two dollars ($2) for the binding of one copy of his thesis.

Library Facilities

The University general library contains 349,814 volumes (June, 1939), and receives virtually all of the publications of learned societies. The Law School Library contains 84,759 volumes (June, 1939). The Seattle Public Library, containing about 530,283 volumes (July 31, 1939), is open to students without charge.

Collections of special significance are mentioned in the departmental announcements.

Special Facilities

Bailey and Babette Gatzert Foundation for Child Welfare. On December 21, 1910, this foundation was established by a gift to the University of $30,000. The purpose of the foundation is (1) to conduct a laboratory for the mental and physical examination of children to determine their individual defects and aptitudes and, in accordance with the results of the examination, to suggest the best means of education and treatment; (2) to assist in establishing the child welfare agencies and child study laboratories throughout the state, and (3) to carry on research in child psychology.

The Alice McDermott Memorial Fund. The late Mrs. Josephine P. McDermott made provision in her will for the establishment of the Alice McDermott Memorial Fund at the University of Washington. The amount of this bequest is $100,000, available for one or both of the following purposes:

1. Research work in or in connection with the University of Washington tending to promote the prevention of tuberculosis.

2. The purchase of radium for research work in connection with disease or for actual treatment thereof.

Engineering Experiment Station. The purpose of the station is to aid in the industrial development of the state and nation by scientific research and by furnishing information for the solution of engineering problems.

The scope of the work is two-fold:

1. To investigate and to publish information concerning engineering problems of a more or less general nature that would be helpful in municipal, rural and industrial affairs.

2. To undertake extended research and to publish reports on engineering and scientific problems.

Every effort will be made to co-operate effectively with professional engineers and the industrial organizations in the state. Investigations of primary interest to the individual or corporation proposing them, as well as those of general interest, will be undertaken through the establishment of fellowships.

For administrative purposes, the work of the station is organized into eight divisions: (1) forest products, (2) mining, metallurgy and ceramics, (3) aeronautical engineering, (4) chemical engineering and industrial chemistry, (5) civil engineering, (6) electrical engineering, (7) mechanical engineering, (8) physics standards and tests.

The University of Washington Oceanographic Laboratories. The University of Washington Oceanographic Laboratories are well situated for the study of many of the problems of the sea, biological, physical and chemical. In this region the marine flora and fauna are very extensive and diversified, and extreme physical and chemical conditions may be found over a relatively small area.

Research and seminars conducted by members of the staff are open to properly qualified graduate students.

The Graduate School of Social Work. This school accepts a limited number of graduate students each year to complete the social service curriculum. Applicants are selected who hold a baccalaureate degree from an accredited college, and who show, by academic record and by character and maturity, aptitude for social work. Application should be made directly to the Graduate School of Social Work and must be filed before June 1.

(For detailed information concerning the Graduate School of Social Work, see pages 128-130.)

Laboratories

The University has well-equipped laboratories for advanced work in anatomy, bacteriology, botany, ceramics, chemistry, civil, chemical, electrical, mechanical and mining engineering, fisheries, forestry, geology, metallurgy, pharmacy, physics, psychology and zoology.

Graduate Fellowships and Scholarships

See pages 72-77.

Admission

Three classes of students are recognized in the Graduate School:

1. Candidates for the master's degree.
2. Candidates for the doctor's degree.
3. Students not candidates for a degree.

Admission. A graduate of the University or any other institution of good standing will be admitted to the Graduate School. Before being recognized as a candidate for a degree, however, a student must be approved by a committee appointed by the dean of the Graduate School, which shall also constitute the advisory committee to oversee the student's subsequent work. Unless the committee is already sufficiently acquainted with the candidate's capacity and attainments, there shall be a conference of the committee and the candidate, the purpose of which is two-fold:

(a) To determine whether the student has the quality of mind and the attitude toward advanced work which would justify his going on for an advanced degree.

(b) To satisfy the major and minor departments and the graduate council that the student has the necessary foundation in his proposed major and minor subjects. If he lacks this foundation, he will be required to establish it through undergraduate courses or supervised reading.

If the student is from a college or university which falls below a satisfactory standard in curriculum, efficiency of instruction, equipment or requirements for graduation, he may be required to take other undergraduate courses in addition to those required as a foundation in the major and minor subjects.

As soon after matriculation as feasible a candidate for an advanced degree must file wth the dean of the Graduate School an outline of his proposed work, on a blank provided for that purpose. This blank is submitted to the advisory committee for acceptance or modification. When it has received approval and the student has been notified, he will be regarded as a candidate for a degree.

Scholarship. A student shall be dropped from the Graduate School when, in the opinion of the dean and the departments concerned in his training, his work does not justify his continuance.

Students on the Staff. Assistants, associates, or others in the employ of the University are normally permitted to carry a maximum of six hours of graduate work if full-time employees, and a maximum of eleven hours if half-time employees. The same regulation applies to teachers in the public schools.

Graduate Study in the Summer. Many departments offer graduate courses during the summer quarter, but these are addressed primarily to candidates for the master's degree. Candidates for the doctorate are in general encouraged to devote the summer to work upon the thesis.

DEGREES

The Doctor's Degree

Doctor of Philosophy. Graduate students will be received as candidates for the degree of doctor of philosophy in such departments as are adequately equipped to furnish the requisite training. This degree is conferred only on those who have attained proficiency in a chosen field and who have demonstrated their mastery by preparing a thesis which is a positive contribution to knowledge.

The requirements for the degree of doctor of philosophy are as follows:

1. At least three years of graduate work, of which not less than one undivided academic year must be spent in residence at the University of Washington. If a candidate is otherwise engaged in any regular employment, a correspondingly longer period of study will be required. Before being recognized as a candidate for the degree, a student must be approved by a committee as provided above.

2. Completion of courses of study in a major and one or two minor subjects. This requirement as to the number of minors, however, may in exceptional cases be modified by action of the Graduate Council, making it possible for the candidate to offer more than two minors, or no minor at all. What subjects may be offered as minors shall be determined by the major department with approval of the Graduate Council. Three times as many grade points as credits must be earned on the program for an advanced degree, the grade of "S" being used to indicate satisfactory work in a hyphenated course so far as the course has progressed, such work not to be counted toward a major or minor until the final examination.

These courses of study cover at least two years of work. The work of the first year is virtually identical with that for the master's degree; the work of the second year is of still more advanced character. Not earlier than the end of the second year and at least a year before the time when the student expects to take the degree the major and minor departments, supplemented by a representative from the Graduate Council, shall submit the student to a careful oral and written examination (see *The Qualifying Examination* below).

3. The preparation of a thesis, as stated above, embodying the results of independent research. The thesis may properly be initiated in the second year, and should occupy the greater part of the third year. If the thesis is of such a character, or falls in such a department, that it requires library or laboratory facilities beyond the resources of the University, the student will be required to carry on his investigation at some other university, at some large library, or in some special laboratory. This thesis must be approved by a committee appointed by the major department of which the instructor in charge of the thesis shall be a member.

4. Examinations as follows:

The Qualifying Examination. An oral, or written, or oral and written examination covering the general fields and the specific courses in the major and minor fields. In so far as the examination is oral, it shall be before a committee appointed by the dean of not less than three representatives of the major department, not less than one representative of each minor department, and a representative of the Graduate Council. The qualifying examination will normally be taken no less than two quarters before the final examination.

The Final Examination. An oral, or oral and written examination, before the same committee as above. If the qualifying examination was in all respects satisfactory, the final examination shall be on the field of the thesis and such courses as were taken subsequent to the qualifying examination. If the

qualifying examination did not meet with the clear approval of the committee, the candidate's entire program, or such parts thereof as may have been designated by the committee, shall be subjected to review.

If there is a division of opinion in the committee in charge of either examination, the case shall be decided by the Graduate Council, with right of appeal to the Graduate Faculty.

5. Evidence of a reading knowledge of scientific French and German and of such other languages as individual departments may require. Certificates of proficiency in these languages, based upon examinations given at the University of Washington, must be filed with the dean not less than three months before the qualifying examination. Only in rare cases shall the requirement of a reading knowledge of scientific French and German be waived, and then only when, in the judgment of a council, the substitution for these languages will be to the advantage of the student's training.

6. Two copies of the thesis in typewritten form (or library hand) shall be deposited with the librarian for permanent preservation in the University archives, at least two weeks before the date on which the candidate expects to take the degree. Printed instructions for the preparation of thesis manuscripts are available at the library. One copy shall be bound at the expense of the candidate. At the same time a digest of the thesis, not to exceed 3000 words, must be filed in the office of the Graduate School.

The thesis, or such parts thereof, or such a digest as may be designated by the council, shall be printed. The candidate shall contribute $50 to the publishing fund for theses, for which he shall receive 50 copies of his thesis if it is printed entire or 50 copies of a digest of his thesis. From this fund the library is provided with 400 copies.

7. A statement certifying that all courses and examinations have been passed and that the thesis has been accepted and properly filed in the library shall be presented to the dean at least one week before graduation. This statement must bear the signatures of all major and minor instructors in charge of the student's work, and of the committee appointed by the major department to pass on the thesis.

The Master's Degree

Master of Arts. The degree of master of arts implies advanced liberal training in some humanistic field, gained through intensive study of one of the liberal arts supplemented by study in one or two supporting subjects. This detailed study culminates in a thesis which, if not an actual contribution to knowledge, is concerned with the organization and interpretation of the materials of learning. Creative work of a high quality may be offered in lieu of a thesis.

Master of Science. The degree of master of science implies training similar to the above in some province of the physical or biological sciences. The thesis for this degree, however, must be an actual contribution to knowledge.

The requirements for these degrees are as follows:

1. At least three full quarters or their equivalent spent in undivided pursuit of advanced study. If a candidate has done graduate work elsewhere, his program may be slightly less exacting, but this work must pass review in the examination, and shall not reduce the residence requirement at this University.

2. Completion of a course of study in a major and one or two minor subjects and of a thesis which lies in the major field. The work in the major and minor subjects shall total not less than 36 course hours of which 24 are usually in the major. The thesis normally counts for 9 hours in addition to the course work and lies in the major field. Three times as many grade points as credits

must be earned on the program for an advanced degree, the grade of "S" being used to indicate satisfactory work in a hyphenated course so far as the course has progressed, such work not to be counted toward a major or a minor until the final examination.

The requirement of a minor or minors may be waived, but only on recommendation of the major department and with the consent of the Graduate Council.

A reading knowledge of an acceptable foreign language is required for the degrees of master of arts and master of science. These examinations are given approximately three weeks before the end of the autumn, winter and spring quarters, and about two weeks before the end of each summer term. Students are responsible for acquainting themselves at the Graduate School office with the exact dates.

No work in the major subject may be counted toward the master's degree until the candidate has complied with the departmental requirements as to previous work in that subject.

Elementary or lower division courses may not count toward the minor requirement, and teachers' courses may not count toward either the major or minor requirements.

3. The preparation of a thesis, as defined above.

4. An oral, or written, or oral and written examination, given by a committee appointed by the head of the major department, including so far as feasible, all the instructors with whom the student has worked. If division of opinion exists among the examiners, the case shall be decided by the Graduate Council, with right of appeal to the Graduate Faculty.

5. The candidate's thesis shall be in charge of the instructor in whose field the subject falls, and it must be approved by a committee of the major department, of which the instructor in charge shall be a member. If the committee is divided in opinion, the case shall be decided by the Graduate Council, with right of appeal to the Graduate Faculty. At least two weeks before the date on which the candidate expects to take the degree, two copies of the thesis in typewritten form or printed form (or library hand, in case the thesis is of such a character that it cannot be typewritten) shall be deposited with the librarian for permanent preservation in the University archives. At the same time a digest of the thesis, not to exceed 1000 words, must be filed in the office of the Graduate School. The thesis must meet the approval of the librarian as to form, printed instructions for the preparation of thesis manuscript being available at the library. The cost of binding for one copy must be deposited with the thesis.

6. A statement certifying that all courses and examinations have been passed, and that the thesis has been accepted and properly filed in the library, shall be presented to the dean at least one week before graduation. This statement must bear the signatures of all instructors in charge of the student's work, and of the instructor in charge of the thesis.

Master of Arts and Master of Science in Technical Subjects. The degrees of master of arts and master of science are given in the following technical subjects: chemical engineering, civil engineering, electrical engineering, mechanical engineering, ceramic engineering, coal mining engineering, geology and mining, metallurgy, metallurgical engineering, mining engineering, forestry, pharmacy, physical education, and home economics. These degrees are designed for students who have taken the corresponding bachelor's degrees in technical subjects. In other respects, the requirements are essentially the same as those for the degree of master of arts and master of science. (See departmental write-ups.)

Master's Degree in Technical Subjects. The master's degree is given in the following technical subjects: economics and business, education, fine arts,

forestry and music. The requirements for these degrees are essentially the same as those for the degrees of master of arts and master of science, with the exception that all the work is in the major. (See departmental write-ups.)

All candidates for advanced degrees must attend the Commencement exercises to receive their degrees in person, unless excused by formal petition to the Dean of the Graduate School.

Graduate Courses

For description of courses, see Departments of Instruction section, page 217.

SCHOOLS OF HOME ECONOMICS, JOURNALISM, AND SOCIAL WORK

(See College of Arts and Sciences, pages 107, 112, 128.)

SCHOOL OF LAW

General Statement. The School of Law was established in 1899. It is a member of the Association of American Law Schools organized in 1900 to set and maintain high standards of legal education, and comprising the leading law schools of the country. The School of Law is approved by the Council on Legal Education and Admission to the Bar of the American Bar Association.

The object of the School of Law is to provide a thorough training in the law and to prepare students for practice in any state or jurisdiction where the Anglo-American legal system prevails. Particular attention is given to the statutes, the special doctrines of law, and the rules of practice that obtain in the State of Washington. The faculty is composed of eleven resident professional law teachers, who devote their entire time and energy to teaching, two lecturers in law, who are active practitioners at the Seattle bar, and one lecturer in accounting, who is a practicing Certified Public Accountant, as well as an instructor in the College of Economics and Business. The courses in practice are taught by men experienced at the Washington bar.

The Law Building. The School of Law occupies a separate building designed exclusively for Law School use.

The Library. The University law library contains 84,759 (June, 1939) 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, and all legal periodicals published in the English language are received.

State and United States Courts. The School of Law is located within a few minutes' ride of both the Federal and state courts sitting in Seattle. The United States District Court is in session and trying cases almost constantly, and the United States Circuit Court of Appeals for the Ninth Circuit holds a session in Seattle each autumn. The superior court for King county with fifteen departments, the justice courts, the municipal police court and the juvenile court are in session in Seattle throughout the school year, and enable the student to witness the trial of actual cases. The Supreme Court of the State of Washington is situated within comparatively easy reach at Olympia and affords the student casual opportunity of hearing the argument of state appeals.

General Information

Quarter System. The quarter system prevails in the Law School. Each quarter is approximately 12 weeks in length. Credit is given usually on the basis of one credit representing a recitation or lecture one hour a week per quarter. The total hour value of courses prevailing in the schools of the Association of American Law Schools has been generally retained—*e.g.,* courses formerly given two hours a week per semester are given three hours a week per quarter under the quarter system.

Admission to the Bar. The University of Washington School of Law is by law the standard of approved law schools for admission to the bar of this State. Admission to the Washington Bar, however, is conditioned upon passing a state bar examination.

Instruction in Other Departments. Law students may elect studies, for which they are prepared, in other departments of the University without

charge, provided, that such election does not interfere with their law studies. Before registering in other departments, the student must obtain written permission from the dean of the Law School.

Expenses. For detailed information concerning University fees and law library fee, see pages 58-66.

Admission

Students may not register until complete credentials from all schools formerly attended have been received and evaluated. It is recommended that admission credentials be submitted by July 15. The student who delays submission of his credentials handicaps himself unnecessarily. Owing to the congestion of correspondence during the weeks immediately preceding the opening of the quarter, it is often impossible to reply at once to letters and applications sent in during this period.

Regular Students. Admission to the School of Law is on a selective basis. In passing upon applications for admission, the following factors are taken into account: amount and character of pre-legal work, scholarship in pre-legal work, and special aptitude and fitness as evidenced by legal aptitude examination and personal interview with the dean of the Law School. Students contemplating entering the School of Law should fill in and submit application blanks, copies of which may be obtained from the dean's office.

Students transferring from other colleges and law schools should settle the question of their admission in advance. In all cases, complete transcripts of college and law work should be sent to the dean's office.

The following are the minimum requirements for admission:

(a) Candidates for the bachelor of laws degree must either (1) hold the degree of bachelor of arts or bachelor of science from the University of Washington, or an equivalent degree from a college or university of approved standing, or (2) have completed three years of college work, 135 quarter credits (exclusive of credits earned in non-theory courses in military or naval science, hygiene, domestic arts, physical education, vocal or instrumental music and similar courses) with a scholarship average of 2.50. Of the three years of academic work required for admission, not more than one year may be done by extension.

(b) Candidates for the bachelor's degree in arts or science or the degree of bachelor of arts in economics and business and the bachelor of laws degree under the combined curricula must have completed three years of college work, 138 quarter credits (exclusive of credits earned in non-theory courses in military or naval science, hygiene, domestic arts, physical education, vocal or instrumental music and similar courses), including the group requirements of the college concerned, with a scholarship average of 2.50.

Special Students. No person will be admitted as a special student in law unless he is 23 years of age and his general education is such as to entitle him to admission to the first year class in the University of Washington. Special students are admitted only in exceptional cases upon vote of the faculty and the number shall not exceed ten per cent of the average number of students admitted by the school as beginning regular law students during the two preceding years.

Attention is called to the fact that in order to be eligible to take the Washington State Bar examination, the student must have completed two years of college work prior to beginning his professional law study. Students intending to qualify for the Washington State Bar examination are, therefore, advised not to petition for admission as special students.

Degrees and Requirements for Graduation

Three-Year Course. The degree of bachelor of laws (LL.B.) will be conferred on all students who have entered the University of Washington Law School or another approved law school prior to the autumn quarter of 1938, and who thereafter complete 125 credits in professional law subjects, including the required courses and who maintain over their entire law record a scholarship average of 2.00 grade points. The curriculum applicable to such students appears hereafter under "Courses of Study" as the "Three-Year Curriculum," see pages 289-291.

Four-Year Course. Effective with the class which entered the Law School in the autumn quarter of 1938, the course leading to the bachelor of laws degree became a four-year course. In respect, therefore, to students commencing their law study in or after the autumn quarter of 1938, the degree of bachelor of laws will be conferred upon those who complete 168 credits in professional law subjects, including the required courses and who maintain over their entire law record a scholarship average of 2.00 grade points. The curriculum applicable to such students appears hereafter under "Courses of Study" as the "Four-Year Curriculum," see pages 291-293.

Honors. Those who maintain a uniformly distinguished record for excellence in their courses will receive the degree with honors.

Combined Curricula in Arts, Sciences, and Law. It is possible for students to obtain the bachelor's degree in arts or science or the degree of bachelor of arts in economics and business and the bachelor's degree in law in seven years (six years in the case of students entering the University of Washington Law School or another approved law school prior to the autumn quarter of 1938). To do this, the student must first complete, with a grade point avearge of 2.50, the three years' work in arts and sciences or in economics and business, a total of 138 academic credits, including the group requirements of the college. (For details of these requirements see the sections on the College of Arts and Sciences or the College of Economics and Business.) The student will then be admitted to the School of Law and upon completion of the prescribed first year's work in law (42 credits) will be granted the college degree. Upon completing the remaining three years of professional law work, with the required scholarship average, he will be granted the bachelor of laws degree.

Students from other institutions entering this University with advanced standing may take advantage of this combined seven-year course, provided they are registered in the College of Arts and Sciences or the College of Economics and Business for at least one full year of work, and earn at least 45 credits in the University before entering the School of Law. This privilege will not be extended to normal school graduates attempting to graduate in two years, nor to undergraduates of other colleges who enter this University with the rank of senior.

Residence Requirement. The candidate for graduation must spend twelve (nine in respect to students entering the University of Washington Law School or another approved law school prior to the autumn quarter of 1938) quarters or their equivalent in residence at a law school which is a member of the Association of American Law Schools. The three quarters immediately preceding the conferring of the law degree must be spent in residence at the University of Washington Law School.

Advanced Standing. If, in addition to satisfying the entrance requirements for regular standing in the Law School, a student has earned credits by regular attendance for at least one academic year of not less than eight months in another law school which is a member of the Association of American Law Schools, he will ordinarily receive credit for such work, subject to

the following restrictions: The work must equal in amount and character that required by this Law School and not more than three (two, in respect to students eligible for the three-year course) years' credit will be allowed for it. The right is reserved to refuse credit in law in whole or in part, save upon examination, and credit once given may be withdrawn for poor work in the school. Candidates for admission with advanced standing should forward a transcript of their record in both pre-legal and law work. No credit is given for time spent in private reading, correspondence work or study in a law office.

Summer School

General Statement. Courses are offered each summer as a part of the regular instruction of the Law School. This work carries the same credit and counts toward a degree the same as the work of any other quarter. Ordinarily only second, third and fourth-year courses are offered. For a detailed program, see the announcement of summer session. By taking advantage of the summer work, students may shorten the period required for the law degree.

Miscellaneous Information

Washington Law Review. The Washington Law Review (with which has been combined the *Washington State Bar Journal*) is a legal publication issued quarterly each year under the direction of the law faculty with the assistance of a student board of 15 to 20 members chosen from the ablest students in the Law School. *The Review* serves as a medium of expression for the legal scholars of Washington and elsewhere and is devoted particularly to the interpretation, advancement, and harmonious development of the law. *The Review* contains scholarly articles by judges and lawyers and discussions of important recent court decisions by students in the Law School, based on thorough research. A place on the student editorial board is one of the goals of every earnest law student and the experience is invaluable to him in his later professional life.

The Order of the Coif. The Order of the Coif is a national honorary legal society with a chapter at this Law School. The order has for its purpose the encouragement of scholarship and the advancement of the ethical standards of the legal profession. Membership in the order is dependent entirely upon the attainment of high scholastic standing. Each chapter annually elects from the senior law class a number of persons, not exceeding ten per cent of the class, ranking highest in scholarship.

Scholarships and Prizes. See pages 72-77.

Inquiries

General Statement. Further particulars as to any phase of the work of the Law School not given herein, or in the section on general information, will be given upon request. Communications addressed at any time to the Dean of the Law School, University of Washington, Seattle, Washington, will receive prompt attention.

DESCRIPTION OF COURSES

For description of courses offered by the School of Law, see Departments of Instruction section, pages 289-293.

SCHOOL OF LIBRARIANSHIP

(See College of Arts and Sciences, page 132.)

COLLEGE OF MINES

Mining, Metallurgical, and Ceramic Industries Available for Study. Mining machinery of many kinds is in operation within easy reach of the University. It is also kept in stock at the Seattle branches of the eastern machinery firms, for distribution throughout the Pacific Northwest, British Columbia, and Alaska. Methods important to the mining engineer are illustrated in Seattle by the operations of power shovels and hydraulic giants. Engineers in charge of mines and plants have given students every opportunity to become familiar with the methods of planning and carrying on work.

Available works of interest include coal mines, washeries, briquet plants; gold, silver, copper, arsenic, manganese, and mercury mines and treatment plants; cement plants, stone quarries, and dressing works; clay mines and works producing brick, building and roof tile, terra cotta, sewer pipe and drain tile, fire brick, pottery, and decorated mantel tile; sand and gravel pits making large production by modern methods; the Tacoma smelter and refinery; the U. S. Assay Office; the Northwest Lead works; the Seattle steel plant of the Bethlehem Steel Company, numerous foundries, and plants engaged in electro-metallurgy.

Laboratories

The headquarters of the College of Mines are in Mines Laboratory, a steel-frame building, which has an area of 57 by 162 feet and a height of 58 feet, with four full floors and mezzanine decks. The building, in addition to the laboratories, contains the offices, classrooms, and library of the department of mining, metallurgical, and ceramic engineering, and the offices of the Northwest Experiment Station of the United States Bureau of Mines, which makes joint use of the College of Mines equipment.

Complete equipment is available for carrying on laboratory instruction, technical investigations and tests, and research studies. The cost of the building and equipment to date has exceeded one-third of a million dollars.

Mining. The mining equipment is divided into three groups, as follows: exhibits designed for purposes of study, laboratory apparatus for experiment and practice, and field equipment.

Mineral Dressing. The laboratory was designed for testing not only ores but also non-metallic mineral substances, which are of great importance in Washington and the Northwest. The equipment is new and complete; much of it is of standard size.

Metallurgy. Separate laboratories are provided for general metallurgy, fire assaying, wet analysis, fuels, electrolytic work, research, and metallography, besides the balance rooms, dark room, and stock room.

Coal Washington. The coal section of Mines Laboratory occupies an area of 54 by 57 feet and a height of 70 feet, including four stories and a subbasement, connected by electric elevator. Full-size equipment is provided for receiving and storing a carlot of coal, followed by picking, elevating, screening, jigging, classifying, tabling, and air-tabling. This portion of the building also contains fuel and analytical laboratories for the College of Mines and the U. S. Bureau of Mines, a room for conducting float-and-sink tests, a sampling room, and a coal-crushing and grinding room for the preparation of samples.

Ceramics. The ceramics apparatus is used for washing, purifying and preparing ceramic and non-metallic raw materials, and for the manufacture and testing of finished ceramic products.

Mining, Metallurgical, and Ceramic Research

The College aims to encourage development in the mining, metallurgical and ceramic industries of Washington, the Pacific Northwest and Alaska by research in the special problems presented, and to solve the problems through the efforts of fellowship holders and others studying in the College.

Graduates from suitable technical courses at institutions of recognized standing, or men who present evidence of technical training that has fitted them to undertake investigations, are eligible to enroll in mining and metallurgical research. The degree of master of science may be granted students holding suitable bachelor of science degrees who complete investigative work in compliance with the University requirements for the master's degree. Although as much latitude as possible will be allowed in the choice of subjects for research, the general topics will be those of special importance to this region.

Research Fellowships. The College of Mines offers four fellowships for research in coal and other non-metallic mineral substances, in cooperation with the United States Bureau of Mines. The fellowships are open to graduates of universities and technical colleges who are properly qualified to undertake research investigations. The value of each fellowship is about $720 to the holder, for the 12 months beginning July 1. Fellowship holders register as graduate students and become candidates for the degree of master of science in the proper subject in the College of Mines, unless an equivalent degree has previously been earned.

Each applicant should send a copy of his collegiate record from the Registrar of the college where he has graduated, or will graduate in June. He should also send a photograph and a detailed statement of his professional experience, if any, and give the names and addresses of at least three persons who are familiar with his character, training, and ability. Applications should be submitted by April 1, and should be addressed to the Dean, College of Mines, University of Washington, Seattle, Washington.

Appointees to the fellowship report for duty on July 1, and are required to be on duty for a full year, except that in case of reappointment for a second year, the fellowship holder is given a vacation from June 15 to July 1. For the year 1939-1940, problems of the following nature will be selected for investigation: 1. *Coal.* Problems in the treatment and utilization of coal and coke. 2. *Non-metallics.* Problems in kaolin, olivine, talc, soapstone, silica sand, diatomite, and other non-metallics.

*Arthur A. Denny Fellowship.** To encourage graduate work, a fellowship of $500 annual value is open to students in the College of Mines who are residents of the State of Washington. It is awarded for scholastic excellence and general merit, but only to students who need financial assistance. Applications must be made to the dean of the college before March 15 preceding the academic year for which the fellowship is to be granted.

Investigations of Problems. Under certain conditions, the University will permit mining, metallurgical, and ceramic companies who have special problems for solution, to detail a representative to work on such problems, or to meet the expense of engaging a man to do so. Experiments which can be carried on as readily in commercial laboratories and which do not require direction from the college experts are not undertaken. The research is done under the direction of the College, and complete records of all the data obtained are filed with the College, which reserves the right to publish this information for the benefit of the mining, metallurgical, and ceramic industries.

*Not available in 1939-1940.

Undergraduate Scholarships

A scholarship of $250, given by the late William Mackay of Roslyn, Washington, is available to junior and senior students in the College of Mines. The award is made on the basis of character, scholarship, and need of assistance. Applications are due in March.

Two scholarships amounting to $180 each are awarded annually to upperclass students for services as assistants in the mining and metallurgy laboratories.

Scholarships based on the character, scholastic standing, and need of assistance of the student are annually offered by the Woman's Auxiliary of the American Institute of Mining and Metallurgical Engineers. Applications for appointment for the following academic year are made in November, through the College of Mines, to the North Pacific Section of the Woman's Auxiliary.

Mines Loan Fund

A loan fund, the nucleus of which was created by the North Pacific Section of the Woman's Auxiliary of the American Institute of Mining and Metallurgical Engineers, is available to assist upperclass students. Requests for financial assistance should be made to the dean of the College.

Mining Institute

Each winter, during the third week in January, a Mining Institute is held for the benefit of prospectors, miners, metallurgists, mining investors, men engaged in the clay and cement industries, and all others interested. The instructors in the department of mining, metallurgy, and ceramic engineering demonstrate the extensive equipment in Mines Laboratory and perform tests of special interest to those enrolled in the Institute. Other members of the faculty of the College of Mines give lectures in their particular fields, and prominent mining engineers and operators give special talks on work in which they are engaged; lantern slides and moving pictures of the mining industry are shown. The course begins on a Monday morning and continues throughout the entire week. It is open to all persons and no fees are charged.

Announcement of the opening date is made in the local papers and in the technical press. It is not necessary to enroll in advance, but better preparation can be made if those who expect to attend will indicate their intention by phone or by letter to the College of Mines a few days before the date set for the opening.

At the session held in January, 1939, the registered attendance numbered 310. The next session of the Institute will open at 9 a.m. on Monday morning, January 15, 1940.

Mines Society

The Mines Society, a student chapter of the American Institute of Mining and Metallurgical Engineers, has a membership composed of all students in the College. At the meetings of the society addresses are made by prominent mining engineers and papers descriptive of their summer work are presented by the student members.

United States Bureau of Mines Northwest Experiment Station

The Department of the Interior maintains at the College of Mines its Northwest Experiment Station, which serves the Pacific Northwest and the coast regions of Alaska. The headquarters of the Station, from which all op-

erations in this territory are directed, are in Mines Laboratory. At present the principal investigations being conducted by the station are in the treatment and uses of coal and of other non-metallic substances. These investigations are conducted by the Station in cooperation with the College of Mines principally through the research fellowships provided by the College. The results of cooperative investigations are published by the Bureau or by the University.

Mine Safety Station. The Mine Safety Station of the United States Bureau of Mines is located in the new Federal Office Building on First Avenue at Madison Street. Apparatus for rescue and resuscitation is kept on hand for practice as well as for instant service. The assistant mining engineer in charge of the Station gives instruction at Mines Laboratory to students in the College of Mines during the winter quarter. The applicant is taught the construction of the apparatus and is given practice in its use. First-aid instruction is also given. Applicants who have completed the course of training receive a certificate from the United States Bureau of Mines. An automobile truck equipped with rescue apparatus ready for emergency calls forms part of the equipment of the Station.

Admission and Expenses

For information concerning University fees, expenses and general admission requirements, see pages 49-86.

Entrance Requirements

For admission to the College of Mines, the student must present 12 units* of high school credit, belonging normally to the 10th, 11th and 12th years of the high school curriculum. At least six of these units must be in academic subjects and should include the following:

English	two units
Advanced algebra	one-half unit
Plane geometry	one unit
Solid geometry	one-half unit
Physics	one unit
Chemistry	one unit

The additional six units may be chosen from either academic or non-academic subjects. A student who does not present high school chemistry for entrance will normally be expected to earn fifteen credits instead of thirteen credits in chemistry during the freshman year.

A student is advised not to attempt to enter the University until he is able to register in his chosen college without deficiencies. Under certain circumstances and with the approval of the dean of the college concerned, however, certain deficiencies in specific college requirements may be removed after entrance to the University.

Preparation in Algebra

All students entering any department of engineering will be tested in high school algebra by class work and by an examination given shortly after the beginning of the first quarter. It is essential that students in the engineering courses shall possess a good working knowledge of algebra *at the beginning of their course,* and it is the purpose of the test to secure this by requiring a review of the subject shortly before entering the University.

*To count as a unit, a subject must be taught five times a week, in periods of not less than 45 minutes, for a high school year of 36 weeks. In satisfying entrance requirements with college courses, a minimum of ten quarter credits is counted as the equivalent of the entrance unit.

Students failing in the test are not permitted to continue with regular freshman engineering mathematics but are required to take a review of preparatory algebra (Math. 1, College of Arts and Sciences) during the first quarter.

Admission to Sophomore Year

All students in the College of Mines, other than first- and second-quarter freshmen and new students, will be placed on the low scholarship list and referred to the dean of the college for appropriate action whenever their grade-point average for any quarter is below 2.0.

No student whose grade-point average in the subjects regularly required in the freshman year of the College of Mines is below 1.80 will be regularly admitted to the sophomore year. When such student has brought his grades to the required average he may apply to the dean for admission.

DEGREES

The College of Mines offers specialized courses in mining, metallurgical, and ceramic engineering. The four-year curricula lead to degrees as follows:

I. Bachelor of science in mining engineering (B.S. in Min.E.).
II. Bachelor of science in metallurgical engineering (B.S. in Met.E.).
III. Bachelor of science in ceramic engineering (B.S. in Cer.E.).

Degree with Honors. A degree with honors may be conferred upon any student of the College of Mines who, upon vote of the faculty and of the honors committee, may be declared worthy of unusual distinction.

Masters' Degrees. The degrees of master of science in mining, metallurgical, and ceramic engineering, respectively, will be conferred upon graduates of this college or of other engineering colleges of recognized standing, who complete, in residence, one year (45 credits) of prescribed graduate work including a thesis, with grades of "A" or "B." The candidate must comply with the regulations of the Graduate School and pass a formal examination open to all members of the faculty. The selection of work for this degree must in each case be approved by the head of the department and by the Graduate Council.

The degree of master of science in ceramics may be conferred upon a graduate from a college of recognized standing provided his undergraduate preparation includes suitable courses in science and ceramics but does not meet the requirements of the engineering degrees granted in this college.

Professional Degrees. The College of Mines offers the following professional degrees: Engineer of Mines (E.M.); Metallurgical Engineer (Met.E.); Ceramic Engineer (Cer.E.). The requirements are as follows:

1. Five years of professional experience in the proper field after graduation with a good record from a 4-year course in this college; or five years of professional experience after award of a master's degree by this college, if the candidate does not hold a bachelor's degree from it.

2. Four years in positions of professional responsibility, of a character equivalent to those required for membership in the National Founder Engineering Societies. Teaching experience shall count in lieu of professional experience in the same ratio as now recognized by the professional societies, provided that a minimum of two years of acceptable engineering work other than teaching be included.

3. A professional thesis on a subject on which the applicant has been directly engaged. The thesis committee shall be the judge of the suitability of the material presented, which may be a published article or other writing having high professional value.

4. Submission of two complete copies of the thesis.

Application for a professional degree may be made at any time. It shall be accompanied by an exact statement of the applicant's record since graduation. The department of mining, metallurgical, and ceramic engineering will pass upon the application and may then arrange dates on which material is to be submitted for criticism. The candidate must submit his thesis in final form at least one month before the date on which theses for advanced degrees are deposited in the library. Final recommendation for or against the degree will be based upon the finished thesis. Action will be taken by the faculty of the College of Mines upon recommendation of the mines department.

CURRICULA OF THE COLLEGE OF MINES

MINING, METALLURGICAL, AND CERAMIC ENGINEERING

For the Freshman and Sophomore Years in all Curricula

Freshman

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Chem. 24. General	4	Chem. 25. General	4	Chem. 23. General	5
G.E. 1. Drawing	3	G.E. 2. Drawing	3	G.E. 3. Drafting Problems	3
G.E. 11. Engineering Problems	3	G.E. 12. Engineering Problems	3	G.E. 21. Surveying	3
Math. 31. Freshman Engineering	5	Math. 32. Freshman Engineering	5	Math. 33. Freshman Engineering	5
Military or Naval Science and Physical Education	+	P.E. 15. Personal Health	2	Military or Naval Science and Physical Education	+
		Military or Naval Science and Physical Education	+		

Sophomore

Min. 51. Elements of Mining	3	Mining 52. Methods	3	Met. 53. Elements of Metallurgy	3
Geol. 5. Rocks and Minerals	5	Chem. 111. Quantitative Analysis	5	Cer. 90. Industrial Minerals	3
Math. 41. Calculus	3	Comp. 100. Technical Composition	3	Geol. 121. Mineralogy	5
Physics 97. Engineers'	5	Physics 98. Engineers'	5	Physics 99. Engineers'	5
Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+

Practice in mining or geology or metallurgy or ceramics in summer vacation.

MINING ENGINEERING

Leading to the Degree of Bachelor of Science in Mining Engineering.

Freshman and Sophomore

(The same for all curricula. See above.)

Junior

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Min. 101. Milling	3	Met. 103. Fuel Technology	4	Min. 106. Mine Excursion	1
Met. 101. Fire Assaying	3	Geol. 124. Petrography	3	Met. 102. Metallurgical Laboratory	2
Met. 104. Non-ferrous	3	C.E. 92. Mechanics	3	Met. 153. Wet Assaying	3
Geol. 123. Optical Mineralogy	3	E.E. 101-102 Direct Currents	6	E.E. 121-122. Alternating Currents	6
C.E. 91. Mechanics	3			Elective	3

Mining practice in summer vacation.

Senior

Min. 152. Mineral Dressing 4	Min. 103. Mine Rescue Training 1	Min. 107. Mine Excursion 1
Min. 191. Thesis..... 2	Min. 162. Economics.... 4	Min. 151. Mining Engineering 4
Met. 155. Iron and Steel 3	Min. 192. Thesis..... 2	Min. 182. Mineral Industry Management... 3
Met. 162. Physical Metallurgy 3	Geol. 127. Economic Geology 5	Min. 193. Thesis..... 1
Elective* 3	E.B. 3. General Economics 3	Elective 3
		C.E. 59. Adv. Surveying 3

*Electives (9 credits) must include one of the following: Comp. 102, Comp. 101, Speech 103, or Speech 40.

Electives must in all cases be approved in advance by the head of the department.

METALLURGICAL ENGINEERING

Leading to the Degree of Bachelor of Science in Metallurgical Engineering.

Freshman and Sophomore

(The same for all curricula. See above.)

Junior

Autumn Quarter *Credits*	*Winter Quarter* *Credits*	*Spring Quarter* *Credits*
Met. 101. Fire Assaying 3	Met. 103. Fuel Technology 4	Met. 102. Metallurgical Laboratory 2
Met. 104. Non-ferrous.. 3	Met. 153. Wet Assaying 3	Min. 106. Mine Excursion 1
Min. 101. Milling..... 3	E.E. 101-102. Direct Currents 6	E.E. 121-122. Alternating Currents 6
C.E. 91. Mechanics..... 3	C.E. 92. Mechanics..... 3	E.B. 3. General Economics 3
Elective* 3		Elective 3

Metallurgical practice in summer vacation.

Senior

Met. 155. Iron and Steel 3	Met. 163. Metallography 3	Met. 166. Advanced Non-ferrous..... 3
Met. 162. Physical Metallurgy 3	Met. 165. Metallurgical Calculations 3	Min. 107. Mine Excursion 1
Min. 152. Mineral Dressing 4	Min. 103. Mine Rescue Training 1	Min. 151. Mining Engineering 4
Min. 191. Thesis..... 2	Min. 162. Economics.... 4	Min. 193. Thesis..... 1
Elective 4	Min. 192. Thesis..... 2	Elective 4
	Chem. 140. Elementary Physical 3	

*Electives (14 credits) must include one of the following: Comp. 102, Comp. 101, Speech 103, or Speech 40.

Electives must in all cases be approved in advance by the head of the department.

CERAMIC ENGINEERING

Leading to the Degree of Bachelor of Science in Ceramic Engineering.

Freshman and Sophomore

(The same for all curricula. See above.)

Junior

Autumn Quarter *Credits*	*Winter Quarter* *Credits*	*Spring Quarter* *Credits*
Cer. 100. Plasticity, Suspensions and Drying.. 3	Cer. 101. Firing..... 3	Cer. 102. Ceramic Decoration 3
Cer. 104. Calculations for Bodies and Glazes.... 3	Cer. 105. Calculations for Drying and Firing.... 3	Cer. 110. Ceramic Physical-Chemical Measurements 2
Min. 101. Milling..... 3	Met. 103. Fuel Technology 4	Min. 106. Mine Excursion 1
C.E. 91. Mechanics..... 3	C.E. 92. Mechanics..... 3	Met. 102. Metallurgical Laboratory 2
Geol. 123. Optical Mineralogy 3	Elective* 3	E.B. 3. Gen. Economics. 3
		Elective 3

Ceramics practice in summer vacation.

Senior

Cer. 121. Ceramic Products Laboratory..... 5	Cer. 122. Ceramic Products Laboratory..... 5	Cer. 123. Ceramic Products Laboratory 5
Min. 191. Thesis..... 3	Min. 103. Mine Rescue Training 1	Min. 107. Mine Excursion 1
Met. 162. Physical Metallurgy 3	Min. 192. Thesis..... 3	Min. 193. Thesis..... 2
Elective 4	Chem. 140. Elementary Physical 3	Chem. 141. Elementary Physical 3
	Elective 3	Elective 4

*Electives (17 credits) must include one of the following: Comp. 102, Comp. 101, Speech 103 or Speech 40.

Suggested electives for students especially interested in
Mining Engineering: Min. 171; M.E. 81, 82, 83; C.E. 142.
Coal Mining: Min. 122, 171, 176; M.E. 81, 82, 83.
Metallurgy: Chem. 141.
Ceramics: Cer. 131, 132, 133; 161, 162, 163; Min. 152, 162; Geol. 124, 125, 128; Physics 109.
General electives: Comp. 102, Speech 103, modern foreign language, E.B. 57.
Electives must in all cases be approved in advance by the head of the department.

DESCRIPTION OF COURSES

For description of courses offered by the College of Mines, see Departments of Instruction section, pages 302-306.

SCHOOLS OF MUSIC AND NURSING EDUCATION

(See College of Arts and Sciences, pages 113 and 116.)

OCEANOGRAPHIC LABORATORIES

(See College of Arts and Sciences, pages 120 and 357.)

COLLEGE OF PHARMACY

Registration as a Pharmacist in the State of Washington

In 1912 the State Board of Pharmacy by resolution required that, on and after July 1, 1914, all candidates for registration as pharmacists must be graduates of recognized colleges of pharmacy. The legislature of 1923 enacted into law the following requirements for registration of pharmacists:

1. An applicant for registration must be a graduate of a college of pharmacy recognized by the department of licenses.

2. A graduate of the four- or five-year course of the *University of Washington College of Pharmacy* has the right to register as a pharmacist without further examination and without the requirement of practical experience in pharmacy.

3. A graduate of a recognized college of pharmacy located outside of the State of Washington may become a registered pharmacist as follows:

(a) A graduate of a two-year course must have two years of practical experience and pass an examination as listed under paragraph four. This degree must have been conferred on the candidate prior to July 1, 1927.

(b) A graduate of a three-year course must have one year of practical experience and pass an examination as listed under paragraph four. This degree must have been conferred on the candidate prior to September, 1, 1936.

(c) A graduate of a four-year course is not required to have practical experience but must pass an examination as listed under paragraph four.

4. The examination embraces the following subjects: pharmacy, materia medica, chemistry, toxicology and posology, compounding prescriptions, identification of drugs, and laws relating to the practice of pharmacy in Washington. The grade must be not less than 60 per cent in any one subject and a general average of 75 per cent.

5. A registered pharmacist must be over twenty-one years of age. Persons under twenty-one shall be classified as assistant registered pharmacists until the age of majority is attained.

6. Persons registered by examination in other states may register as pharmacists in Washington without examination other than in the subject of laws relating to the practice of pharmacy in the State of Washington, providing such persons are graduates of recognized colleges of pharmacy, with degrees listed under 3 a, b, or c, and prior to the dates mentioned.

7. Colleges recognized by the State Board of Pharmacy are such colleges as hold membership in the American Association of Colleges of Pharmacy and such foreign colleges of pharmacy as meet the standards and re-

quirements of the American Association of Colleges of Pharmacy, with degrees as provided under 3 a, b, or c.

8. Applicants for registration as pharmacists should communicate with the State Board of Pharmacy, department of licenses, Olympia, Washington, for proper blanks and instructions. A fee of ten dollars ($10) for registration is payable to the state treasurer.

Work Offered

Training in pharmacy prepares students for a number of different types of work. With this in mind three curricula are outlined. The first two years of the three courses are the same for all students, but at the beginning of the junior year the student must select the curriculum that he wishes to complete. The courses of study offer preparation as follows:

Retail Pharmacy. Pharmacy is clearly recognized as both a profession and a business. The graduate working as a clerk in the ordinary retail store must be a professional pharmacist in order to properly prepare and dispense medicines. He must also have a background of scientific training which will enable him to advise the public in many problems affecting health and sanitation. In addition, a fundamental knowledge of business methods is necessary if he is to succeed in his calling. This course of study aims to give professional and business training which will amply qualify the graduate for the ordinary retail pharmacy trade.

The Science Course. Curriculum number two is designed to give a scientific training which will prepare graduates for responsible positions in prescription and hospital pharmacies. It also prepares students for positions as pharmaceutical chemists in clinical diagnostic laboratories, as manufacturing pharmacists for large pharmaceutical manufacturers, as food and drug chemists in the enforcement of state and federal food and drug laws, and as chemists for food and drug manufacturing houses. There are also openings for teachers of pharmacy, but students desiring to teach in colleges of pharmacy are urged to take one or more years of graduate work.

Preparation for Study of Medicine. Curriculum number three is designed to prepare the student for entrance to medical colleges and, at the same time, to give basic training in pharmacy. A graduate of this course who later studies medicine, has a more thorough knowledge of drugs and medicines than can otherwise be obtained. Students enrolling for this course are expected to select the school of medicine they wish to enter, and, by proper use of elective courses, entrance requirements for any one or more selected colleges of medicine can be satisfied. A student who receives a degree in medicine with this preparatory course, has the benefit of training in two professions, and can practice either or both, as occasion demands.

Graduate Study

Master of Science in Pharmacy. A graduate of any one of the three undergraduate curricula can continue work for an advanced degree. One year of properly selected study, with the completion of a research project, leads to the degree of master of science in pharmacy. Students with this additional training have many opportunities for employment.

Doctor of Philosophy with Major in Pharmacy. To obtain this degree the student 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 yielding comprehensive results and proving a definite contribution to knowledge. This college of pharmacy is giving special attention to graduate work

and can assure the prospect of unusual opportunities to those taking the time for thorough preparation. Pharmacy colleges all over the country are developing and rapidly extending their courses, hence thoroughly trained teachers are in demand, and manufacturing houses and the United States government laboratories are always in need of well trained men possessing this degree.

General Information

American Association of Colleges of Pharmacy. The College of Pharmacy is a member of the American Association of Colleges of Pharmacy. The objects of the association are: to promote closer relations between the several colleges of pharmacy of the United States, to standardize pharmaceutical education and to encourage a higher standard of proficiency for members of the profession.

Garden of Medicinal Plants. The College of Pharmacy maintains on the campus a garden in which plants of pharmaceutical importance are cultivated. The area and scope of this garden have been gradually extended, until the college has a complete collection of medicinal plants which furnishes valuable material for classes in botany, materia medica and drug assay, and for research.

The garden is divided into sections containing plants grown in ancient and medieval gardens, kitchen herbs, plants native to the Pacific Northwest, poisonous plants, a section for experimental purposes and a group of medicinal trees of which a large grove of Cascara trees is featured.

Fellowships, Scholarships and Prizes. See pages 72-77.

Admission and Expenses. For information concerning University fees, expenses and admission requirements, see pages 49-86.

Subject Requirements

For entrance to the College of Pharmacy, either by certificate or by examination, a student must present 12 units* of credit belonging normally to the last three years of the high school curriculum, which must include at least two units of English, 1 unit of plane geometry and three additional units of academic subjects.

The College of Pharmacy recommends that high school students preparing for pharmacy should include in their schedules one unit of laboratory science and two units of one foreign language, one of which may be taken in the ninth grade.

Admission to Advanced Standing

The American Association of Colleges of Pharmacy 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; this to become effective for students entering member colleges on and after January 1, 1938."

Graduate Standing

Candidates for the degree of master of science in pharmacy or doctor of philosophy with major in pharmacy must have received the bachelor's degree from this college or from some other college of equal rank, maintaining a four-year course, which is the equivalent of the course at this institution.

Degrees

1. The degree of bachelor of science in pharmacy (B.S. in Pharm.) will be conferred upon any student who has fulfilled the entrance requirements and completed one of the four-year courses as outlined.

*A "unit" is applied to work taken in high school. To count as a unit a subject must be taught five times a week, in periods of not less than 45 minutes, for a school year of 36 weeks.

2. The degree of master of science in pharmacy (M.S.) will be conferred upon any graduate of the four-year course who has completed one year of graduate work and presented a satisfactory thesis.

3. The degree of doctor of philosophy (Ph.D.) with major and thesis in the pharmaceutical field may be taken by meeting all requirements of the Graduate School. The bulletin of the Graduate School should be consulted for information concerning graduate degrees.

Curricula Required for Graduation

Three four-year curricula are outlined, each leading to the degree of bachelor of science in pharmacy.

The first two years of all three curricula are the same and are outlined as follows:

First Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Pharm. 1. General	3	Pharm. 2. General	3	Pharm. 3. General	3
Pharm. 4. Profession	2	Comp. 9. Pharmacy	3	Comp. 10. Pharmacy	2
Chem. 8. General	5	Chem. 9. General	5	Chem. 10. Qualitative	5
Bot. 13. Pharmacy	5	Bot. 14. Pharmacy	4	Physiol. 6. Human	5
Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+

Second Year

Ph. Chem. 5. Quantitative Gravimetric	5	Ph. Chem. 6. Quantitative Volumetric	5	Ph. Chem. 7. Urinalysis.	2
Pharm. 9. Prescriptions.	3	Pharm. 10. Prescriptions	3	Ph. Chem. 8. Pharmacopoeial Assay	
Ph'cog. 12. Pharmacognosy	3	Ph'cog. 13. Pharmacognosy	3	Pharm. 11. Prescriptions	3
Chem. 37. Organic	5	Chem. 38. Organic	5	Ph'cog. 14. Pharmacognosy	3
Military or Naval Science and Physical Education	+	Military or Naval Science and Physical Education	+	Chem. 39. Organic	5
				Military or Naval Science and Physical Education	+

Optional Curricula. The student, after completing the first two years, the outline of which is common to all courses, must elect to follow one of the following:

1. PHARMACY COMBINED WITH BUSINESS COURSES. (To prepare graduates for positions in retail pharmacy.)

Third Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Ph'col. 101. Pharmacology and Toxicology	3	Ph'col. 102. Pharmacology and Toxicology	3	Ph'col. 103. Pharmacology and Toxicology	3
Pharm. 113. Advanced Prescriptions	5	Pharm. 114. Advanced Prescriptions	5	Pharm. 115. Advanced Prescriptions	5
Bact. 101. General	5	Ph'cog. 104. Microscopy.	3	Ph'cog. 105. Microscopy.	3
E.B. 54. Business Law	3	E.B. 55. Business Law	3	E.B. 3. General	3
		Approved elective	2	Approved elective	2

Fourth Year

Ph'cog. 112. Biologicals.	3	Pharm. 183. New Remedies	3	Pharm. 184. Laws and Journals	3
Ph. Chem. 195. Pharmaceutical Chemistry	5	Ph. Chem. 196. Pharmaceutical Chemistry	5	Ph. Chem. 197. Toxicology	5
Approved elective	8	Approved elective	8	Approved elective	8

Total scholastic credits for graduation—180 including Physical Education 15 for men, or Physical Education 10 or 4, 6, 8 for women.

2. THE SCIENTIFIC COURSE. (Prepares students for prescription and hospital pharmacy, manufacturing pharmacists and pharmaceutical chemists.)

Third Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Ph'col. 101. Pharmacology and Toxicology	3	Ph'col. 102. Pharmacology and Toxicology	3	Ph'col. 103. Pharmacology and Toxicology	3
Bact. 101. General	5	Ph'cog. 104. Microscopy.	3	Ph'cog. 105. Microscopy.	3
Pharm. 113. Advanced Prescriptions	5	Pharm. 114. Advanced Prescriptions	5	Pharm. 115. Advanced Prescriptions	5
Approved elective	2	Approved elective	4	Approved elective	4

Fourth Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Ph'cog. 112. Biologicals.	3	Pharm. 183. New Remedies	3	Pharm. 184. Laws and Journals	3
Ph. Chem. 195. Pharmaceutical Chemistry	5	Ph. Chem. 196. Pharmaceutical Chemistry	5	Ph. Chem. 197. Toxicology	5
Physics 1 or 4. General.	5	Physics 2 or 5. General.	5	Approved elective	8
Approved elective	3	Approved elective	3		

Total scholastic credits for graduation—180 including Physical Education 15 for men, or Physical Education 10 or 4, 6, 8 for women.

3. PRE-MEDICAL CURRICULUM. (This curriculum with proper selection of elective courses, will give qualified entrance to colleges of medicine. The student graduating from this course and obtaining a degree in medicine has the benefit of training in two separate but mutually beneficial professions.)

Third Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Ph'col. 101. Pharmacology and Toxicology	3	Ph'col. 102. Pharmacology and Toxicology	3	Ph'col. 103. Pharmacology and Toxicology	3
Mod. Foreign Language.	5	Mod. Foreign Language.	5	Mod. Foreign Language.	5
Zoology 1 or 3	5	Zoology 2 or 4	5	Comp. 2. Composition	5
Approved elective	2	Approved elective	2	*or* Comp. 37. Argumentation	5
				Approved elective	2

Fourth Year

Autumn Quarter	*Credits*	*Winter Quarter*	*Credits*	*Spring Quarter*	*Credits*
Physics 1 or 4. General.	5	Physics 2 or 5. General.	5	Physics 3 or 6. General.	5
Bact. 101. General	5	Approved elective	10	Approved elective	10
Approved elective	5				

Total scholastic credits for graduation—180 including Physical Education 15 for men, or Physical Education 10 or 4, 6, 8 for women.

Graduate Courses

1. WITH DEGREE OF MASTER OF SCIENCE IN PHARMACY. (Five-year course.)

Graduates of the four-year science may continue work for the master's degree as follows:

Not more than 25 credits accepted in courses outside of the College of Pharmacy.

Not less than 20 credits shall be elected in the College of Pharmacy. At least 12 credits of the major work must be earned by a research problem and the preparation of a thesis. Examination and thesis must conform to the regulations of the graduate school.

2. WITH DEGREE OF DOCTOR OF PHILOSOPHY.

The degree of doctor of philosophy (Ph.D.) with major and thesis in the pharmaceutical field may be taken by meeting all requirements of the Graduate School. The bulletin of the Graduate School should be consulted for information concerning graduate degrees.

DESCRIPTION OF COURSES

For description of courses offered by the College of Pharmacy, see Departments of Instruction section, page 321.

SCHOOL OF PHYSICAL EDUCATION AND HYGIENE

(See College of Arts and Sciences, page 122.)

DEPARTMENTS OF INSTRUCTION

EXPLANATION

This bulletin contains a list of all courses of study offered in the University. The departments are arranged in alphabetical order.

The University reserves the right to withdraw temporarily any course which has not an adequate enrollment at the end of the sixth day of any quarter. For changes in registration, due to withdrawal of a course, no fee will be charged.

The four-quarter plan has been adopted to enable the University to render larger service. It is more flexible than the semester plan and adds 12 weeks' instruction to the regular year. It is impossible, however, to provide that every course be given every quarter.

Courses bearing numbers from 1 to 99 inclusive are normally offered to freshmen and sophomores; those from 100 to 199 to juniors and seniors, and those from 200 upward to graduate students.

Two or three numbers connected by hyphens indicate a course which ordinarily carries credit only when pursued for the full time; the instructor's permission must be obtained for credit for only a single quarter of such a course. No credit in a beginning foreign language is given for less than two quarters' work.

The credit indicated in connection with each course is the "quarter credit" based on the class period per week.

The descriptions of courses in each department include: (1) the number of the course as used in University records; (2) the title of the course; (3) a brief statement of its subject matter and method; (4) number of quarter credits given; (5) quarter in which it is given (autumn, winter, spring, summer); (6) name of instructor.

Courses preceded by * are not given in 1939-1940.

Courses preceded by ** are given if a sufficient number of students elect them.

In the lists of department faculties appearing in this bulletin, the first name in each instance is that of the department executive officer.

AERONAUTICAL ENGINEERING

Guggenheim Hall

Professors Eastwood, Kirsten; Associate Professor F. S. Eastman; Assistant Professor Martin; Instructor White

83. *General Aeronautics.* A descriptive outline of the field of aeronautical engineering. Prerequisite, sophomore standing. Three credits; autumn, winter, spring. Martin.

100. *Power Plants and Instruments.* A study of the principal characteristics of aircraft power plants and instruments. Prerequisite, A.E. 83. Two credits; autumn, winter. Eastman.

101. *Aerodynamics.* Study of air-flow phenomena and of the aerodynamical characteristics of air-foils and air-foil combinations. Prerequisites, A.E. 83, Phys. 97. Three credits; autumn, winter. Martin.

102. *Advanced Aerodynamics.* Mathematical development of air-foil contours; stability problems for various flight maneuvers. Prerequisite, A.E. 101, and senior standing. Three credits; winter. Martin.

103. *Airplane Performance.* Speed, climb, and stability estimates from theoretical considerations and from model tests. Full-scale testing. Prerequisites, A.E. 100, 101. Three credits; spring. White.

104. *Laboratory Methods and Equipment.* Familiarization with the wind tunnel laboratories and related equipment. Prerequisite, A.E. 101. Two credits; winter, spring. White.

105. *Wind Tunnel Laboratory.* Model testing. Prerequisite. A.E. 104. One credit; autumn. Martin, White.

106, 107. *Advanced Wind Tunnel Laboratory.* Prerequisite, A.E. 105 and special permission. One to three credits; 106, winter; 107, spring. White.

111. *Airplane Design.* Aerodynamics of airplane design. Prerequisites, A.E. 103, 172. Three credits; autumn. Martin, White.

112. *Advanced Airplane Design.* Structural design of airplanes. Determination of design loads. Prerequisite, A.E. 111. Three credits; winter. Martin, White.

121. *Airships.* Lighter-than-air craft, aerostatics, and airship design. Prerequisites, A.E. 101, 172. Three credits; spring. Kirsten.

141. *Aerial Propulsion.* Methods of screw-propeller design; design of a standard screw-propeller and performance calculations. Prerequisites, A.E. 101, 171. Three credits; autumn. Kirsten.

142. *Advanced Aerial Propulsion.* Different types of propellers; coordination of propeller with vessel; standard propeller-test methods. Prerequisite, A.E. 141. Three credits; winter. Kirsten.

*151. *Special Aeronautical Designs.*

161. *Advanced Aeronautical Problems.* Prerequisite, A.E. 103, 172. Three credits; autumn. Martin.

171. *Aircraft Mechanics.* Stress analysis of basic aircraft parts. Prerequisite, C.E. 92. Three credits; autumn, winter. Eastman.

*Not offered in 1939-1940.

172. *Aircraft Mechanics.* A continuation of A.E. 171. Prerequisite, A.E. 171. Three credits; winter, spring. Eastman.

173. *Advanced Aircraft Mechanics.* Graphical analysis. Rigid frames and indeterminate structures. Prerequisite, A.E. 172. Three credits; autumn, spring. Eastman.

181. *Advanced Airplane Design.* Prerequisites, A.E. 112, 173. Three credits; spring. Martin.

190. *Seminar.* Prerequisites, A.E. 102, 112. Three credits, spring. Kirsten.

191, 192, 193. *Research.* Two to five credits; autumn, winter, spring. Kirsten.

211, 212, 213. *Research.* Two to five credits; autumn, winter, spring. Kirsten.

Engineering English

For courses in Engineering English, see department of English, Comp. B, 100, 101, 102, 103 and Speech 103.

ANATOMY

Anatomy Building

Professor Worcester, Associate Kambe

Gross Anatomy

100. *Anatomy Lectures.* Three credits; autumn, winter, spring. Worcester, Kambe.

101, 102, 103. *General Human Anatomy.* For pre-medical, nursing, physical education students; open to others. Prerequisites, Zool. 3 and 4 or equivalent. Three or six credits a quarter; autumn, winter, spring. Worcester, Kambe, Assistants.

104. *Topographic Anatomy.* Cross and saggital sections for correlation. Prerequisites, Anat. 101, 102, 103. Four credits; autumn, winter, spring. Worcester.

108. *Special Dissections.* For physicians or students who have completed the above courses in gross anatomy. Credits to be arranged; autumn, winter, spring. Worcester, Kambe.

Microscopic Anatomy

105, 106. *Histology and Embryology.* For pre-medical and nursing students; open to others. Prerequisites, Zool. 1 or 3, or equivalent. Three or six credits for 105 (normal and abnormal microscopic anatomy for Harborview students); six credits for 106; winter. Worcester, Kambe.

107. *Neurology.* Dissection of the human brain, cord, special organs of sense; comparative developmental history of the central nervous system; microscopic study of the nuclei and fibre tracts. Prerequisites, Zool. 1 or 3 or equivalent. Especially for pre-medic students but open to others. Six credits; spring. Worcester, Kambe.

200. *Research.* Graduate work and research in anatomy for those qualified. Credits and time arranged. Autumn, winter, spring. Worcester.

ANTHROPOLOGY

Museum

Associate Professor Gunther; Assistant Professor Jacobs; Instructor Ray; Associate Garfield

51. *Principles of Anthropology.* Evolution and heredity as applied to man. Racial classification and its significance. Five credits; autumn, winter, spring. Staff.

52. *Principles of Anthropology.* Man's social customs, political institutions, art, literature; survey of the anthropological approach to language. Five credits; autumn, winter, spring. Staff.

53. *Principles of Anthropology.* Prehistoric cultures, prehistory of modern peoples, material cultures of primitive peoples. Five credits; autumn, winter, spring. Staff.

91. *Theories of Race.* A survey of human heredity, the causes for race differences; study of race mixtures; history of race theories. Two credits; autumn, winter. Ray, Jacobs.

101. *Basis to Civilization.* Primitive normal mentality and abnormality; individual personalities and variability; tribal and regional culture patterns. Prerequisites, Anthr. 51, 52 or 53 or junior standing. Three credits; winter. Jacobs.

105. *Culture Growth.* Fundamental material inventions in the building of cultures. Prerequisites, Anthr. 51, 52 or 53 or junior standing. Three credits; spring. Ray.

107. *Methods and Problems of Archaeology.* The technique of archaeology with an analysis of the problems various areas present, together with field experience in this locality. Five credits; spring. Garfield.

110. *American Indians.* Indian life as a background for the modern social and economic problems of this group. Three credits; winter. Gunther.

111. *Indian Cultures of the Pacific Northwest.* Ethnographic study of Indians west of Rockies from Columbia River through southern Alaska, with special emphasis on tribes of Washington. Three credits; autumn. Ray.

112. *Peoples of the Pacific.* Ethnographic study of primitive peoples of Pacific; brief analysis of effects of European contacts. Three credits; spring. Gunther.

*113. *Peoples of Northeastern Asia.*

*114. *Peoples of Africa.*

141. *Primitive Literature.* The forms and functions of oral tradition. Three credits; autumn. Gunther.

142. *Primitive Religion.* A descriptive survey of primitive religions. Three credits; winter. Ray.

143. *Primitive Art.* Aesthetic theories, artistic achievements of preliterate peoples, with museum material for illustration. Three credits; spring. Gunther.

160. *History of Anthropological Theory.* A survey of the field of anthropology conducted through discussion of the various schools of thought and their theories. Two credits; winter. Ray.

*Not offered in 1939-1940.

150. *General Linguistics.* Anthropological approach to language; psychological, comparative and historical problems; phonetic and morphologic analysis. Three credits; winter. Jacobs.

151. *American Indian Languages.* Phonetics and morphology of American Indian languages; methods of field research. Prerequisite, Anthr. 150. Three credits; spring. Jacobs.

152. *Introduction to Anthropology.* Survey of the field as a basis for other social sciences. Prerequisite, junior standing. Five credits; autumn, winter. Gunther.

170. *Primitive Crafts.* Pottery, weaving, basketry, wood-carving and other techniques involved in primitive material culture. Instructor's permission necessary. Five credits; spring. Gunther, Ray.

185. *Primitive Social and Political Institutions.* Prerequisites, Anthr. 51, 52 or 53, or instructor's permission. Five credits; spring. Ray.

(*190), 191, 192. *Research.* Independent studies in field or campus with seminars and conferences. Instructor's permission necessary. Credits and hours to be arranged; winter, spring. Gunther, Jacobs.

193, 194, 195. *Reading Course.* Directed reading in special fields. Instructor's permission necessary. Credits and hours to be arranged; autumn, winter, spring. Gunther.

COURSES FOR GRADUATES ONLY

204, 205. *Seminar in Methods and Theories.* Instructor's permission necessary. Three credits; autumn, winter. Gunther.

206. *Seminar in Indian Administration.* Dealing with problems of administration of Indian affairs and their history; discussion of present social and economic resources of the Indian. Three credits; spring. Gunther.

242. *Seminar in Theories of Primitive Religion.* A critical examination of various theoretical approaches to the understanding of primitive religions and philosophies. Prerequisite, Anthr. 142, or instructor's permission. Three credits; spring. Ray.

252. *Seminar in American Indian Languages.* Advanced training in recording and analyzing languages. Prerequisites, Anthr. 150, 151. Three credits; winter. Jacobs.

ARCHITECTURE

Architecture Building

Professors Thomas, Gowen, Herrman; Associate Professor Pries; Assistant Professor Olschewsky; Lecturer Alden; Instructor Alderman

1-2. *Architectural Appreciation.* Illustrated lectures giving an historic survey of domestic architecture. General appreciation of architecture. Two credits a quarter; autumn, winter. Herrman.

3. *Architectural Appreciation.* Important periods of architectural history. Two credits; spring. Herrman.

4-5-6. *Elements of Architectural Design.* Problems in elementary architectural design. To be taken with Arch. 7-8-9. Four credits a quarter; autumn, winter, spring. Herrman, Olschewsky.

*Not offered in 1939-1940.

7-8-9. *Graphical Representation.* Elementary principles of orthographic projections, shades and shadows and perspective. To be taken with Arch. 4-5-6. One credit a quarter; autumn, winter, spring. Olschewsky.

40, 41, 42. *Water Color.* Still life studies and outdoor sketching in water color. Prerequisite, major in architecture, Art 32, 33, 34. Two credits each quarter; autumn, winter, spring. Hill.

47-48. *Elementary Theory of Construction.* Analysis of fundamental structural problems by application of the laws of equilibrium. Three credits a quarter; autumn, winter. Sergev.

51-52-53. *History of Architecture.* Technical study of the architecture of Egypt, Western Asia, Greece, Rome, Byzantium, and the Romanesque and Gothic periods. Prerequisite, Arch. 3. Two credits a quarter; autumn, winter, spring. Thomas.

54, 55, 56. *Architectural Design, Grade I.* Problems in design under individual criticism; order problems and simple problems of buildings. Prerequisite, Arch. 6. Five credits; any quarter; autumn, winter, spring. Gowen, Pries.[1]

101-102-103. *History of Architecture.* The Renaissance; a comparative study of the period in European architecture. Prerequisite, Arch. 53. Two credits a quarter; autumn, winter, spring. Herrman.

104, 105, 106, 107. *Architectural Design, Grade II.* Advanced problems in design done under individual criticism. Prerequisite, *Arch. Design, Grade I.* Five credits; autumn, winter, spring. Herrman,[1] Olschewsky.

112, 113. *Freehand Drawing.* Studies of casts of the human figure. Charcoal, flat wash, and pencil. Prerequisite, Art 32, 33, 34. Three credits a quarter; autumn, winter. Pratt.

117. *Building Construction.* General principles of structural design; girders, columns and roof trusses in timber and steel as applied by the architect. Prerequisite, C.E. 170. Three credits; winter. Sergev, May.

118. *Building Construction.* Principles of concrete design; slab, joists, tile and joist columns, and the like, as applied by the architect. Prerequisite, Arch. 117. Three credits; spring. Sergev.

120-121-122. *Working Drawings.* Lectures on simple building construction. Drafting room practice in working drawings. Prerequisite, junior standing in architectural design. Two credits a quarter. Autumn, winter, spring. Olschewsky.

125-126. *Pencil Sketching.* Pencil sketches of architectural subjects—the first quarter from photographs, the second from actual subjects. Prerequisite, sophomore standing, architecture major or permission. One credit a quarter; winter, spring. Olschewsky.

140-141, 142. *History of Architectural Ornament.* Prerequisite, sophomore standing. Two credits; autumn, winter, spring. Pries.

151. *History of Architecture.* Modern architecture in America and Europe from the middle of the eighteenth century to the present time. Prerequisite, Arch. 103. Two credits; spring. Gowen.

152-153. *Theory of Architecture.* Theory of architectural design, relation of composition and scale, planning. Prerequisite, *Arch. Design, Grade II.* Two credits; autumn, winter. Gowen.

[1]General criticism and supervision of all courses in Design, Grades I, II, III and Advanced Design, are given by Professor Harlan Thomas, director of the school.

154, 155, 156, 157, 158. *Architectural Design, Grade III.* Advanced design under individual criticism. Prerequisite, *Arch. Design, Grade II.* Five credits a quarter; autumn, winter, spring. Gowen, Pries.[1]

160, 161, 162. *Architectural Problems.* Advanced problems in design. Prerequisite, Arch. 158. Three to seven credits; any quarter. Gowen, Thomas.

168-169. *Specifications and Materials.* Specifications and all contract forms used by the architect; modern business methods; ethics and office organization. Properties of materials used in architectural practice. Prerequisite, senior standing, Arch. 122. Two credits; winter, spring. Alden.

ART

Education Hall

Professors Isaacs, Patterson; Associate Professors Benson, Foote, Hill; Assistant Professors Molzahn, Penington, Pratt, ———; Associates Curtis, Eckrem, Iglehart, Worman

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

1. *Elementary Painting and Design.* An introductory studio course for the general student rather than the major in art. Drawing, painting and general design. Varied exercises with lectures. Five credits; autumn. ———.

*2. *Elementary Painting and Design.*

5, 6, 7. *Drawing.* Drawing with charcoal from casts and still life; perspective, introduction to painting, supplementary reading, lectures. Prerequisite for any subsequent course in drawing and painting. Three credits a quarter; autumn, winter, spring. ———, Hill, Patterson, Curtis.

9, 10, 11. *Art Structure.* Design developed through original problems, lectures, discussions and supplementary reading, and the principles of art structure. Prerequisite for any subsequent course in art. Three credits a quarter; autumn, winter, spring.
Benson, Eckrem, Molzahn, Penington, Worman.

12. *Art History.* Survey of the main developments in painting and sculpture from prehistoric times through the Renaissance; illustrated with slides and colored reproductions. Five credits; winter. ———.

15, 16. *Laboratory Drawing.* The technique of representation with pencil, carbon pencil, pen, and wash, for use in science, or other work requiring accuracy and detail. Expression of the third dimension; drawing from the microscope. Three credits a quarter; winter, spring. Curtis.

20. *Modern Sculpture.* Illustrated lectures and demonstrations on the history and appreciation of sculpture. Two credits a quarter; spring. Pratt.

32, 33, 34. *Drawing and Sculpture for Architects.* One quarter of sculpture and modeling from casts. Two quarters of drawing from cast ornaments. Three credits a quarter; autumn, winter, spring. Pratt, Hill.

53, 54, 55. *Art Structure.* Creative design for industry and commerce. Prerequisites, Art 5, 6, 7, 9, 10, 11. Three credits a quarter; autumn, winter, spring. Penington, Iglehart.

[1] General criticism and supervision of all courses in Design, Grades I, II, III and Advanced Design, are given by Professor Harlan Thomas, director of the school.

*Not offered in 1939-1940.

56, 57, 58. *Drawing and Painting.* Oil and water color painting from still life and casts, introduction to life and outdoor sketching, lectures and reading. Prerequisites, Art. 5, 6, 7. Three credits a quarter; autumn, winter, spring. ———, Hill, Patterson.

62. *Essentials of Interior Design.* Lectures on the art of home decoration. Illustrated with various objects and materials, textiles and lantern slides. Two credits a quarter; autumn. Foote.

65, 66, 67. *Drawing and Painting.* A continuation of Art 56, 57, 58, for majors in painting; outdoor sketching in oil and water color. Three credits a quarter; autumn, winter, spring. ———, Hill, Patterson.

72, 73, 74. *Sculpture.* Elementary clay modeling from casts or, for proficient students, from life; compositions and plaster casting. Three credits a quarter; autumn, winter, spring. Pratt.

80, 81, 82. *Furniture Design.* Studied drawings of furniture at actual and small scale, also studies in color. Prerequisites, Art 5, 6, 7, 9, 10, 11. Three credits a quarter; autumn, winter, spring. Foote.

83. *History of Furniture and Decoration.* Illustrated lectures on the history and development of furniture and its backgrounds, from the Renaissance to the present time. Two credits a quarter; spring. Foote.

100. *Art Methods.* A summary of aims, objectives, and current methods of teaching and supervising art. Prerequisites, senior standing in art, Education 70, and consent. Two credits; autumn. Elmer.

101. *Elementary Interior Design.* For the general student and those wishing to teach art in the public school. Two credits a quarter; winter. Foote.

102. *Bookbinding.* Lecture and laboratory course for teachers of art and also open to any student having junior standing in art. Bookbinding and elementary crafts. Two credits a quarter; spring. Benson.

103, 104. *Pottery.* Hand and wheel processes. Mould making, casting and pressing. Composition and preparation of clays, slips and glazes. Application of glaze. Study of ceramic art through historic and contemporary examples. Prerequisite, junior standing in art. Three credits a quarter. Course 103, autumn; 104, winter and spring. Worman.

105. *Lettering.* Based upon the principles of art structure and composition. Exercises and problems in pen and brush technique. Prerequisites, for majors, Art 5, 6, 7, 9, 10, 11; for non-majors, permission of the School of Art. Three credits a quarter; autumn, spring. Benson.

106. *Commercial Design.* A course in structural composition; advertising design studied and analyzed. Prerequisite, Art 105. Three credits; winter. Benson.

107, 108, 109. *Portrait Painting.* Character delineation, stressing composition, color contrast and personal expression. Reading and class reports. Prerequisites, Art 56, 57, 58. Three credits a quarter; autumn, winter, spring. Patterson.

110, 111, 112. *Interior Design.* For the special student wishing a technical knowledge of interior design, furnishings and architecture. Prerequisites, Art 80, 81, 82. Five credits a quarter; autumn, winter, spring. Foote.

116. *Design for Industry.* The study of design in its relation to the modern industrial world. Prerequisites, Art. 55, 105. Three credits a quarter; winter. Iglehart.

122, 123, 124. *Sculpture.* Portrait and figure from life. Compositions and work in terra cotta. Prerequisites, Art 72, 73, 74. Three credits a quarter; autumn, winter, spring. Pratt.

126. *History of Modern Painting.* Painting since the Renaissance. Lectures illustrated with lantern slides and colored reproductions. Prerequisites, Art 12, sophomore standing. Two credits; winter. Isaacs.

129. *Appreciation of Design.* Intended to increase the enjoyment of beauty in the applied arts. Reading. Two credits a quarter; winter. Benson.

130. *Pottery.* Advanced problems in form. Clays for ceramic sculpture. Glazes and their application to tile and mosaic. Firing. Study of historic examples and modern tendencies. Three credits a quarter; spring. Worman.

132, 133, 134. *Advanced Sculpture.* Continuation of second year work. Prerequisites, Art 122, 123, 124. Three credits a quarter; autumn, winter, spring. Pratt.

136, 137, 138. *Sculpture Composition.* Imaginative design; problems met in professional practice. Prerequisites, Art 72, 73, 74. Three credits a quarter; autumn, winter, spring. Pratt.

150, 151. *Illustration.* Principles of composition applied to book illustration and to the making of prints. Prerequisite, senior standing in art. Five credits a quarter; autumn, winter. Molzahn.

157, 158, 159. *Design in Metal.* Design and construction of objects in copper, pewter, brass, silver and gold. Emphasis on interrelationships of parts, unity of form and decoration, limitations of materials. Various processes including etching, enameling, stone setting. A supplementary study of old and contemporary examples. Prerequisite, junior standing in art. Three credits; 157, autumn, spring; 158, 159, winter, spring. Penington.

160, 161, 162. *Life.* Drawing and painting from the model. Class criticism of original compositions; anatomy. Prerequisites, Art 56, 57, 58. Three credits a quarter; autumn, winter, spring. Isaacs, Patterson.

163, 164. *Composition.* The development of individuality in painting through creative composition. Reading and reports from works on modern criticism. Prerequisite, *Life.* 3 credits. Five credits a quarter; winter, spring. Isaacs.

*166. *Art Structure.*

169, 170, 171. *Costume Design.* Costume illustration and design. Supplementary reading reports. Prerequisites, Art 5, 6, 7, 9, 10, 11. Two credits a quarter; autumn, winter, spring. Benson.

172, 173, 174. *Interior Design.* An advanced course for the special student in interior design, furnishings and architecture. Prerequisites, Art 110, 111, 112. Five credits a quarter; autumn, winter, spring. Foote.

175, 176, 177. *Advanced Painting.* Prerequisites, Art 56, 57, 58. Three credits a quarter; autumn, winter, spring. Isaacs.

179, 180, 181. *Costume Design.* Prerequisites, Art 169, 170, 171. Two credits a quarter; autumn, winter, spring. Benson.

182, 183, 184. *Oriental Art.* An historical and critical study of the development of the arts in India, China and Japan. Two credits a quarter; autumn, India; winter, China; spring, Japan. Savery.

*Not offered in 1939-1940.

COURSES FOR GRADUATES ONLY

207, 208, 209. *Portrait Painting.* Work of ample size and of a professional character. Three or five credits a quarter; autumn, winter, spring. Patterson.

250, 251. *Advanced Design.* Problems of graduate character. Prerequisites, Art 150, 151. Three or five credits a quarter; autumn, winter, spring. Molzahn.

260, 261, 262. *Advanced Life Painting.* An intensive course in painting from life. Three or five credits a quarter; autumn, winter, spring. Isaacs.

263, 264. *Composition.* Three or five credits a quarter; autumn, winter, spring. Isaacs.

Suggested courses in commercial art: Art 5, 6, 7; 9, 10, 11; 105, 106, 116, 126; 129; 150, 151; 160, 161, 162; 169, 170, 171; Jour. 130, 131.

ASTRONOMY

Observatory

Assistant Professor Jacobsen

1. *Astronomy.* Solar system, stars, siderial universe. Prerequisite, two units of high school mathematics. Five credits; autumn, spring. Jacobsen.

51. *Practical Astronomy.* Methods of determining latitude, longitude, asimuth, time. Prerequisites, Astron. 1, trigonometry. Four credits; spring. Jacobsen.

101. *Astrophysics and Stellar Astronomy.* Interpretation of stellar spectra; motions, types of stars. Prerequisites, Astron. 1, Physics 101. Four credits; spring, 1940 and alternate years. Jacobsen.

*102. *The Solar System.*

AVIATION

Ground School Course

See Naval Science and Tactics.

BACTERIOLOGY AND PATHOLOGY

Johnson Hall

Associate Professor Henry; Professor Hoffstadt; Assistant Professors Ordal, Weiser; Lecturer Berry

Cooperating Laboratories

Children's Orthopedic Hospital Lab.; director: Hildur Truesdon, B.S.
Physicians' Clinical Laboratory; director: G. A. Magnusson, M.D.
Polyclinic Laboratory; director: Homer Wheelon, M.D.
Providence Hospital Laboratory; director: Alfred Balle, M.D.
Seattle Department of Health Laboratory; director: Marie Mulhern, B.S.
State Board of Health Laboratory; director: A. U. Simpson, M.D.
Swedish Hospital Laboratory; director: D. H. Nickson, M.D.
U. S. Frozen Pack Laboratory; director: James A. Berry, M.S.
Virginia Mason Hospital Laboratory; director: Freda Hendrickson, M.S.

*Not offered in 1939-1940.

The work in bacteriology provides training along the following lines: (a) as part of a liberal education; (b) as applied to medicine, nursing, pharmacy, fisheries, home economics, sanitary engineering, chemistry, industry and physical education; (c) for the preparation of technicians and bacteriologists; (d) for advanced degrees. Ten undergraduate credits are prerequisite to graduate work.

Recommendations applying to all undergraduate curricula in bacteriology:

1. A grade point average of 2.5 in courses in chemistry and biology shall be required for admission to *Bacteriology* 100 and sponsorship by the department.

2. A grade point average of 2.5 in all courses in bacteriology shall be required of bacteriology majors for graduation.

3. Transfer students entering the undergraduate curricula shall be considered by a departmental committee and any examination deemed necessary shall be required.

50. *Survey of Bacteriology.* A brief consideration of different fields in bacteriology and their application to everyday life. Course does not count toward a bacteriology major. Five credits; winter, spring. Henry, Ordal.

100. *Fundamentals of Bacteriology.* Fundamental factors involved in microbiology. Required of bacteriology majors. Prerequisites, ten credits of botany or zoology and Chem. 132. Bacteriology majors only. Five credits; autumn, spring. Henry.

101. *General Bacteriology.* Prerequisite, Chem. 2 or 22. Five credits; autumn, winter, spring, summer. Weiser, Hoffstadt.

102. *Sanitary and Clinical Methods.* Bacterial analysis of water, food, feces and urine. Examination of clinical material used for the diagnosis of disease. Prerequisite, Bact. 100 or 101. Five credits; winter. Weiser.

103. *Public Hygiene.* Lectures only. Prerequisite, junior standing. Five credits; autumn, spring. Hoffstadt.

104. *Serology.* Types of immunity; immunization of animals and man; study of immune products. Prerequisites, Bact. 100 or 101 and Chem. 132. Five credits; spring. Hoffstadt.

105. *Infectious Diseases.* Study of pathogenic bacteria, and methods of diagnosis of infectious disease. Students registering for Bact. 105 are required to receive such diagnostic and prophylactic treatments for the purpose of avoiding accidental infection as shall be designated by the department of bacteriology from time to time. The department of bacteriology reserves the right, throughout the quarter in which the course is given, to exclude any student who, through gross carelessness or negligence, jeopardizes the health of himself or his fellow students. Any student so excluded shall be required to repeat an elementary course in bacteriology before again being admitted to Bact. 105. Prerequisite, Bact. 100 or 101. Five credits; autumn. Hoffstadt.

107. *Microbiology of Food Spoilage.* Factors concerned in the control of microorganisms involved in spoilage. Prerequisites, Bact. 100 or 101 and permission of instructor. Three credits; winter. Ordal.

110, 111, 112. *Pathology.* Gross and microscopic study of diseased tissue. Prerequisite, Anat. 105. Five credits; autumn, winter, spring. Weiser.

120, 121, 122. *Applied Bacteriology.* Work in media room, public health, private hospital or industrial laboratories. Fifteen hours per week. Regis-

tration, and letter from director required. For bacteriology majors only. Prerequisite, instructor's permission. Five credits; autumn, winter, spring, summer. Henry.

127. *Review of Journals.* Prerequisites, Bact. 100 or 101 and 105. One credit; winter. Hoffstadt.

130, 131, 132. *Industrial Bacteriology.* Microbiology of food preparation, industrial fermentations. Prerequisites, Bact. 100 or 101 and permission of instructor. Five credits; autumn, winter, spring. Ordal, Henry.

COURSES FOR GRADUATES ONLY

201. *Physiology of Bacteria.* Environmental factors influencing bacteria; bacterial metabolism and activities. Open to qualified students with permission of instructor. Five credits; autumn. Henry, Ordal.

202. *Filterable Viruses.* Study of representative types of ultramicroscopic agents causing disease in man, lower animals and plants. Open to qualified students with permission of instructor. Five credits; winter. Hoffstadt.

204, 205, 206. *Advanced Bacteriology.* Under this head nearly all types of work can be provided. Time and credit to be arranged. Autumn, winter, spring, summer. Staff.

209. *Seminar.* No credit. Time to be arranged. Staff.

210, 211, 212. *Research.* Open to qualified students after consultation. Credits to be arranged; autumn, winter, spring, summer. Staff.

BOTANY

Professors Frye, Hotson, Rigg; Assistant Professors Hanley, Hitchcock, Riley

Suggested Selections

For the required biological science in the College of Arts and Sciences, we recommend courses 1 or 5, 3, ten credits of 105, 106, 107 or 2, 134, 135.

Students in art, music or architecture desiring to satisfy the science requirements by taking botany may elect from this list, or they may include 101. It is recommended that they include 101 where possible.

For part of a major, courses 105, 106 and 107 are suggested.

For teaching botany, select from non-technical courses, among which 1, 3, 5, 101, 105, 106, 107 and 134 are suggested.

Courses 1, 5, 10, 13 and 16 are along elementary lines so only one should be taken. Courses 2, 11, and 14 likewise are phases of the same subject and only one should be selected.

1. *Elementary Botany.* Structure and functions of roots, stems, leaves and seeds. No botany prerequisite. Five credits; autumn and winter. Riley and Assistants.

2. *Elementary Botany.* Types of the great groups of plants from the lowest to the highest. Primarily for non-majors. Prerequisite, Bot. 1 or one year high school botany. Five credits; winter. Frye and Assistants.

3. *Elementary Botany.* Plant analysis; field and laboratory work with local flora. No botany prerequisite. Five credits; spring.
Hitchcock and Assistants.

4. *Plants and Civilization.* The origin and discovery of important plants used for food and clothing; their cultivation and improvement; their effect on civilization. No prerequisites. Five credits; winter. Riley.

5. *Survey of Botany.* The outstanding generalizations concerning plants, especially those relating to human welfare. Students who expect to continue with botany should begin with Bot. 1 or 3. Three lectures, one quiz and one two-hour laboratory period, or field trip. Five credits; autumn and spring.
Rigg and Assistants.

8. *Genetics.* The principles of heredity, their physical basis and their application to plant breeding. No prerequisites. Three credits (lectures only) or five; autumn. Riley and Assistants.

10, 11. *Forestry Botany.* Structure and physiology of the higher types of plants, types of the great groups from the lowest up. No prerequisites. Four credits a quarter; autumn and winter. Hitchcock and Assistants.

13, 14. *Pharmacy Botany.* Gross structure of vegetative and reproductive parts of seed plants, brief study of spore plants; microscopy of powdered drugs. Five credits, autumn; four credits, winter. Rigg and Assistants.

16. *Economic Botany.* Structure of plants and their use by man for food, clothing and shelter. Five credits; autumn, spring.
Riley and Assistants.

23. *Plant Ecology.* A consideration of the effects of environment on plant succession and survival; the factors which determine vegetation types throughout the world. Prerequisites, Botany 1 or equivalent. Five credits; autumn. Hanley.

24. *Plant Cultivation.* The culture of plants and methods of plant propagation correlated with the principles of plant growth. Prerequisites, Botany 1 or equivalent. Five credits; winter. Hanley.

101. *Ornamental Plants.* The plants used in beautifying lawns and house yards, their propagation and use. Prerequisite, 10 credits in botany or high school botany. Not open to students who have had Bot. 92. Five credits; spring. Hitchcock and Assistants.

102. *Textile Fibres.* Cotton, wool, hairs, linen, jute, ramie, silk, rayon, etc.; their microscopy and staining; permanent mounts and cross sections. Prerequisite, H.E. 25. Three credits; spring. Riley.

106, 107, 105. *Morphology and Evolution.* Morphological study of types to show advances in complexity. Required of all majors. Prerequisite, one year high school botany or ten credits of botany, or Zool. 1 and 2. Five credits a quarter; autumn, winter, spring. Frye.

111. *Forest Pathology.* Recognition and treatment of common wood-destroying fungi. Prerequisite, Bot. 11 or 105. Five credits; winter and spring. Hotson and Assistants.

115. *Yeasts and Moulds.* Their classification, recognition, cultivation, and their relation to the industries and to man. Prerequisite, 15 credits in botany, bacteriology, or zoology. Five credits; spring. Hotson.

119. *Plant Histology.* The preparation of permanent slides for the compound microscope and the study of cells. Prerequisite, 10 credits in botany. Five credits; winter. Riley and Assistants.

122. *Plant Cyto-genetics.* Chromosomal cytology and its bearing on genetics, taxonomy and the origin of species. Prerequisites, 15 credits in botany or zoology, including Bot. 8 or equivalent. Three credits (lectures only) or five; spring. Riley and Assistants.

129. *Plant Anatomy.* The cellular tissues of plants. The origin and development of the stele. Prerequisite, 15 credits in botany. Five credits; spring. Riley.

*131. *Mosses.*

132. *Algae.* Field and laboratory work in the recognition of the algae. Prerequisite, one year of botany. Five credits; spring. Frye and Assistants.

134, 135. *Taxonomy.* The flowering plants. Prerequisite, 10 credits of botany including Bot. 3 or equivalent. Five credits a quarter; autumn and winter. Hitchcock.

140, 141, 142. *General Fungi.* Morphology and classification of fungi as a basis for plant pathology. Prerequisite, 15 credits of botany. Five credits a quarter; autumn, winter, spring. Hotson and Assistants.

143, 144, 145. *Plant Physiology.* Prerequisites, 15 credits of botany and Chem. 22. Desirable prerequisites, Chem. 133 and Physics 2. Five credits a quarter; autumn, winter, spring. Rigg and Assistant.

151. *Range Plants.* Their recognition, and the characters which make them important as useful or harmful. Prerequisites, 10 credits in botany. Three credits; autumn, spring. Hitchcock.

180, 181, 182. *Plant Pathology.* Diseases of plants and the fungi which produce them. Prerequisite, Bot. 142. Five credits a quarter; autumn, winter, spring. Hotson.

199. *Proseminar.* Semi-independent work by students. Open only on consultation with the head of the department. One to fifteen credits; any quarter. Staff.

Teachers' Course in Botany. See Education 75B.

COURSES FOR GRADUATES ONLY

200. *Seminar.* Review of recent literature. Only graduate students may obtain credit. One-half credit per quarter, with maximum of two credits allowed any one student; autumn, winter, spring. Staff.

205, 206, 207. *Physiology of Marine Plants.* Prerequisites, Physics 3, Bot. 145, Chem. 111 and 129 or their equivalents. Two lectures, one three-hour laboratory period. Three credits each quarter; autumn, winter, spring. Rigg.

210, 211. *Phytoplankton.* These courses are given at Friday Harbor laboratories by special arrangement with instructor. Three credits; winter, spring. Phifer.

220. *Advanced Fungi.* Prerequisite, Bot. 142. Two to five credits; any quarter. Hotson.

233. *Research.* Two to five credits; any quarter. Staff.

250. *Algae.* Prerequisite, thirty credits of botany. Two to five credits; autumn, spring. Frye.

*Not offered in 1939-1940.

251. *Bryophytes.* Prerequisite, Bot. 106. Two to five credits; any quarter. Frye.

271, 272, 273. *Experimental Morphology.* Prerequisites, Bot. 106, 145; Chem. 23. Two credits a quarter; autumn, winter, spring. Frye.

279. *Colloidal Biology.* Prerequisites, Bot. 143, Chem. 132. Desirable prerequisite, Chem. 141. Five credits; any quarter. Rigg.

280. *Micrometabolism.* Prerequisites, Bot. 107, 145. Five credits, any quarter. Rigg.

281. *Physiology of Fungi.* Prerequisites, Bot. 142, 145, 280. Five credits; any quarter. Rigg.

CHEMISTRY AND CHEMICAL ENGINEERING

Bagley Hall

Professors Benson, Beuschlein, Dehn, Smith, Tartar, Thompson; Associate Professors Kobe, Norris, Powell, Robinson; Assistant Professors Cady, Siverts; Instructor ———; Associate Radford, ———

Requirements of the Department

Students wishing to specialize in chemistry may select one of the three courses: (1) the prescribed curriculum for those who intend to make use of chemistry as a vocation, leading to the degree of bachelor of science in chemistry; (2) the elective curriculum for those who want a general course in chemistry, leading to the degree of bachelor of science in the College of Arts and Sciences; (3) the prescribed curriculum in chemical engineering for those who plan to engage in manufacturing industries, leading to the degree of bachelor of science in chemical engineering.

For purchase of chemicals and apparatus, each student is required to buy a breakage ticket at the comptroller's office. The cost of the ticket is $3. Any unused portion will be refunded.

A. Recommendations applying to all undergraduate curricula.

1. A grade point average of 2.5 in all courses, shall be required for graduation.

2. Upon completion of the first 90 credits (equivalent to the work of the freshman and sophomore years), every student will be passed upon by a departmental committee which shall consider his academic record and other qualification, and give any comprehensive examinations deemed necessary, to determine whether or not the department desires to sponsor the student in further work in his curriculum.

3. All students from other schools entering the undergraduate curricula shall first be considered by the department, which shall pass on the credentials presented in chemistry and chemical engineering courses and give any examinations that may be deemed necessary to determine the proper place to begin courses in this department.

B. Recommendations applying to the elective curriculum in the chemistry department.

1. The following courses or their equivalent shall constitute the minimum requirements for a major:

   a. Chemistry 1 or 21, 2 or 22, 23, 111, 131, 132, 140, 141 (in lieu of 140-141, pre-medic students may present Chem. 161-162).

   b. Physics, 15 credits.

   c. Mathematics, 15 credits.

   d. French or German, 10 credits.

At least twenty credits in chemistry and 10 credits in physics should be completed among the first 90 credits (end of sophomore year). The intention of the student to graduate with a major in chemistry should be declared not later than the end of the sophomore year.

Chemistry

1-2. *General Inorganic Chemistry.* Open only to students not having had accredited high school chemistry. Three lectures, one recitation and two 2-hour laboratory periods. Five credits; any quarter.
Smith, Tartar, Powell, Sivertz.

8-9-10. *General Chemistry and Qualitative Analysis.* Pharmacy students only. The work in the spring quarter is qualitative analysis. Three lectures and two laboratory periods. Five credits; autumn, winter, spring. Rising.

21-22. *General Inorganic Chemistry.* Open only to students having accredited high school chemistry. Three lectures, one recitation and two 2-hour laboratory periods. Five credits; any quarter.
Smith, Tartar, Powell, Sivertz.

23. *Elementary Qualitative Analysis.* Prerequisite, Chem. 2 or 22, or equivalent. Three lectures, one recitation and two 2-hour laboratory periods. Five credits; any quarter. Smith, Sivertz.

24-25. *General Chemistry.* For engineering students having accredited high school chemistry. Two lectures, one recitation and one laboratory period. Four credits; autumn, winter. Cady.

26. *General Chemistry.* Prerequisite, Chem. 2 or 22, or 25 or equivalent. Continuation of Chem. 24-25. Two lectures, one recitation and one laboratory period. Four credits; autumn, spring. Cady.

37-38-39. *Organic Pharmaceutical Chemistry.* Organic chemicals of the U. S. Pharmacopoeia. Pharmacy students only. Prerequisites, Chem. 10 or its equivalent. Three lectures and two laboratory periods. Five credits; autumn, winter, spring. Fischer.

*55. *Forest Products.*

*56. *Forest Soils.*

101. *Advanced Qualitative Analysis.* Two lectures and three laboratory periods. Prerequisite, Chem. 23 or its equivalent. Five credits; autumn, spring. Thompson, Robinson.

*Not offered in 1939-1940.

104. *Food Chemistry.* Methods of analysis of various foods are studied for detection of adulteration. Prerequisites, Chem. 111 and 132 or equivalent. Four credits; spring. Norris.

109. *Quantitative Analysis.* Gravimetric analysis. Prerequisite, Chem. 23 or its equivalent. Two lectures and three laboratory periods. Five credits; autumn, winter. Thompson, Robinson.

110. *Quantitative Analysis.* Volumetric analysis. Two lectures and three laboratory periods. Prerequisite, Chem. 109. Five credits; winter, spring. Thompson, Robinson.

111. *Quantitative Analysis.* Gravimetric and volumetric methods for students not majoring in chemistry. Prerequisite, Chem. 23. Two lectures and three laboratory periods. Five credits; autumn, winter, spring. Thompson.

131, 132, 133. *Organic Chemistry.* Three lectures and two laboratory periods. Prerequisites, Chem. 22 or its equivalent. Five credits; autumn, winter, spring (131, 132 repeated winter, spring). Dehn, Powell.

135-136. *Organic Chemistry.* For home economics students. Only women are admitted. Three lectures and two laboratory periods. Prerequisite, Chem. 2 or 22. Five credits; autumn, winter. Powell.

137. *Organic Chemistry.* For students in nursing. Four lectures and one laboratory period. Five credits; autumn, spring. Powell.

140-141. *Elementary Physical Chemistry.* Fundamental principles and theories of chemistry for pre-medical and science students and chemistry majors in the elective curriculum. Two lectures and one laboratory period. Prerequisites, Chem. 111 or equivalent and ten credits of physics. Three credits; winter, spring. Sivertz.

144. *Biological Chemistry.* For home economics students. Prerequisite, Chem. 136 or equivalent. Three lectures and two laboratory periods. Five credits; spring. Norris.

150. *Undergraduate Thesis.* Investigation of special topics suggested by the staff. Prerequisite, senior standing in chemistry. Two to five credits; any quarter. Staff.

155. *Oceanographical Chemistry.* Methods of analysis and the general physical and chemical properties of sea water and sea products. Prerequisites, Chem. 111, 132 or equivalent. Three lectures. Three credits; spring. Thompson.

156. *Oceanographical Chemistry.* Laboratory methods. Taken simultaneously with Chem. 155. Three laboratory periods. Three credits; spring. Thompson, Robinson.

161-162. *Biological Chemistry.* For students in medicine, biology, bacteriology and nutrition. Prerequisites, Chem. 111 and 131 or equivalent. Three lectures and two laboratory periods. Five credits; autumn, winter. Norris.

163. *Biological Chemistry.* Methods of biochemical analysis and of metabolism. Prerequisite, Chem. 162. One lecture and two laboratory periods. Three credits; spring. Norris.

166. *Biochemical Preparations.* Preparations of special substances involving biochemical methods. Prerequisite, Chem. 162. Two to three credits; autumn, winter, spring. Norris.

181, 182, 183. *Physical and Theoretical Chemistry.* Fundamental principles and theories of chemistry accompanied by physico-chemical measurements. Prerequisites, one year (15 credits) college physics, Chem. 110, and differential and integral calculus. Three lectures and two laboratory periods. Five credits; autumn, winter, spring. Tartar, Sivertz.

190, 191. *History of Chemistry.* (Offered every other year alternating with Chem. 205, 206, 207.) Lectures and assigned readings. Prerequisite, Chem. 132, 182. Two credits; autumn, winter. Smith.

Teachers' Course in Chemistry. See Education 75C.

Chemical Engineering

51. *Industrial Chemical Calculations.* Application of chemical units and laws in industrial calculations as applied to combustion processes. Prerequisites, Chem. 23 or 26, Math. 33, or equivalents. Two lectures. Two credits; autumn, winter. Kobe.

52. *Industrial Chemical Calculations.* Material and heat balances over combustion furnaces and gas producers. Prerequisite, Chem. 51. Two lectures. Two credits; winter, spring. Kobe.

53. *Industrial Chemical Calculations.* Calculations for lime and cement kilns, sulfur compounds, crystallization processes. Prerequisite, Chem. 52. Two lectures. Two credits; autumn, spring. Kobe.

74. *Elementary Electrochemistry.* Fundamental principles and theory of electrochemistry. Prerequisites, Chem. 26, Physics 98. Not open to chemists and chemical engineers. Two lectures. Two credits; autumn. Kobe.

118. *Engineering Chemistry.* The chemistry of industrial materials in engineering. Prerequisite, Chem. 26, or equivalent. Three lectures. Three credits; winter. Kobe.

121. *Chemistry of Engineering Materials.* The chemistry and technical analysis of important engineering materials. Prerequisite, Chem. 110. Three lectures and two laboratory periods. Five credits; autumn. Benson, Kobe.

122. *Inorganic Chemical Industries.* The development and control of inorganic unit processes. Prerequisite, Chem. 110. Three lectures and two laboratory periods. Five credits; winter. Benson, Kobe.

123. *Organic Chemical Industries.* The development and control of organic unit processes. Prerequisite, Chem. 110. Three lectures and two laboratory periods. Five credits; spring. Benson, Kobe.

152. *Advanced Chemical Calculations.* Mathematical study of chemical operations with solutions of typical engineering problems. Prerequisite, Math. 41 or equivalent. Three lectures. Three credits; spring. Kobe.

171. *Unit Operations.* The unit operations of flow of fluids, heat transfer and drying. Prerequisite, Chem. 53. Three lectures, two laboratory periods. Five credits; autumn. Beuschlein.

172. *Unit Operations.* The unit operations of distillation, absorption and extraction. Prerequisite, Chem. 171. Three lectures, two laboratory periods. Five credits; winter. Beuschlein.

173. *Unit Operations.* The unit operations of evaporation, mechanical separation, crushing and grinding, and crystallization. Prerequisite, Chem. 172. Three lectures. Three credits; spring. Beuschlein.

175. *Industrial Electrochemistry.* Industrial applications of electrochemistry, solutions and electric furnace applications. Prerequisites, Chem. 181 for chemists and chemical engineers, Chem. 74 for others. Three lectures. Three credits; winter. Kobe.

176, 177, 178. *Chemical Engineering Thesis.* An assigned problem is investigated as a research project and a thesis written. One to five credits; autumn, winter, spring. Benson, Beuschlein, Kobe.

179. *Research in Electrochemistry.* Research in electrochemistry under various staff members, or reports on selected topics. Prerequisite, permission of the instructor. Two to five credits; winter, spring. Staff.

COURSES FOR GRADUATES ONLY

200. *Departmental Seminar.* Required of all graduate students during residence. Assigned readings and reports on the chemical literature. One-half credit a quarter; maximum of two credits will be allowed to any student; autumn, winter. Powell.

*201, 202, 203. *Advanced Theoretical and Physical Chemistry.*

204. *Chemistry of Colloids.* (Offered every other year, alternating with 202, 203.) Fundamental properties of substances in the colloidal state. Surface phenomena such as surface tension and absorption. Prerequisite, Chem. 182 or equivalent. Three lectures. Three credits; autumn. Tartar.

*205, 206, 207. *Inorganic Preparations.*

208, 209, 210. *Advanced Quantitative Analysis.* Theoretical principles of analytical chemistry. Prerequisites, Chem. 111 and 182 or equivalent. Two lectures. Two credits; autumn, winter, spring. Thompson.

211, 212. *Advanced Organic Preparations.* Preparation of special substances involving representative laboratory methods. Either quarter may be taken independently. Two credits; winter, spring. Powell.

215, 216. *Advanced Theoretical and Physical Chemistry.* (Offered every other year, alternating with 202, 203.) Prerequisite, Chem. 182 or equivalent. Three lectures. Three credits; winter, spring. Tartar.

218, 219, 220. *Selected Topics in Industrial Chemistry.* The application of fundamental chemical and economic principles to typical industries. Prerequisite, graduate standing in chemistry and chemical engineering. Two lectures. Two credits; autumn, winter, spring. Benson.

221, 222, 223. *Advanced Inorganic Chemistry.* The third quarter is devoted to the chemistry of the coordination compounds. Recommended for all majors and graduate students. Three credits; autumn, winter, spring. Smith.

224. *Chemistry of Nutrition.* Enzyme and chemical reactions involved in digestion and metabolism. Prerequisite, Chem. 162. Two lectures and one laboratory period. Three credits; autumn. Norris.

225. *Problems in Analytical Chemistry.* Mainly laboratory work with occasional conferences. Prerequisite, Chem. 182. Two to six credits, maximum six credits; autumn, winter, spring. Thompson.

226. *Micro-Quantitative Analysis.* Principles and technique of micro-quantitative analysis. Prerequisites, Chem. 111, 132 or equivalent. One lecture and two laboratory periods. Three credits; autumn. Robinson.

*Not offered in 1939-1940.

227. *General Chemical Microscopy.* Theory of the polarizing microscope and its application to chemistry. Prerequisites, Chem. 141 or 182. One lecture and two laboratory periods. Three credits; winter. Robinson.

228. *Micro-Qualitative Analysis.* Identification of ions by means of optical properties of their crystals. Prerequisites, Chem. 101, 227 or equivalent. Three credits, spring. Robinson.

231, 232, 233. *Advanced Organic Chemistry.* Detailed study of special fields of organic chemistry. Any quarter may be taken independently. Prerequisite, Chem. 132 or equivalent. Three lectures. Three credits; autumn, winter, spring. Dehn.

*236. *Advanced Physical Chemistry Laboratory.*

241, 242, 243. *Advanced Unit Operations.* (Offered every other year alternating with 244, 245, 246.) A detailed study of basic unit operations. Flow of fluids, heat transfer, fuels, combustion, gas producers and filtration. Prerequisites, calculus and Chem. 171. Three credits; autumn, winter, spring. Beuschlein.

*244, 245, 246. *Advanced Unit Operations.*

249. *Graduate Seminar.* Assigned readings and reports dealing with special topics. Offered as desired by members of the different divisions of the department. Hours and credits to be arranged; autumn, winter, spring. Staff.

250. *Research.* The work is of three types: (1) special investigations by advanced students; (2) research for the master's degree, maximum, nine credits; (3) research for the doctor's degree under direction of any member of the senior staff, maximum, 45 credits. Staff.

Engineering English

For courses in Engineering English, see department of English, Comp. B, 100, 101, 102, 103 and Speech 103.

CIVIL ENGINEERING

Guggenheim Hall

Professors Van Horn, Harris, May, A. L. Miller, More, Tyler; Associate Professors Farquharson, Hawthorn, Moritz, Sergev; Assistant Professors Chittenden, Collier, Hennes, Rhodes, Smith; Lecturer Hauan

Lower Division Courses

56. *Forest Surveying.* A comprehensive course in plane surveying with special emphasis on forest mapping, the use of steel tape, compass, clinometer, level, transit and plane table. Pack Forest. Eight credits; spring. Chittenden.

57. *Transportation Surveying.* Curves and earthwork. Complete survey notes and map for highway or railway grading project. Prerequisite, G.E. 21. Four credits; autumn. Hawthorn, Chittenden, Hennes.

58. *Transportation Engineering.* Highway-railway grades, automobile and locomotive performance; superelevation and widening of curves; sight distances; legal descriptions. Profile, mass diagram and estimates. Prerequisite, C.E. 57. Four credits; winter. Hawthorn, Chittenden.

*Not offered in 1939-1940.

59. *Advanced Surveying.* Base-line measurement; triangulation; precise leveling; determination of asimuth, latitude, and time; plane table. Prerequisite, G.E. 21. One section, for mines students only, 3 credits. Four credits; spring. Hawthorn, Collier, Hennes.

91. *Mechanics.* Fundamental principles of mechanics for students not in civil engineering. Kinetics, kinematics. Prerequisites, G.E. 12, Math. 33, Physics 97. Three credits; autumn, winter, spring.
Smith, Moritz, Sergev, Farquharson, Rhodes, Chittenden.

92. *Mechanics.* Mechanics of materials for students not in civil engineering. Analysis and application of fundamentals to elementary structural design. Prerequisite, C.E. 91. Three credits; autumn, winter, spring.
Farquharson, Smith, Sergev, Moritz, Rhodes.

95. *Mechanics.* (For students in civil engineering.) Fundamentals of static and dynamic equilibrium. Kinematics. Prerequisites, Math. 33, G.E. 12, preceded by or concurrent with Phys. 97. Three credits; autumn, winter.
Miller, Rhodes, Farquharson.

96. *Mechanics.* (For students in civil engineering.) Mechanics of materials. Fundamentals of structural mechanics. Prerequisite, C.E. 95. Three credits; winter, spring. Miller, Rhodes, Farquharson.

Upper Division Fields and Courses

*109. *Engineering Relations.*

Transportation Engineering

121. *Roads and Pavements.* Location, construction, and maintenance of roads and pavements. Materials and accessories. Prerequisite, C.E. 58. Three credits; autumn, spring. Hawthorn, Hennes.

123. *Highway and Railway Economics.* Economics of highway and railway location, construction and operation. Prerequisite, C.E. 121. Three credits; autumn, winter. Hawthorn.

124. *Highway Design.* Selection and design of pavements. Pavement subgrades and embankments. Roadway and intersection design. Prerequisite, C.E. 121. Three credits; spring. Hawthorn.

128. *Transportation Administration.* Highway and railway organization and finance. Administrative problems. Sampling and testing of highway materials. Prerequisite, C.E. 121. Three credits; winter. Hawthorn.

Hydraulic and Sanitary Engineering

141. *Dynamics of Fluids.* Conservation of energy and loss of energy in fluid motion. Application of principles of Torricelli, Bernoulli, and Borda. No laboratory work. Prerequisite, C.E. 91. Three credits; autumn. Harris.

142. *Hydraulics.* Flow of water through pipes and orifices, over weirs, and in open channels; energy of jets with application to impulse wheels. Prerequisite, C.E. 91 or 95. Five credits; autumn, winter, spring.
Harris, Moritz, Wilcox, Hennes, Tyler, Little.

143. *Hydraulic Engineering.* Complete projects presenting hydraulic engineering; hydrometric methods; economic design of pipes and spillways. Prerequisite, C.E. 142. Five credits; autumn, winter. Van Horn, Moritz.

*Not offered in 1939-1940.

145. *Hydraulic Machinery.* Development and theory of water wheels and turbine pumps; design of a reaction turbine; hydrostatic machinery and dredging equipment. Prerequisite, C.E. 142. Three credits; autumn, winter. Harris, Moritz.

147. *Hydraulic Power.* Investigation of power development; generation of power; penstocks and turbines; types of installation. Prerequisite, C.E. 142. Three credits; spring. Harris.

150. *Sanitary Engineering and Public Health.* Relation of biology, bacteriology and chemistry to water supply, sewage and public health problems. Prerequisites, Chem. 22 and junior standing. Three credits; spring. Van Horn, Tyler.

151. *Sanitation and Plumbing.* For architects. Two credits; winter. Hauan.

154. *Sanitary Designs.* The design of sewers, sewage-disposal plants and water-purification plants. Prerequisites, C.E. 155 and 158. Three credits; spring. Tyler.

155. *Water Supply Problems.* Design, cost estimation, construction, operation, and maintenance of water supplies, distribution systems, and purification plants. Prerequisites, C.E. 142, 150. Three credits; autumn, winter. Tyler.

157. *Reclamation.* Elements of the reclamation of land by drainage and irrigation engineering. Soil conservation. Prerequisite, C.E. 143 and senior standing. Three credits; autumn, winter. Van Horn.

158. *Sewerage and Sewage Treatment.* Design and operation of sewage systems and disposal plants. Refuse collection and disposal. Prerequisites, C.E. 142, 150. Three credits; autumn, winter. Tyler.

Engineering Materials

162. *Materials of Construction.* Investigating strength and physical characteristics of Portland cement and concrete. Designing concrete mixtures. Prerequisite, C.E. 96. Three credits; winter, spring. Collier, Smith.

163. *Materials of Construction.* Strength and physical characteristics of timber and steel. Prerequisite, C.E. 96. Three credits; winter, spring. Smith, Collier.

166. *Soil Mechanics.* The mechanics of landslides; building and dam foundations; tunnel linings. Soil stabilization. Seniors and graduates. Three credits; autumn, spring. Hennes.

167. *Soil Mechanics.* A study of those physical properties of soil affecting the work of the civil engineer. Soil testing. Seniors and graduates. Three credits; winter, spring. Hennes.

Structural Analysis and Design

170. *Theory of Building Construction.* Prerequisites, junior standing in Architecture, Math. 56, Arch. 48. Three credits; autumn. Sergev.

171, 172, 173. *Structural Analysis.* Theory of structural mechanics. Mechanics of materials with special consideration of reinforced concrete, steel, and timber. Prerequisite, C.E. 96. Three credits; autumn, winter, spring. Miller, Rhodes, Farquharson.

175, 176, 177. *Structural Design.* Application of the theory of structures and mechanics of materials to the design of reinforced concrete, steel,

and timber members and connections. Prerequisite, C.E. 173. C.E. 175, 176, four credits; 177, three credits; autumn, winter, spring. More, Staff.

181, 182. *Advanced Structures.* Stresses and deflections in structures and structural members with particular reference to statically indeterminate cases. Seniors and graduates in civil engineering. Prerequisite, C.E. 173. Three credits; autumn, winter, spring. More.

183. *Advanced Structures.* Arches. Statically indeterminate trusses. Seniors and graduates. Prerequisite, C.E. 182. Four credits; spring. More.

Special Senior and Graduate Courses

191, 193, 195. *Advanced Professional Design and/or Analysis.*† Two to five credits; autumn, winter, spring. Staff.

192, 194, 196. *Research.*† Special investigations by seniors or advanced students under the direction of members of the staff. Three to five credits; autumn, winter, spring. Staff.

198. *Thesis.* Three to six credits; autumn, winter, spring. Staff.

210, 212, 214. *Research.*† For graduates only. Two to five credits; autumn, winter, spring. Staff.

220, 222, 224. *Seminar.*† For graduates only. Two to five credits; autumn, winter, spring. Staff.

Engineering English

For courses in Engineering English, see department of English, Comp. B, 100, 101, 102, 103 and Speech 103.

CLASSICAL LANGUAGES AND LITERATURE

Denny Hall

Professors Thomson, Densmore, Sidey; Associate Professors Read, Stone

For administrative purposes Greek and Latin are combined, but students must major in one or the other.

I. Greek

Requirements for a Major. A minimum of 36 credits chosen from courses other than 1-2, 11, 13, 15, 17, 18, 111, 113, and including course 122 and at least one year's sequence of courses numbered above 150. At least 50 per cent of the credits in the major must be in upper division courses. A student majoring in Greek must have had at least two years of high school Latin or must take Latin 1-2, 3 in the University, and is advised to secure a reading knowledge of German. At the conclusion of the senior year all major students must take the senior examination.

Recommended electives in other departments: History 72, 73, 101, 102, 104, 111, and 207, 208, 209. Suggested courses for auditing: Art 20, Arch. 1, Phil. 101, Pol. Sci. 111, E.B. 187.

1-2, 3. *Elementary Greek.* Five credits a quarter. Densmore.

4, 5. *Socrates.* A study of the life and personality of the philosopher, based on Plato, Xenophon, Aristophanes. Should be accompanied if possible

†No examination for credit until completion of the entire course.

by Greek 8 and 9. Prerequisite, Greek 3. Three credits; autumn, winter. Densmore.

6. *The World of Homer.* Readings from the story of Achilles. Prerequisite, Greek 5. Three credits; spring. Densmore.

7. *New Testament Greek.* This course will be given instead of Greek 6 if the class elects it. Prerequisite, Greek 5. Three credits; spring. Densmore.

8, 9. *Grammar and Composition.* Prerequisite, Greek 3. Two credits; autumn, winter. Read.

51, 51, 51. *Greek Authors.* Practice at sight-reading from a wide range of authors. Prerequisite, Greek 5 or permission. No credits. Two hours weekly. Densmore.

101. *The Persian War Period.* Readings in Herodotus and Plutarch. Prerequisite, Greek 5. Three credits; autumn. Read.

102. *Pericles and the Peloponnesian War.* Aristotle, Thucydides, Xenophon, and Plutarch. Three credits; winter. Read.

103. *Periods of Theban and Macedonian Supremacy.* Plutarch, Demosthenes and Arrian. Three credits; spring. Read.

104. *Drama.* Alcestis and Prometheus Bound. Three credits; autumn. Densmore.

105. *Drama.* Sophocles, the Oedipus plays and Antigone. Three credits; winter. Densmore.

106. *Lyric Poetry.* Three credits; spring. Densmore.

122. *Grammar and Composition.* Intensive review of the entire grammar with practice in writing. Prerequisite, thirty credits of Greek. Three credits; autumn. Read.

151, 152. *Plato.* The Phaedo, Symposium, and extensive readings in the second half of the Republic. Prerequisite, Greek 103. Three to five credits a quarter; autumn, winter. Densmore.

153. *Plato.* Selections from the Parmenides, Theaetetus, Sophist, Timaeus. Prerequisite, Greek 152. Three to five credits; spring. Densmore.

191, 192, 193. *Literary Criticism and Sophocles.* Textual criticism. Aristotle and other ancient critics. Independent critical study of one play. Prerequisite, Greek 106. A reading knowledge of Latin required. Three to five credits; autumn, winter, spring. Densmore.

COURSES FOR GRADUATES ONLY

*201, 202. *Greek Philosophers.*

203. *Greek Philosophers.* Stoicism from Zeno to Marcus Aurelius. Three to five credits; spring. Densmore.

211, 212. *Hellenistic Literature.* Critical study of Appollonius Rhodius. Three to five credits; autumn, winter. Densmore.

*221, 222, 223. *Epigraphy.*

231. *Research in Special Authors.* For 1939-1940, the extant literature concerning Greek music. Three to five credits; autumn, winter, spring. Densmore.

*Not offered in 1939-1940.

II. Latin

Requirements for a major: At least 36 credits, chosen from courses other than 1-2, 3, 4, 5, 6, 11, 13. At least 50 per cent of the credits in the major must be in upper division courses. A student majoring in Latin must take at least 15 credits of Greek, preferably in the first two years. At the conclusion of the senior year all major students must take the senior examination.

1-2, 3. *Elementary Latin and Caesar.* Five credits; autumn, winter, spring. Read.

4, 5, 6. *Cicero and Virgil.* Prerequisite, two years high school Latin or Latin 1-2, 3 in the University. Qualifies a student for Latin 21. Review of grammar and syntax. Five credits; autumn, winter, spring. Thomson.

NOTE: To enter Latin 21 to 25, the student is expected to be thoroughly familiar with the declensions and conjugations and with the normal phenomena of Latin syntax to be found in Caesar, Cicero and Virgil.

21. *Cicero: De Senectute.* With exercises in grammar and composition. Prerequisite, three and one-half years high school Latin. Five credits; autumn. Thomson.

*22. *Catullus.*

*23. *Virgil: Georgics and Bucolics.*

24. *Sallust: Jugurtha.* With exercises in grammar and composition. Prerequisite, three and one-half years high school Latin. Five credits; winter. Thomson.

25. *Ovid: Metamorphoses.* With exercises in grammar and composisition. Prerequisite, three and one-half years high school Latin. Five credits; spring. Thomson.

100. *Livy.* One book and selections from other books. Prerequisite, Latin 21, 22, 24, or special permission. Five credits; autumn. Stone.

101. *Horace.* Selections from the complete work. Prerequisites, Latin 21, 22, 24, or special permission. Five credits; winter. Stone.

102. *Tacitus: Germania and Agricola.* Five credits; spring. Stone.

*103. *Plautus and Terence.*

*104. *Martial: Epigrams.*

106. *Syntax and Prose Composition.* Students should, if possible, register for this course in combination with Edu. 75P. Prerequisite, Latin 100 or equivalent. Three credits; autumn. Stone.

107. *Cicero's Letters.* Prerequisite, Latin 100 or equivalent. Three credits; winter. Stone.

*109. *Pliny's Letters.*

140. *Relations of Latin to English and the Romanic Languages.* Prerequisite, 107 or equivalent. Three credits; spring. Stone.

*152. *Quintilian: Book X* and *Horace: Ars Poetica.*

153. *Augustine: Confessions.* Prerequisite, 109 or 107 or equivalent. Three credits; spring. Thomson.

154. *Lucretius.* Prerequisite, 109 or 107 or equivalent. Three credits; autumn. Thomson.

156. *Horace: Satires and Epistles.* Prerequisite, 107 or equivalent. Three credits; winter. Thomson.

*Not offered in 1939-1940.

*157. *Cicero: In Verrem.*

160, 161, 162. *Major Conference.* Discussion with members of the staff of various features of Greek and Roman life and literature not specifically dealt with in other courses. Required of all majors. One credit each quarter. Staff.

*165. *Cicero: De Finibus.*

*166. *Survey of Latin Satire.*

For Teachers' Course in Latin, see Education 75P.

COURSES FOR GRADUATES ONLY

*204. *Tacitus: Histories.*

*207. *Seneca: Moral Essays.*

211. *Latin Novel.* Three credits; spring. Read.

214. *Suetonius: Augustus.* Three credits; winter. Sidey.

*216. *Christian Latin.*

*218. *Cicero: De Natura Deorum.*

220. *Latin Elegy.* Three credits; autumn. Read.

285, **286. *Vulgar Latin.* Prerequisites, completion of work in Latin and at least one Romance language, satisfactory to instructor. Three credits; winter. Stone.

287, **288. *Medieval Latin.* Prerequisite, same as for 286. Three credits; spring. Stone.

COURSES IN CLASSICAL ANTIQUITIES, GIVEN IN ENGLISH

I. Greek

11. *Greek Civilization.* A study of the rise, growth, achievements, and decline of Greek Humanism as expressed in their political and social ideals and institutions as well as in their literature and art. Modern parallels in institutions and ideals will be examined. Knowledge of Greek not required. Five credits; autumn. Sidey.

13. *Greek Literature.* The masterpieces in English translation. Knowledge of Greek not required. Five credits; autumn, winter, Sidey; spring, Read.

17. *Greek and Roman Art.* Five credits; autumn. Sidey.

18. *Greek and Roman Mythology.* A study of the principal myths of Greece and Rome with special reference to their appearance in English literature. Three credits; winter. Sidey.

II. Latin

11. *Roman Civilization.* A brief review of Roman history, together with a study of the private life of the Romans and their contribution to modern civilization. Knowledge of Latin not required. Five credits; autumn, winter, spring. Stone.

13. *Roman Literature.* The masterpieces in English translation. Knowledge of Latin not required. Five credits; autumn, winter, spring. Read.

*Not offered in 1939-1940.
**To be offered if a sufficient number of students elect the course.

ECONOMICS AND BUSINESS

Commerce Hall

Professors Preston, Burd, Cox, Dakan, Demmery, Gould, Gregory, Hall, Mund, Skinner, Smith; Professor Emeritus McMahon; Associate Professors Brown, Butterbaugh, Farwell, Martin, McIntyre, Miller; Assistant Professors Chertkov, Lester, Lorig, Mackenzie; Lecturers Draper, McConahey, Truax; Instructors Fordon, Mikesell; Acting Instructor Bartels; Associates Hammack, Higman

Lower division courses are open to all students without prerequisite, except as indicated. E.B. 1-2 are required for majors in economics and business and should be taken by students who plan to devote two courses, and no more, to economics. Students who take but one course in economics must choose E.B. 4, *Survey of Economics and Business.* This course, together with Soc. 1, *Survey of Sociology,* and Pol. Sci. 1, *Survey of Political Science,* constitutes a general survey of the field of social science. This sequence is available to all students without prerequisite, and may be taken in any order that suits the convenience of the student. E.B. 1-2 are prerequisite to all intermediate courses, which are open to third quarter sophomores. All advanced courses have at least one specified intermediate course as a prerequisite. The following courses are open only to professional majors in the College of Economics and Business, except by special permission of the dean of the college and the instructor concerned: 123, 126, 127, 132, 134, 135, 136, 143, 144, 145, 146, 147, 148, 149, 152, 153, 154, 155, 156, 157, 158, 169, 170.

Lower Division Courses

1-2. *Principles of Economics.* The course is planned to give a general understanding of the organization of our economic life and the fundamental principles underlying it. Five credits each quarter; autumn, winter, spring.
Cox, ———, ———.

3. *General Economics.* Condensation of E.B. 1 and 2; abbreviated for students in chemistry, pharmacy, forestry, and engineering. Other students should elect E.B. 4 if only 5 credits are desired; E.B. 1 and 2 if 10 or more credits in economics is planned. Prerequisite, sophomore standing. Three credits; autumn, winter, spring. Cox, Farwell.

4. *Survey of Economics.* This course is *not* open to students in Economics and Business, economics majors in University College, or others who expect to continue with Economics and Business courses. Students who desire more than one course in economics should begin with E.B. 1 and 2. Five credits; autumn, winter, spring. Mikesell.

16-17-18. *Secretarial Training.* Designed to standardize the skills in shorthand and typewriting and other secretarial subjects. Two hours daily; three credits each quarter; autumn, winter, spring. Hamack.

54. *Business Law.* This and the two following courses are designed to give the fundamentals of law which bear most closely upon ordinary business transactions. An introduction to the study of law, its origin and development, and the formation of contracts. Prerequisite, sophomore standing. Three credits; autumn, winter. Brown, Chertkov.

55. *Business Law.* Continuation of E.B. 54. Prerequisite, E.B. 54. Three credits; winter, spring. Brown, Chertkov.

56. *Business Law.* Continuation of E.B. 55. Prerequisite, E.B. 55. Three credits; autumn, spring. Brown, Chertkov.

57. *Business Law.* Arranged for engineering students or others who are unable to devote more than three credits to the study of business law. May not be substituted for E.B. 54, and does not carry credit for students in economics and business. Prerequisite, sophomore standing and English requirement. Three credits; autumn, winter. Brown, Chertkov.

62. *Principles of Accounting.* A study of fundamental accounting theory. Objectives of financial and operating statements analyzed. Four hours a week in accounting laboratory. Three lectures. Prerequisite, sophomore standing. Five credits; autumn, winter, spring. Mackenzie, Lorig.

63. *Principles of Accounting.* More specialized problems in general theory, practice, and analysis. Four hours a week in accounting laboratory. Three lectures. Prerequisite, E.B. 62. Five credits; autumn, winter, spring. Mackenzie, Lorig.

88. *Introduction to Insurance.* A study of the principles and uses of insurance in general. Prerequisite, E.B. 1-2. Five credits; winter. Smith.

Intermediate Courses

100. *Statistical Analysis I.* Application of statistical method to practical business and economic problems. The correct interpretation of statistical data is stressed. Prerequisite, E.B. 1-2. Five credits; autumn, winter, spring. Butterbaugh and Assistants.

101. *Scientific Management.* A general non-technical study. Scientific management as a philosophy and a scientific approach applicable to all business enterprises. Prerequisite, E.B. 1-2, 63. Five credits; autumn, winter, spring. Mackenzie.

103. *Money and Banking.* Functions of money; standards of value; principles of banking with special reference to the banking system of the United States. Prerequisite, E.B. 1-2. Five credits; autumn, winter, spring. Dakan, Preston, Mikesell.

104. *Public Service Industries.* A general survey of the elements of transportation and communication. Prerequisite, E.B. 1-2. Five credits; autumn, winter, spring. Farwell, Gould.

105. *Economics of Labor.* Economic factors in labor problems; economic and social aspects of labor and employing organizations; analysis of government measures with regard to labor problems. Prerequisite, E.B. 1-2. Five credits; autumn, winter, spring. Lester.

106. *Economics of Marketing and Advertising.* Development of economic principles; market processes and systems; the middlemen and their functions. Prerequisite, E.B. 1-2. Five credits; autumn, winter, spring. Miller.

107. *World Economic Policies.* Economic and commercial relations of nations; commercial treaties, tariff systems and administration. Prerequisite, E.B. 1-2. Five credits; autumn, winter, spring. Skinner.

108. *Risk and Risk Bearing.* The risk factor in its economic and social consequences; ways of meeting risk. Prerequisite, E.B. 1-2. Five credits; autumn. Smith.

109. *Principles of Real Estate I.* Economic principles underlying the utilization of land; forces influencing the growth and structure of cities. Prerequisite, E.B. 1-2. Five credits; winter, spring. Demmery.

110. *Accounting Analysis and Control.* The form, content and interpretation of the balance sheet, the profit and loss statement, and certain analytical statements. The principles of valuation and their application to the individual accounting categories. Prerequisite, E.B. 63. Five credits; autumn, winter, spring. Gregory, Lorig.

111. *Advanced Theory of Accounts I.* Application of accounting theory to business problems; advanced partnership and corporation problems; receiverships; annuities; consignments. Prerequisite, E.B. 110. Five credits; autumn, winter, spring. Draper.

112. *Advanced Theory of Accounts II.* Continuation of E.B. 111. Mergers and consolidations; consolidated balance sheets, and profit and loss statements; accounting for securities. Prerequisite, E.B. 111. Five credits; autumn, winter, spring. Draper.

115. *Business Correspondence.* Analysis of principles, including psychological factors. The study of actual business letters in terms of these fundamentals. Prerequisites, Comp. 1 and junior standing. Five credits; autumn, spring. Miller.

120. *Business Organization and Combination.* Business corporations, associations and combinations. Prerequisite, E.B. 1-2. Five credits; autumn. Mikesell.

Advanced Courses

BANKING AND FINANCE

121. *Corporation Finance.* Financial problems connected with the promotion of corporations, underwriting and sale of securities; financial management; financial problems accompanying corporation expansion. The reorganization of unsuccessful corporations. Prerequisites, E.B. 63 and E.B. 103. Five credits; autumn, winter, spring. Dakan.

122. *Principles of Investment.* Underlying principles of investment credit; origin and purpose of credit instruments; selection of sound investments; investment policy of individuals and institutions; care of investments; relation of the investment market to the money market. Prerequisite, E.B. 121. Five credits; autumn, winter. Dakan.

123. *Investment Analysis.* An analytical study of typical industrial, public utility, and railroad securities; analysis of financial operations, revenue and expense reports, and their use in determining investment values. Prerequisite, E.B. 122. Five credits; spring. Dakan.

125. *Advanced Money and Banking.* Presupposes a knowledge of our existing financial organization and devotes attention to questions of banking and monetary policy. Prerequisite, E.B. 103. Five credits; spring. Mikesell.

126. *Bank Credit Administration.* The administration of bank credit based on actual problems selected from portfolios of Pacific Northwest banks. Prerequisites, E.B. 63, 103, and consent. Three credits; winter. Truax.

127. *Foreign Exchange and International Banking.* Foreign currencies and banking systems; foreign banking by American institutions; foreign exchange markets; theory of international exchange; financing of exports and imports; specie movements. Prerequisites, E.B. 103, 107. Five credits; autumn. Skinner.

128. *Personal Insurance.* Scientific basis of life insurance; types of policies; premium rates and reserves. Prerequisite, E.B. 108. Given in spring, 1939, and alternate years thereafter. Five credits; spring. Smith.

129. *Property Insurance.* Coverage of property risks; types of companies; study of the standard fire insurance contract. Prerequisite, E.B. 108. Given in spring, 1940, and alternate years thereafter. Five credits; spring. Smith.

FOREIGN AND DOMESTIC COMMERCE

131. *Principles of Foreign Trade.* The historical development of world commerce; theories, principal materials, trends. Prerequisites, Geog. 7 or 1, E.B. 107. Five credits; winter. Skinner.

132. *Advanced Foreign Trade.* International trade theories as tested by the facts of commerce; government and private trade promotion; organization and management of foreign trade concerns; foreign trade methods and practices. Prerequisite, E.B. 131. Five credits; spring. Skinner.

134. *Wholesaling.* The wholesale functions and agencies performing them; historical development and economic justification; recent trends and future prospects. Prerequisite, E.B. 106. Five credits; autumn. Miller.

135. *Retailing.* The various types of retail organizations; their evolution, present status and future prospects; economic functions performed by each type; their relative efficiency. Prerequisite, E.B. 106. Five credits; winter. Miller.

136. *Advertising.* Advertising as a business force; its economic justification as a factor in marketing; analysis of current criticism; advertising organizations, their functions and procedure. Prerequisite, E.B. 106. Five credits; spring. Miller.

*138. *Recent Marketing Trends.*

PUBLIC UTILITIES AND TRANSPORTATION

141. *Regulation of Public Utilities.* Economic, legislative and administrative problems of regulation. Prerequisite, E.B. 104. Five credits; autumn. Hall.

142. *Advanced Economics of Public Utilities.* Economic characteristics of public utilities; rate principles and practices with reference to cost differentiation; finance, etc. Prerequisite, E.B. 104. Five credits; winter. Hall.

143. *Railway Transportation.* Critical evaluation of problems of finance, operation, competition, combination and regulation. Prerequisites, E.B. 63, 100, 104. Five credits; winter. Gould.

144. *Water Transportation.* Problems of joint and special costs, competition, rate practices, rate agreements, shipping subsidies, intercoastal regulations. Prerequisites, E.B. 63, 100, 104. Five credits; autumn. Gould.

145. *Highway Transportation.* A treatment of the principles used in the traffic and operating divisions of highway transportation. Prerequisites E.B. 63, 100, 104. Five credits; spring. Gould.

146. *Air Transportation.* Economic principles of modern air transport, with particular reference to operating methods and costs; traffic promotion; schedule maintenance; safety; governmental regulation; airport management. Prerequisites, E.B. 63, 100, 104. Five credits; autumn. Farwell.

*Not offered in 1939-1940.

147. *Transportation Rates.* An intensive examination of theory underlying commodity classifications and tariffs. Rate-making power of governmental bodies. Prerequisite, one of the following: E.B. 143, 144, 145, 146. Five credits; spring. Gould.

148. *Traffic Management.* Problems of routing, expediting, auditing, demurrage, reconsignment, port and terminal facilities. Prerequisite, one of the following: E.B. 143, 144, 145, 146. Five credits; winter. Farwell.

149. *Marine Insurance and Carriers' Risks.* Liabilities of rail and water carriers; plans of marine insurance; marine underwriters; insurable interests; warranties. Prerequisite, one of the following: E.B. 143, 144, 145, 146. Five credits; spring. Farwell.

MANAGEMENT AND ACCOUNTING

150. *Technology of Industry.* The manager's use of technology. The important industrial factors used in controlling physical operating conditions. Prerequisite, E.B. 101. Five credits; winter, spring. McIntyre.

152. *Government Accounting.* The essentials of accounting and financial reporting for municipal, county, state, and federal governments. Includes an examination of the types of funds necessary and the method of accounting for same, the interpretation of government reports, and the accounting aspect of budgetary control. Prerequisite, E.B. 110. Five credits; autumn. Lorig.

153. *Accounting Systems.* A thorough study is made of accounting and personnel problems to be considered in the development and installation of systems of accounting. Special attention is given to the objectives of the system; planning the system to provide the information required by the management; the chart of accounts with details of routine; forms and equipment required, and the record of results or periodic report. Prerequisite, E.B. 112. Five credits; spring. Lorig.

154. *Cost Accounting I.* Economics of cost accounting; industrial analysis; production control through costs; types of cost systems, burden application; standard costs; selected problems. Prerequisite, E.B. 110. Five credits; autumn, winter, spring. Gregory.

155. *Cost Accounting II.* Theory and practice of standard costing and budgeting; sales, distribution and administrative cost; differential costs. Prerequisite, E.B. 154. Five credits; spring. Gregory.

156. *Income Tax Accounting.* Selected cases illustrating the definition of taxable income of individuals, corporations, partnerships. Regulations of Treasury Department. Prerequisite, E.B. 112. Five credits; autumn, winter. Lorig, McConahey.

157. *Auditing.* Auditing procedure; balance sheet audits; analysis of income and expense; certifications and reports; classifications of audits and asset and liability values; profit and loss statement audits; analysis of investigations. Prerequisite, E.B. 112. Five credits; autumn, winter. Cox.

158. *C.P.A. Problems.* Selected problems taken from the American Institute of Accountants and state C.P.A. examinations. Prerequisite, E.B. 157. Five credits; winter, spring. McConahey.

ADVANCED ECONOMICS AND BUSINESS

161. *Labor Legislation.* A consideration of legislative and judicial actions bearing directly on labor problems and the labor movement in their relation to social, political, and economic theories. Prerequisite, E.B. 105. Five credits; spring. Chertkov.

*162. *European Labor Problems.*

*163. *Economics of Consumption.*

164. *Labor Relations.* Study of labor relations and collective bargaining in various branches of American industry, together with an analysis of experience here and abroad with government intervention in labor disputes. Prerequisite, E.B. 105. Five credits; autumn. Lester.

169. *Real Estate II.* Types of real estate uses and their characteristics; appraisals of farm and urban land and improvements; property rights; real estate finance; management of real property; leases. Prerequisite, E.B. 109. Five credits; autumn. Demmery.

170. *Advanced Statistical Analysis.* A continuation of E.B. 100. Cases and problems are analyzed in order to develop ability in applying statistical technique to practical problems in economics and business. Prerequisite, E.B. 100. Five credits; winter. Butterbaugh.

171. *Public Finance and Taxation I.* The growth of public expenditures; the underlying principles and theory of the various forms of public revenue; the character of various forms of taxation; the principles and practices of public credit and of public financial administration. Prerequisite, E.B. 103. Five credits; autumn, spring. Hall.

172. *Public Finance and Taxation II.* A survey and analysis of fiscal thought; methods and problems in expenditure analysis; a study of tax systems; theories and problems of classification, equity and incidence in taxation; a critical evaluation of the use and control of public credit and the custody and disbursement of public funds. Prerequisite, E.B. 171. Five credits; winter. Hall.

175. *Business Fluctuations.* Survey of past business fluctuations, secular trends, seasonal variations, irregular fluctuations and business cycles; discussion of forces which tend to destroy economic equilibrium; proposals for controlling business fluctuations. Prerequisite, E.B. 103. Five credits; autumn, winter, spring. Demmery.

*177. *Social Insurance.*

181. *Economic Development of the United States.* Special attention will be given to manufactures, commerce, labor, finance, and agriculture. Prerequisite, 30 upper division credits in economics and business. Five credits; autumn. ———.

185. *Advanced Economic Theory.* Economic thought centering about the neo-classical theories of value and distribution and the validity of this thought under present conditions. Prerequisite, 30 upper division credits in economics and business. Five credits; autumn, winter, summer. Mund.

187. *Development of Economic Thought.* A study of the contributions of the classical and neo-classical economists and their contemporary critics. Primary sources will be used and attention will be given to the industrial, social, and political background of economic thought. Prerequisite, E.B. 185. Five credits; winter, summer. Mund.

*Not offered in 1939-1940.

RESEARCH COURSES FOR UNDERGRADUATES AND GRADUATES

190. *Research in Business Administration.* Summer quarter only. Staff.

193A, B, C. *Problems in Wholesaling, Retailing and Advertising.* Individual and group study. Required business contacts. Compiling, organizing and interpreting data from original and library sources. Each student will specialize in one field: wholesaling, retailing, or advertising. Prerequisites, E.B. 134, 135, 136, and consent. Five credits each quarter; autumn, winter, spring. Burd.

194A, B. *Research in Transportation.* Open only to qualified students in transportation who will be placed in part-time contact with transportation agencies. Prerequisite, consent of instructor. Three credits each quarter; autumn, winter. Gould.

195A, B, C. *Research in Management and Accounting.* Open to qualified undergraduate and graduate students. Prerequisite, consent of instructor. Three credits each quarter; autumn, winter, spring. Gregory.

196A, B, C. *Research in Public Utilities or Public Finance.* Open to qualified undergraduate and graduate students. Prerequisite, consent of instructor. Three credits each quarter; autumn, winter, spring. Hall.

197C. *Research in International Trade.* Open to qualified undergraduate and graduate students. Prerequisite, consent of instructor. Three credits; spring. Skinner.

199B, C. *Research in Real Estate and Business Fluctuations.* Open to qualified undergraduate and graduate students. Prerequisite, consent of instructor. Three credits each quarter; winter and spring. Demmery.

COURSES FOR GRADUATES ONLY

200A, B, C. *Thesis Seminar.* No credit; autumn, winter, spring, summer. Staff.

202A, B. *Graduate Seminar in Finance.* For students interested in monetary and banking history and theory, and business finance. Prerequisites, E.B. 103, at least one advanced course in finance, and consent of instructor. Five to seven credits; winter. Preston.

205C. *Graduate Seminar in Public Finance.* Prerequisite, graduate standing and consent of instructor. Five to seven credits; spring. Hall.

206B, C. *Graduate Seminar in Labor.* Theories and problems. Prerequisites, one advanced course in labor, and consent of instructor. Five to seven credits each quarter; winter, spring. Lester.

208A. *Graduate Seminar in Economics.* Class discussions and reports; individual conferences. Prerequisites, E.B. 185, 187, or equivalent, and consent of instructor. Five to seven credits; autumn. Mund.

210A, B, C. *French and German Economists.* Prerequisite, consent of instructor. Three credits each quarter; autumn, winter, spring. Skinner.

*212. *Seminar in Public Service Problems.*

214A. *Graduate Seminar in International Economics.* Prerequisite, graduate standing and consent of instructor. Five to seven hours credit; autumn. Skinner.

*Not offered in 1939-1940.

258. *Problems in Accounting Theory.* An intensive study of accounting theory through the use of problems. Prerequisite, 112, graduate standing and consent of instructor. Five credits; spring. McConahey.

TEACHERS' COURSES IN BUSINESS ADMINISTRATION

Edu. 75E. *Teachers' Course in Accounting.* Five credits. (Two credits only count in education); spring. Draper.

Edu. 75F. *Teachers' Course in Shorthand and Typewriting.* Five credits. (Two credits only count in education); spring. Hamack.

EDUCATION

Education Hall

Professors Uhl, Bolton, Cole, Draper, Dvorak, Osburn, Stevens, Williams; Associate Professors Corbally, Jessup, Powers; Lecturer Sperlin

1. *Education Orientation.* A preview of the field of teaching in its several phases. Conferences. For those contemplating teaching as a profession. Credit only to freshmen and sophomores. Required of all undergraduates planning to secure the normal diploma. Two credits; autumn, winter, spring. Uhl, Jessup.

I. Elementary Courses (Upper Division Credit)

9. *Psychology of Secondary Education.* Prerequisites, Edu. 1, Psych. 1, and an all-university grade-point average of at least 2.5. Three credits; autumn, winter, spring. Powers.

30. *Washington State Manual.* For all applicants for Washington teaching certificates. No credit; autumn, winter, spring. Corbally.

60. *Principles of Secondary Education.* Problems of high school teaching. Quiz sections; conferences; visits to public schools. May be taken concurrently with Edu. 90. Prerequisites, Edu. 1, 9, and 70. Three credits; autumn, winter, spring. Draper.

70.. *Introduction to High School Procedures.* Prerequisites, Edu. 1, 9, and an all-university grade-point average of at least 2.5. Five credits; autumn, winter spring. Williams.

71-72. *Cadet Teaching.* Semester basis. Course 72 may precede or follow 71. Prerequisites, Edu. 1, 9, 70, 60, 90, and 75 or approved equivalent, and, after December, 1939, an all-university grade-point average of at least 2.5. Eight credits. Cadets electing autumn semester register for 71, five credits, autumn quarter; 72, three credits, winter quarter. Cadets electing spring semester register for 72, three credits, winter quarter; 71, five credits, spring quarter. Also register for Education 30, no credit. Three successive free hours should be provided in the schedule each quarter for cadet teaching. Cadets registering for autumn semester report at 114a Education Hall, Monday, September 25 at 8:30 a.m. for assignment to Seattle Schools. Corbally, Powers.

71N-72N. *Cadet Teaching for Vocational Home Economics Majors Only.* Prerequisites as for 71-72. Students planning to take 71N in autumn or winter quarters must register for 72N spring quarter of preceding year. Students taking 71N in spring quarter must register for 72N in winter quarter immediately preceding. Students must register for Educ. 30 either autumn or spring quarters, and must attend the weekly four o'clock lectures in Educ.

72, winter quarter. 71N, five credits; 72N, three credits, totalling eight credits. Autumn, winter, spring. Corbally, Raitt.

71P-72P-73P. *Cadet Teaching for Women Health and Physical Education Majors.* Prerequisites as for 71-72. Eight credits; three quarters required. Registration in 71P, three credits, 72P, two credits; 73P, three credits. Teaching arrangements made by the school of physical education and hygiene for women and the director of cadets. Corbally, Hutchinson.

90. *Measurement in Secondary Education.* Use of tests and scales for diagnosis, remedial education, motivation, and study of individual differences. May be taken concurrently with Edu. 60. Prerequisites: Edu. 1, 9, 70, and an all-university grade-point average of at least 2.5. Two credits; autumn, winter, spring. Dvorak.

75B. *Botany.* Prerequisite two years of botany. This course is to be taken concurrently with Edu. 71. Two credits; autumn. Frye.

75C. *Chemistry.* Prerequisite, at least 20 credits of college chemistry of average "B" grade. Two credits; autumn, winter, spring. Smith.

75D. *Civics.* Attitude of approach, arrangement of material, methods of presentation. Two credits; spring. Webster.

75E. *Commercial Course.* Typical business courses examined and discussed. Prerequisite, 30 credits of the 54 required for a major in commercial teaching, including 15 credits in accounting. Five credits (two credits only count as education; three count as economics and business); spring. Draper.

75F. *Commercial Course, Shorthand and Typewriting.* A study of curriculum, methods of teaching, objectives, standards, grading, examination, and demonstrational problems. Emphasis on shorthand and typewriting. Five credits; spring. Hamack.

75H. *English.* Five credits. Two credits count as education; three credits as English; autumn, spring. Sperlin.

75K. *French.* Prerequisites, French 41, 101, 102, 103, 158, and 159. Two credits; spring. Simpson.

75L. *German.* Prerequisite, German 110, or consent of instructor. Two credits; spring. Schertel.

75M. *History.* Special reference to work of the high school. Open to seniors. Five credits. Two credits count as education; three credits as history; spring. Gates.

75NA. *Home Economics.* Survey of objectives, organization, and curricula of home economics in elementary, junior and senior high schools. Prerequisite, 25 credits in home economics. Three credits (only two count toward normal diploma); spring. Raitt.

75NB. *Home Economics.* Organization and methods of instruction for nurses, dietitians, internes, employees of hospitals and other institutions. Prerequisites, 25 credits in home economics. Three credits (two count toward normal diploma); autumn. Terrell.

75O. *Geography.* (Prerequisites, Geography 1, and 5 additional credits.) Two credits; spring. Earle.

For teachers' course in journalism, see Jour. 125.

75P. *Latin.* Prerequisite, 20 credits of college Latin. Course must be taken in combination with Latin 107 except by special arrangement. Two credits; autumn. Stone.

75Q. *Mathematics.* Prerequisite, Math. 109. Three credits (two credits in education; one credit elective); spring. Jerbert.

For teachers' course in music, see Music 116.

For teachers' course in physical education for men, see Phys. Edu. 141, 142, 143.

75V. *Health and Physical Education for Women.* Prerequisites, Phys. Edu. 162, 163, 164, at least five credits of which must be in residence. Two credits; autumn. Hutchinson.

For teachers' course in piano, see Music 167.

75X. *Speech.* Five credits; two credits will count as education and three as electives in speech; spring. Orr.

For teachers' course in sociology, see Soc. 164.

75Y. *Spanish.* Prerequisites, Span. 101, 102, 103, 159. Two credits; spring. Umphrey.

75Z. *Zoology.* Prerequisite, 20 credits in zoology. Two credits; winter. Guberlet.

II. Intermediate Courses (Upper Division and Graduate Credit)

101. *Educational Psychology.* A systematic treatment of the theoretical principles and experimental background in the field. Three credits; autumn. Powers.

104. *Psychology and Training of Exceptional Children.* Subnormal, superior, backward, eccentric, and delinquent children studied from the point of view of the teacher. Five credits; spring. Dvorak.

105. *Modern Problems of Adolescence.* Five credits; autumn, winter. Bolton.

120. *Educational Sociology.* A consideration of the problems of education as related to the process of social evolution. Three credits; autumn, winter, spring. Bolton.

122. *Diagnostic and Remedial Work in Education.* Materials and devices for locating pupils' difficulties. Special reference to progress in school subjects. Emotional defects. Three credits; winter. Osburn.

134. *High School Organization and Administration.* A study of the high school principal as supervisor, administrator, and director of extraclass and intramural activities. Three credits; spring. Corbally.

140. *School Supervision.* Analysis of the problems and technique of the improvement of school work through the in-service education of teachers. Four credits; autumn. Jessup.

141. *Supervision of Elementary School Subjects.* Four credits; winter. Jessup.

145V. *Principles and Objectives of Vocational Education.* Aims of vocational education, materials of instruction, standards of work, and judging measurement of work. Three credits; winter. Corbally.

146. *Extraclass and Intramural Activities.* Weekly conferences with the instructor. Class is limited to 20 students. Prerequisite, Education 60. Three credits; spring. Draper.

147. *Educational and Vocational Guidance.* Three credits; autumn. Corbally.

153. *Elementary School Curricula.* Four credits; spring. Jessup.

158A. *Investigations in Reading.* Scientific studies of elementary school reading. Primarily for administrators and teachers with experience. Three credits; autumn. Osburn.

164-165. *Principles and Technique of Curriculum Making.* Students must give one hour a week for laboratory and field work in public schools. Prerequisite, Edu. 60 and 70 or equivalent. Three credits a quarter; autumn, winter. Draper.

175. *The Improvement of Teaching.* Adaptation of instruction to individual differences. Examination of laboratory studies; summarization of research. Three credits; spring. Osburn.

180, 181, 182. *History of Education.* A social interpretation of the historic beginnings of education. Three credits a quarter; autumn, winter, spring. Jessup.

183. *Historical Backgrounds of Educational Method.* Three credits; autumn. Williams.

184. *Comparative Education.* Modern education in foreign countries. Five credits; spring. Jessup.

188. *Philosophy of Education.* Three credits; autumn. Jessup.

191. *Advanced Educational Measurements.* Prerequisite, Edu. 90 or its equivalent. Three credits; winter. Dvorak.

193. *Character Education.* Experimental background of the modern effort toward character development. Three credits; winter. Powers.

197, 198, 199. *Individual Research.* Prerequisite, consent of department. Two to five credits; autumn, winter, spring. Staff.

III. Advanced Courses (Open to Graduates Only)

201. *Advanced Educational Psychology.* Students must have as prerequisites courses in general and educational psychology. Three credits; spring. Powers.

209-210. *Seminar in Psychology of High School Subjects.* Three credits; winter, spring. Williams.

220. *Seminar in Educational Sociology.* Five credits; spring. Bolton.

222. *Seminar in Diagnostic and Remedial Work in Education.* Five credits; spring. Osburn.

230. *Seminar in Administration.* (Legislation). Four credits; winter. Jessup.

232. *Reconstruction in Education.* Survey of educational trends in the program of education. Extension of school service and the adjustment of subject instruction to life situations. Five credits; winter. Cole.

233. *Seminar in Administration.* (School Buildings.) Four credits; spring. Jessup.

240. *Technique of Objective Supervision.* Three credits; spring. Williams.

245, 246, 247. *Organization of Supervisory and Administrative Programs.* Types of schools and changes being made in them, supervision of instruction, and pupil accounting. Five credits; autumn, winter, spring. Cole.

260-261. *Seminar in Secondary Education.* Two credits each quarter; winter, spring. Draper.

263. *Junior College.* Three credits; spring. Dvorak.

265, 266. *College Problems.* Higher education from the standpoint of the new instructor. History of administrative organization. The course will be adapted to individual needs through special assignments. One two-hour laboratory period to be arranged. Five credits; autumn, winter. Stevens.

267, 268, 269. *Guidance and Counseling.* Counseling in colleges and public schools. Students must reserve time each week for duties in a counselor's office. Discussion and reports. Five credits; autumn, winter, spring. Stevens.

270-271. *Problems in Modern Methods.* Three credits each quarter; autumn, winter. Williams.

275. *Improvement of College Teaching.* Methods for making college teaching more effective. One two-hour laboratory period to be arranged. Prerequisite, Edu. 265, 266 and approval of instructor. Five credits; spring. Stevens.

287, 288, 289. *Seminar in Philosophy of Education.* Three credits each quarter; autumn, winter, spring. Uhl.

290. *Educational Statistics.* Required of candidates for the doctor's degree in education. Five credits; autumn. Dvorak.

291. *Methods of Educational Research.* Required for master's and doctor's degrees in education. Three credits; autumn, winter. Dvorak.

298, 299, 300. *Individual Research or Thesis Work.* Credits to be arranged; autumn, winter, spring. Indicate "field" by letter when registering. Staff.

Sec.

A. Educational psychology

B. Educational sociology

C. Educational administration and supervision

D. Elementary education and remedial education

E. Secondary education, general; curriculum; guidance

F. Classroom techniques

G. History and philosophy of education and comparative education

H. Educational measurements and scientific techniques

ELECTRICAL ENGINEERING

Engineering Hall

Professors Magnusson, Loew, Shuck; Associate Professors A. V. Eastman, Hoard, Lindblom, Smith; Assistant Professor Cochran; Instructor Wolfe

101. *Direct Currents.* Short course in continuous-current machinery, for non-electrical students. To be taken in connection with E.E. 102. Prerequisites, Physics 98, Math. 41. Four credits; autumn, winter, spring. Hoard, Smith, Eastman.

102. *Direct Currents Laboratory.* Continuous-current machinery, for non-electrical students. To be taken with E.E. 101. Prerequisite, Physics 98. Two credits; autumn, winter, spring. Shuck, Smith, ———.

103. *Direct Currents.* A short course in direct-current machinery, for civil engineering students. To be taken with E.E. 104. Prerequisite, Physics 98, Math. 41. Three credits; autumn. Lindblom, Wolfe.

104. *Direct Currents Laboratory.* Direct-current machinery, for civil engineering students. To be taken with E.E. 103. Prerequisite, Physics 98. One credit; autumn. Cochran, ———.

105. *Electric Wiring.* A short course for architects. Two credits; autumn. Shuck.

109. *Direct Currents.* Theory of electric and magnetic circuits; construction, operation, and characteristics of direct-current machines. To be taken with E.E. 110. Prerequisites, Physics 98, Math. 41. Four credits; autumn, spring. Smith, Wolfe.

110. *Direct Currents Laboratory.* Direct-current machinery. Prerequisite, Physics 98. To be taken with E.E. 109. Two credits; autumn, spring. Eastman, Cochran, ———.

111. *Direct Currents.* Continuation of E.E. 109 in direct-current machinery. Storage batteries. Direct-current systems. To be taken with E.E. 112. Prerequisite, E.E. 109. Four credits; autumn, winter. Shuck, Lindblom, ———.

112. *Direct Currents Laboratory.* Experimental work on direct-current dynamo machinery. To be taken with E.E. 111. Prerequisite, E.E. 110. Four credits; autumn, winter. Hoard, Cochran, Wolfe.

**15. *Elementary Direct Currents.* (Extension night class.) Laws of the electric and magnetic circuits with application to direct-current machinery. Practical course for electricians. Shuck.

**20. *Elementary Alternating Currents.* (Extension night class.) Alternating-current theory with experimental work on alternating-current machinery. Prerequisite, E.E. 15. Shuck.

121. *Alternating Currents.* Alternating currents for non-electrical students. To be taken with E.E. 122. Prerequisite, E.E. 101. Four credits; autumn, winter, spring. Shuck, Eastman, ———.

122. *Alternating Currents Laboratory.* Experimental work on alternating-current machinery. To be taken with E.E. 121. Prerequisite, E.E. 102. Two credits; autumn, winter, spring. Shuck, Cochran, ———.

**To be offered if a sufficient number of students elect the course.

123. *Alternating Currents.* A short course in alternating-current machinery for civil engineering students. To be taken with E.E. 124. Prerequisites, E.E. 103, 104. Three credits; winter. Smith, Wolfe.

124. *Alternating Currents Laboratory.* Alternating-current machinery for civil engineering students. To be taken with E.E. 123. Prerequisites, E.E. 103, 104. One credit, winter. Wolfe, ———.

141. *Illumination.* Electric lamps; commercial photometry; adaptation of electric lighting to commercial requirements. Junior or senior elective. Prerequisites, E.E. 109, 110. Three credits; winter. Shuck.

152. *Electrical Machine Design.* Complete design of one direct-current generator or motor. Prerequisites, E.E. 111, 112. Three credits; autumn, winter, spring. Lindblom.

**154. *Design of Electrical Apparatus.* Switchboards, transformers, alternators, alternating-current motors, etc. Prerequisites, E.E. 152, 163. Four credits. Lindblom.

161. *Alternating Currents.* Theory of singlephase and polyphase systems; power factor and power measurements; theory of transformers and induction motors. To be taken with E.E. 162. Prerequisite, E.E. 111. Six credits; winter, spring. Hoard, Lindblom, Cochran.

162. *Alternating Currents Laboratory.* Experimental work with alternating-current machinery. To be taken with E.E. 161. Prerequisite, E.E. 112. Four credits; winter, spring. Hoard, Shuck, ———.

163. *Alternating Currents.* Theory of alternators, rotary converters, rectifiers, synchronous and commutator motors, and transmission lines. To be taken with E.E. 164. Prerequisite, E.E. 161. Six credits; autumn, spring. Loew, Shuck, Lindblom.

164. *Alternating Currents Laboratory.* To be taken with E.E. 163. Prerequisite, E.E. 162. Four credits; autumn, spring. Shuck, Hoard, Smith.

171. *Electric Railways.* Electrification of steam railroads. Fundamentals of direct-current and alternating-current systems of electrification. Prerequisites, E.E. 161, 162. Four credits; autumn. Hoard.

**173. *Central Stations.*

175. *Power Transmission.* Theory, design, and operation of electric-power transmission lines. Prerequisites, E.E. 163, 164. Five credits; winter, spring. Loew.

181. *Vacuum Tubes.* Fundamentals of vacuum tubes; theory of rectifiers and amplifiers; photoelectric cells; thyratrons; applications to power and communication fields. To be taken with E.E. 182. Prerequisite, E.E. 161. Four credits; autumn, winter. Hoard, Eastman.

182. *Vacuum Tubes Laboratory.* Experimental work with vacuum tubes. To be taken with E.E. 181. Prerequisite, E.E. 162. Two credits; autumn, winter. Cochran, Hoard.

183. *Radio.* Theory of vacuum-tube oscillators, modulators, detectors, and amplifiers; applications in the radio and other high-frequency fields. Prerequisite, E.E. 181. Five credits; winter, spring. Eastman, Cochran.

184. *Radio-Telephone Transmitter Practice.* Supervised study and practice in radio-telephone transmitter operation. Credit allowed only after stu-

**To be offered if a sufficient number of students elect the course.

dent has passed U.S.F.C.C. first-class radio-telephone license examination. Prerequisite, E.E. 183. Two credits; autumn, winter, spring.
Eastman, Cochran.

185. *Telephone Transmission.* Theory of telephone transmission; reflection phenomena; standing and traveling waves; loading; measurement of line constants; filter design. Prerequisite, E.E. 161. Five credits; autumn, spring. Eastman, Cochran.

188, 190, 192. *Research.* Two to five credits a quarter; autumn, winter, spring. Staff.

191. *Advanced Circuit Theory.* Operational calculus applied to the solution of electric circuits. Prerequisites, E.E. 161, 162. Three credits; winter, spring. Loew.

193. *Advanced Circuit Theory.* A study of net-works under short circuit conditions with the use of symmetrical components. Prerequisite, E.E. 161. Three credits; spring. Shuck.

194. *Seminar.* For the year 1939-1940 this seminar will be in the field of hydro-electric power resources in the State of Washington. Prerequisites, E.E. 163, 164. Five credits; spring. Magnusson.

195. *Electric Transients.* Single and double energy transients; standing and traveling waves; short-circuit transients; surges; corona; lightning. Prerequisite, E.E. 163. Three credits; autumn, winter. Magnusson.

196. *Electric Transients Laboratory.* To be taken with E.E. 195. Prerequisite, E.E. 164. Four credits; autumn, winter. Smith, Cochran.

197. *Seminar.* Prerequisites, E.E. 161, 162. Five credits; autumn.
Magnusson.

198. *Electric Transients Laboratory.* Continuation of E.E. 196. Study of electric transient phenomena by means of vibrator and cathode ray oscillographs, klydonograph, and voltage impulse recorders. Two to five credits; autumn, winter, spring. Magnusson, Smith.

205. *Seminar.* For 1939-1940 this seminar will be held in the field of radio transmission. Prerequisite, E.E. 185 or 175. Three credits; winter.
Eastman.

210, 212, 214. *Research.* Two to five credits a quarter; autumn, winter, spring. Magnusson.

Engineering English

For courses in Engineering English, see department of English, Comp. B, 100, 101, 102, 103 and Speech 103.

ENGLISH

LITERATURE: *Professors Griffith, Benham, Cox, Harrison, Heffner, Padelford, Taylor; Associate Professors Blankenship, Winther; Assistant Professors Cornu, Eby, Stirling, Wagenknecht, Zillman; Lecturer Sperlin; Instructors Burns, Ethel, Kahin, Kocher, Savage; Associates Butterworth, Ranson.* DRAMA: *Professor Hughes; Assistant Professor Conway; Instructor Harrington; Associates Ferrall, Gray, Hicken, Phillips; Theatre Assistants Bell, Cole, Davis.* SPEECH: *Professor Orr; Associate Professors Franzke, Rahskopf; Assistant Professor Carrell; Instructor Bird; Associates Baisler, Bixby, Burnett, Hill, Pellegrini.* FRESHMAN COMPOSITION: *Associate Professor Lawson in charge Freshman Composition; Instructors Hall, in charge Engineering English, Gillette; Associates V. Anderson, S. V. Anderson, Beal, Brown, Burgess, Dressler, Emery, Forrest, Mark, McKinlay, Nix, Norlin, Person, St.Clair, Vickner, Walters,* ———, ———. LIBRARY: *Gilchrist, Parrington Branch Librarian*

Suggestions to Major Students

The department of English includes four divisions: composition, literature, speech, and drama. Majors are granted in these four subjects, normally requiring from 45 to 60 credits, of which at least 50 per cent must be upper division. Composition 1 and 2 or their equivalent of composition are required but cannot be counted toward a major or minor.

At the conclusion of the senior year, all major students are required to pass the senior examination given by the division of English in which their major falls. The examination will require a general knowledge of English and American literature and specialization in the chosen branch of English study.

The schedules for majors and minors in the various divisions need not be repeated here, as they are found listed with the requirements for a teaching diploma in the bulletins of the College of Education. Majors in literature who are not seeking a normal diploma, however, may substitute English electives for Speech 79 and may omit Lit. 117. The "major courses" are grouped as follows:

Group	I.	Old and Middle English (150, 151) Old English Language (180, 181) English Literature 1476-1642 (153, 154)
Group	II.	Shakespeare (170, 171) Seventeenth Century Literature (167, 168) Eighteenth Century Literature (144, 145)
Group	III.	Early Nineteenth Century Literature (177, 178) Late Nineteenth Century Literature (174, 175, 176) American Literature (161, 162)

For the major in literature at least ten credits in one major course are required and five credits in each of the major groups other than the one in which the ten-credit major course is taken. For majors in drama, and minors in literature, at least ten credits from these major courses are required.

Candidates for a graduate degree in English are required to offer the equivalent of an undergraduate major in English at the University of Washington. In addition, majors present a master's thesis and 30 credits which include Lit. 201, 202, 203 and 15 credits in one graduate-year course. Minors present 12 graduate credits which shall complete the undergraduate major in English and contain at least five credits in English courses for graduates only.

Composition

A. *Elementary Composition.* A non-credit composition course required of students who fail in examinations for entrance into Comp. 1 or 4. Autumn, winter, spring. Miss Lawson in charge.

B. *Elementary Composition.* A non-credit course in the fundamentals of writing. For those who fail in the test for admission to Comp. 100. A passing grade in the course is equivalent to passing in this test. Autumn, winter, spring. Miss Hall in charge.

1, 2. *Composition.* Principles and practice of composition with conferences for personal criticism. Entrance into this course is gained by satisfactory grade in the freshman preliminary English test. As this test is graded both for entrance and for efficiency, there are several possible assignments for students after its completion. The usual assignments are (1) exemption from Comp. 1 and 2; (2) transfer to Comp. 15, where five credits of composition are required instead of 10; (3) assignment to Comp. 1, where if a student's work is of sufficiently high quality, he may be exempted from Comp. 2 on the recommendation of his instructor and the instructor in charge of this course; (4) assignment to Comp. 1 and 2; (5) transfer to Comp. A, a non-credit course required before entrance to Comp. 1. In forestry, the grade in Comp. 1 is a tentative grade contingent upon good work in English in subsequent forestry courses. Five credits each; autumn, winter, spring. Miss Lawson in charge.

1e-2e-3e. *English Composition and Literature.* This is an elective course substituting for Comp. 1 and 2 and allowing, in addition, credits in literature. Group and conference methods of instruction. Five credits; autumn, winter, spring. Burgess, Dressler, Walters.

4, 5, 6. *Composition.* In content, this course is the same as Comp. 1 and 2. For students in architecture, art, nursing education and drama. Three credits; autumn, winter, spring. Miss Lawson in charge.

9, 10. *Composition.* For students in pharmacy. Three credits, winter; two credits, spring. Miss Lawson in charge.

15. *Composition.* For students ranking very high in the freshman preliminary test as a substitute for Comp. 1 and 2. Five credits; autumn. Miss Lawson in charge.

37. *Argumentation.* Primarily for students in the College of Economics and Business. Analysis, the use of evidence, the discovery of fallacies, and the organization of logical discussion. Five credits; autumn, winter, spring. Stirling in charge.

51, 52, 53. *Advanced Composition.* Writing of exposition and personal essays. Upper division credit for upper division students. Prerequisite, Composition 2 or equivalent. Two credits; autumn, winter, spring. Person.

54, 55, 56. *Advanced Composition.* Writing of description, book reviews, and critical articles. Upper division credit for upper division students. Prerequisite, Composition 2 or equivalent. Two credits; autumn, winter, spring. Ethel, Brown, Ranson, Person.

57, 58, 59. *Narrative Writing.* The writing of the short story, tale, and sketch. Upper division credit for upper division students. Prerequisite, Composition 2 or equivalent. Three credits; autumn, winter, spring. Savage.

61, 62, 63. *Verse Writing.* Prerequisite, Comp. 1, 2. Two credits; autumn, winter, spring. Zillman.

74, 75, 76. *Dramatic Composition.* Principles of dramatic composition with experimental creative work in dramatic writing. This course may be substituted for required courses in drama with the consent of the department. Upper division credit for upper division students. Prerequisites, Comp. 1 and 2 or equivalent. Three credits; autumn, winter, spring. Savage.

100. *Technical Composition.* The logical organization of material, and its effective presentation in the form of articles, business letters, and reports. Prerequisite, the passing of a test in the mechanics of English, given to sophomore engineers on the third Tuesday of the autumn quarter. Three credits; autumn, winter, spring. Miss Hall in charge.

101. *Modern Reading.* A course for students in technology intended to direct their reading in non-technological fields. Conferences, written and oral reports. Students registered in this course may continue directed reading during vacations. Three to five credits; autumn, winter, spring. Hall.

102. *English for Engineers.* In this course, the technical student who wishes to come in contract with authors representative of the thought or the culture of either the past or the present and to improve his own style of writing, is given opportunity to progress in accordance with his ability. Individual conferences, weekly. Prerequisite, Comp. 100. Three credits; autumn, winter, spring. Hall.

103. *English for Engineers.* A continuation of Comp. 102. Three credits; autumn, winter, spring. Hall.

110, 111, 112. *Advanced Verse Writing.* Given in conjunction with Comp. 61, 62, 63. All the elementary credits must be earned before advanced credit will be given. Two credits; autumn, winter, spring. Zillman.

156, 157, 158. *Advanced Narrative Writing.* Prerequisite, six credits advanced composition or permission of instructor. Five credits; autumn, winter, spring. Savage.

184, 185, 186. *Professional Creative Writing.* The student entering this course should have the preliminary work on his writing project completed. Revision of manuscripts for emphasis, organization and style. Prerequisite, permission of instructor. Three to five credits each; autumn, winter, spring. Savage.

For other courses in composition, see Speech 139; Drama 111, 112, 113; Drama 144, 145, 146; Jour. 173, 174-175.

Drama

1, 2, 3. *Introduction to the Theatre.* Significant aspects of the modern theatre. An orientation course primarily for students expecting to major or minor in Drama. Lectures and required reading. Two credits; autumn, winter. Hughes.

47, 48. *Theatre Speech.* To prepare the speech of students for desirable usage in the theatre. Three credits; autumn, winter, spring. Harrington, Ferrall, Gray.

51, 52, 53. *Elementary Acting.* Theory and practice of the art of acting. Includes pantomime, improvisation, and characterization. Prerequisites, Speech 43, Drama 47, 48. Three credits; autumn, winter, spring. Harrington, Ferrall.

103. *Scene Construction.* Principles and actual construction of stage scenery and properties. One hour lecture, four hours laboratory. Three credits; autumn, winter, spring. Hicken.

104. *Scene Design.* Theory and practice of scene design. One hour lecture, four hours laboratory. Prerequisite, Drama 103. Three credits; autumn, winter, spring. Conway.

105. *Theatrical Costume Design and Construction.* Theory and practice of design and construction of theatrical costumes. One hour lecture, four hours laboratory. Three credits; autumn, winter, spring. Conway.

106. *Make-Up.* Principles and practice of theatrical make-up. One hour lecture, four hours laboratory. Three credits; autumn, winter, spring. Conway.

107, 108, 109. *Puppetry.* A practical course in educational and professional puppetry. History and principles of the marionette theatre. Design, construction, costuming, stringing, and manipulation of puppets. Portable puppet stage construction. With permission of the department, this course may be repeated for credit. Two credits; autumn, winter, spring. Phillips.

111, 112, 113. *Playwriting.* An advanced course for those who wish to write professionally for the stage. This course may be substituted for required courses in drama with the consent of the department. Prerequisite, two quarters of Composition 74, 75, 76, or permission of instructor. Three credits; autumn, winter, spring. Hughes.

114, 115, 116. *Stage Lighting.* Principles, equipment, and practice of stage lighting. Four hours laboratory. Two credits; autumn, winter, spring. Hicken.

117, 118, 119. *Advanced Theatre Workshop.* Four hours laboratory. Prerequisites, Drama 103, 104, 105, or 116 or permission. Two credits; autumn, winter, spring. Staff.

121, 122, 123. *Advanced Acting and Directing.* Emphasis on group acting. Practice in directing. Members of the class given first consideration for parts in public productions. Prerequisites, Drama 51, 52, 53. Three credits; autumn, winter, spring. Harrington, Ferrall.

127, 128, 129. *History of the Theatre.* Origin and evolution of theatre art in the Orient, Europe, and America. The physical playhouse, methods of production, great actors, stage machinery, scenery, lighting, costumes, and masks. Two credits; autumn, winter, spring. Conway.

141, 142, 143. *Radio Acting and Production.* Technique of radio acting and methods of dramatic production for radio. Actual broadcasting experience. Prerequisite, two quarters of acting. Two credits each; autumn, winter, spring. Bell.

144, 145, 146. *Radio Writing.* Principles of dramatic composition for radio with experimental production of scripts under actual broadcasting conditions. Prerequisite, two quarters of advanced composition or one quarter of playwriting. Three credits each; autumn, winter, spring. Bell.

151, 152, 153. *Representative Plays.* Origin and development of the drama in the Orient, Europe, and America. Representative plays of great playwrights of all important periods. Theories of the drama. Three credits; autumn, winter, spring. Hughes.

181, 182, 183. *Problems in Acting.* Advanced theories of acting applied to individual problems and group work. Prerequisites Drama 51, 52, 53, 121, 122, 123, and permission of instructor. Two credits; autumn, winter, spring. Harrington, Ferrall.

197. *Theatre Organization and Management.* A practical course for theatre directors. Theatre personnel, box-office methods, advertising, production costs, royalties, executive policies. Prerequisite, senior or graduate standing. Two credits; spring. Hughes.

COURSES FOR GRADUATES ONLY

210, 211, 212. *Research in Drama.* Individual conference. Permission of instructor necessary for enrollment. Time to be arranged. Five credits; autumn, winter, spring. Hughes in charge.

For other courses in drama see Literature 154, 170, 171, 208, 209, 210, 217, 218, 219.

Literature

Composition 1 or equivalent is prerequisite to all literature courses except Lit. 20 and 50.

20. *Survey of American Literature.* Five credits; autumn, winter, spring. Blankenship.

50. *Survey of Nineteenth Century Literature.* Studies and lectures in the poetry and novels of nineteenth century English literature. No prerequisite. Five credits; autumn, winter, spring. Wagenknecht.

57. *Introduction to Poetry.* An introduction to poetry with illustrations from the nineteenth century. Not open to students who have credit for Literature 21, 66, 83, or 84. Five credits; autumn, winter, spring.
Ethel, Kocher, Zillman.

58. *Introduction to Fiction.* A critical analysis of narrative poems, short stories, novels, and plays. For majors in literature and drama and for others who desire to study the organization of narrative literature. Upper division credit for upper division students. Not open to students who have credit for Literature 75. Five credits; autumn, winter, spring.
Griffith, Ethel, Burns.

64, 65. *Literary Backgrounds.* English classics, especially Beowulf, Chaucer, Spenser, Shakespeare, Milton, Dryden, Pope, Johnson, Burns, emphasizing literary forms, their appreciation, and social relations. Grade of "A" or "B" grants upper division credit to an upper division student for the quarter in which the grade is earned. Five credits; autumn, winter, spring.
Burns, Cornu, Heffner, Kahin, Kocher, Ranson, Stirling, Wagenknecht.

73. *Introduction to Modern Literature.* Essays on European and American thought. Readings in poetry, novel, and drama. Five credits; autumn, winter, spring. Cornu, Stirling.

97, 98, 99. *The Bible as Literature.* Open to all. Upper division credit for upper division students. Two credits; autumn, winter, spring.
Wagenknecht.

104, 106. *Contemporary Literature.* Special studies in English and continental contemporary literature for advanced students. Three credits; autumn, winter, spring. Harrison.

117. *History of the English Language.* Pronunciation, vocabulary, and syntax. Open to sophomores who intend to major in English. Literature 180 may be substituted for this course. Five credits; autumn, winter, spring.
Butterworth.

141, 142, 143. *Social Ideals in Literature.* Model commonwealths and such other literatures as illustrate the development of social and economic thought. Three credits; autumn, winter, spring. Benham.

144, 145. *Eighteenth Century Literature.* The classic period, Johnson and his Age, and eighteenth century romanticism. Five credits; autumn, winter, spring. Cox, Cornu.

*147, 148, 149. *The English Novel.*

150, 151. *Old and Middle English Literature.* Five credits; autumn, winter, spring. Griffith, Butterworth.

153, 154. *English Literature*: 1476-1642. The Renaissance, Spenser and his contemporaries; non-Shakespearean Elizabethan drama. Five credits; autumn, winter. Padelford, Taylor.

161, 162. *American Literature.* From the beginning to 1870. Five credits; autumn, winter, spring. Harrison, Eby, Blankenship, Burns.

164, 165, 166. *American Literature since* 1870. The beginning of realism; tendencies from 1900 to 1915; contemporary fiction and poetry. Three credits; autumn, winter, spring. Harrison.

167, 168, 169. *Seventeenth Century Literature.* Survey of the period; Milton and his contemporaries, and the Restoration. Five credits; autumn, winter, spring. Benham.

170, 171. *Shakespeare.* Comedies and histories (170); tragedies (171). Prerequisites, Lit. 64, 65. Five credits; autumn, winter, spring. Padelford, Taylor, Heffner, Kocher, Stirling.

174, 175. *Late Nineteenth Century Literature.* Poetry, novels, essays, and drama. Five credits; autumn, winter, spring. Winther, Wagenknecht.

176. *Late Nineteenth Century Literature: Browning.* Browning's longer poems. Five credits; spring. Padelford.

177, 178. *Early Nineteenth Century Literature.* Poetry, novels, essays, and drama. Five credits; autumn, winter, spring. Cox, Eby, Ethel, Zillman.

180, 181, 182. *Old English Language.* The reading of Anglo-Saxon classics in the original and the study of grammatical forms. Five credits; autumn, winter, spring. Butterworth.

*191. *Major Conference.*

Teachers' Courses. See Education 75H.

For courses in foreign literature taught in English, see Department of General Literature.

COURSE FOR GRADUATES ONLY

201, 202. *Graduate English Studies.* An introduction to graduate study by practice in research writing, bibliography, reading and studies in periods of English and American literature. Required of candidates for the master's degree. Five credits; autumn, winter. Griffith and Staff.

203. *Literary Criticism.* History of English criticism. Five credits; spring. Winther.

*Not offered in 1939-1940.

204, 205, 206. *Chaucer.* The problems of Chaucerian scholarship. Five credits; autumn, winter, spring. Griffith.

*208, 209, 210. *English Drama to* 1642.

211, 212, 213. *Seminar in Sixteenth Century Literature: Spenser.* Five credits; autumn, winter, spring. Padelford.

217, 218, 219. *Seminar in Shakespeare.* Five credits; autumn, winter, spring. Taylor.

221, 222, 223. *Seminar in Seventeenth Century Literature.* Five credits; autumn, winter, spring. Benham.

224, 225, 226. *American Literature.* Five credits; autumn, winter, spring. Eby.

*229. *Seminar in American Literature.*

230, 231, 232. *Old English.* Anglo-Saxon grammar, readings in Old English prose and poetry; Middle English language; Beowulf. Five credits; autumn, winter, spring. Butterworth.

*233, *234. *Advanced Old English.*

238, 239, 240. *Seminar in Early Nineteenth Century Literature.* Five credits; autumn, winter, spring. Cox.

241, 242, 243. *Victorian Literature.* Five credits; autumn, winter, spring. Winther.

244, 245, 246. *Eighteenth Century Literature.* Five credits; autumn, winter, spring. Cox.

250, 251, 252. *Thesis Research.* A student should not enroll for this course until he has chosen a thesis subject. Time and credit to be arranged; autumn, winter, spring. Staff.

For other graduate courses that may be counted toward an English major for an advanced degree, see General Literature 201, 202, 203, 211, and Liberal Arts 214, 215, 216.

Speech

Work in the division of speech is designed to contribute both to the practical needs of the individual and to the attainment of such general educational objectives as personality adjustment, analytical power, clear thinking and emotional control. Courses in speech fall into five main groups:

Group I. Public Address and Argumentation.
Courses 38, 40, 41, 101, 103, 138, 139, 188, 211, 212.

Group II. Voice Science and Voice Training.
Courses 43, 44, 187, 214.

Group III. Oral Interpretation of Literature.
Courses 79, 179, 215.

Group IV. Speech Pathology and Correction.
Courses 19, 50, 51, 190, 191, 192, 193, 194, 216.

Group V. General and Special Courses.
Courses 161, 162, 163, 186, 220, Education 75X.

*Not offered in 1939-1940.

19. *English Phonetics for Foreign Students.* Training in English speech. Two credits; autumn. Strother.

38. *Essentials of Argumentation.* Bibliographies, briefs, and oral arguments. Upper division credit for upper division students. Five credits; autumn, winter, spring. Pellegrini.

40. *Essentials of Speaking.* An elementary course in the fundamentals of effective speaking. Five credits; autumn, winter, spring. Orr in charge.

41. *Advanced Speaking.* Continuation of Speech 40, with special emphasis on problems of delivery. Upper division credit for upper division students. Prerequisite, Speech 40. Five credits; autumn, winter, spring. Bixby, Bird, Franzke.

43. *The Speaking Voice.* A fundamental training course with emphasis on the mental, emotional, and physical coordinations essential to good voice. Upper division credit for upper division students. Three credits; autumn, winter, spring. Orr, Rahskopf, Strother, Baisler, Hill, Burnett.

44. *Voice and Articulation.* Continuation of Speech 43 with special attention to problems of articulation and to the physiological and acoustic aspects of voice production. Upper division credit for upper division students. Prerequisite, Speech 43. Three credits; winter, spring. Rahskopf.

50. *Elementary Lip Reading.* The fundamental principles of lip-reading; sense training for speed and accuracy; study of relationship of lip-reading to the speaking situation. Two credits; autumn, winter, spring. Burnett.

51. *Advanced Problems in Lip Reading.* Continuation of Speech 50 with special emphasis on the complex elements of lip-reading. Prerequisite, Speech 50 or consent of instructor. Two credits; spring. Burnett.

79. *Oral Reading of Literature.* Required for a normal diploma in English. Upper division credit for upper division students. Prerequisite, Speech 43, unless a literature major. Three credits; autumn, winter, spring. Orr, Pellegrini, Bixby.

101. *Varsity Debate.* Only students chosen for the freshman and varsity debate squads may register for this course. Credits will be allowed upon the recommendation of the instructor in charge, provided that no more than three credits are earned in one year and that the total does not exceed twelve credits. Three credits; winter, spring. Orr, Bird, Franzke, Hill.

103. *Extempore Speaking.* Recommended to students in engineering and law. Not open to College of Arts and Sciences students nor to students who have credit in Speech 40. Three credits; spring. Bird.

138. *Methods in Debate and Public Discussion.* Study and practice of various types of debating, including the old traditional method and new modifications, such as cross-examination, symposium, and problem-solving debates. Particularly designed for teachers and speech majors. Prerequisite, Speech 38 or consent of instructor. Three credits; winter. Pellegrini.

139. *Forms of Public Address.* Study of the structure and style of the various forms of public address, based on analysis of modern speeches. Prerequisite, Speech 40. Five credits; autumn. Rahskopf.

161. *Radio Speech.* Special projects in the techniques of speech in radio, *viz.,* announcer's copy, talks, dialogue, interviews, group discussion, etc. Three credits; autumn. Bird.

162. *Radio Production Methods.* Manual and recorded sound effects, music in relation to broadcasts, microphone placement, studio set-up, timing, cutting of scripts are among the factors considered. Laboratory experience in the rehearsal studio of the Campus Radio Studios. Three credits; winter. Bird.

163. *Radio Program Building.* The planning of the radio program. Problems of adaption of literary forms for radio production, the presentation of expository, informational, and persuasive material by radio. Three credits; spring. Bird.

179. *Advanced Interpretation of Literature.* Advanced training in the mental and vocal technique essential to artistic oral interpretation of the various forms of literature. Prerequisite, Speech 79. Five credits; spring. Orr.

186. *Backgrounds in Speech.* Study of speech as a fundamental human activity considered from the biological, acoustic, psychological, and social aspects. Some attention is given to the development of speech as a field of study and the correlation of its various phases. Five credits; spring. Rahskopf.

187. *Voice Science.* The anatomy, physiology, physics and psychology of voice production. Prerequisite, Speech 43 or consent of instructor. Five credits; winter. Rahskopf.

188. *Advanced Problems in Speaking.* Advanced training in effective methods of preparation and delivery of speeches. Prerequisite, Speech 40. Five credits; spring. Orr.

190. *Speech Pathology.* Study of the nature, etiology, and diagnosis of disorders of speech. Not open to students having credit for Speech 193. Five credits; autumn. Strother.

191. *Speech Correction.* Methods of correcting speech defects. Clinical practice for qualified students. Three credits; autumn, spring. Strother.

192. *Speech Clinic.* Individual work for students having speech defects they wish to correct. Sec. A, Articulation Problems; Sec. B, Foreign Dialect; Sec. C, Stuttering; Sec. D, Voice Problems. No credit; autumn, winter, spring. Strother.

193. *Clinical Training in Speech Correction.* A training course in techniques and problems of speech correction. The work involves observation in the public schools and actual management of cases in the University Clinic, the Traveling Clinic, and at cooperating hospitals. Prerequisites, Speech 190, 191 and permission of instructor. Two credits; spring. Strother.

194. *Basic Methods of Teaching Lip-Reading.* Introduction to the theory and methods of diagnosing hearing disabilities and teaching lip-reading, with laboratory practice. Prerequisite, normal hearing. Five credits; winter. Burnett.

Teachers' Course. See Edu. 75X.

COURSES FOR GRADUATES ONLY

211. *Historical Principles of Public Address.* A critical evaluation of public addresses based on a study of their development from ancient to modern times. Students read in translation the more important works of Aristotle, Cicero, Quintilian, Wilson, Campbell, Whately and other modern critics. Five credits; autumn. Rahskopf.

212. *Research in Rhetoric and Public Address.* Five credits; winter. Rahskopf.

214. *Research in Voice.* Five credits; autumn. Orr.

215. *Research in Theory of Interpretation.* Five credits; winter. Orr.

216. *Research in Speech Pathology.* Five credits; spring. Strother.

220. *Thesis Research.* Time and credit to be arranged. Autumn, winter, spring. Staff.

FISHERIES

Fisheries Hall

Professor W. F. Thompson; Associate Professors Lynch, ———; Assistant Professor Donaldson

101. *Comparative Anatomy of Fishes.* Morphology of fishes. Emphasis on evolution of structures in reference to phylogeny. Prerequisites, Zool. 1 and 2. Two laboratory periods, three lectures. Five credits; autumn. Welander.

102. *The Classification and Identification of the Soft-rayed Fishes.* Special attention is given to salmon and trout. Prerequisite, Fish. 101. Two laboratory periods, three lectures. Five credits; winter. Welander.

103. *The Classification and Identification of the Spiny-rayed Fishes.* Special emphasis on game and food fishes. Prerequisite, Fish. 102. Two laboratory periods, three lectures. Five credits; spring. Welander.

105, 106, 107. *Commercial Aquatic Invertebrates.* Classification, life history, uses of commercially important invertebrates. Prerequisites, Zool. 1 and 2. Two laboratory periods, three lectures. Five credits; autumn, winter, spring. Lynch.

108, 109, 110. *Problems of Fisheries Science.* No prerequisite. Required of all majors any three quarters not later than Junior year. One credit; any quarter. Thompson and staff.

125. *The Spawning Habits of Game and Other Fishes.* Observations of salmon and trout spawning made in the field. Prerequisites, Fish. 101, 102. Two laboratory periods, three lectures. Five credits; autumn. Donaldson.

126. *Early Life History of Fishes.* Sexual maturity, growth, development, and the various environmental factors influencing growth of fish eggs, larvae and young fish. Prerequisite, Fish. 102. Two laboratory periods, three lectures. Five credits; winter. Donaldson.

151. *Natural Fish Foods and Water Supplies.* Fresh-water insects and crustacea and their relations to pond culture. Physical and chemical determinations of the suitability of water. Propagation of salt-water fishes. Prerequisites, Zool. 1 and 2; Chem. 1, 2, or 21 and 22. Three 2-hour laboratory periods and three lectures. Five credits; autumn. Lynch, Donaldson.

152. *Propagation of Freshwater Fishes; Methods of Hatching and Rearing.* Methods of feeding and efficiency evaluation of diets. Design, structure and maintenance of hatcheries, pond systems and aquaria. Prerequisites as for Fish. 151. Three 2-hour laboratory periods, three lectures. Five credits; winter. Lynch, Donaldson.

153. *Hatchery Biology.* Algae, higher plants, and miscellaneous invertebrates in relation to fish. Sanitation, disease prevention. Stream improvement. Stocking policies. Prerequisites as for Fish. 151. Three 2-hour laboratory periods, three lectures. Five credits; spring. Lynch, Donaldson.

154. *Diseases of Fish.* Nature and cause of disease in fish. Prerequisites, Zool. 1 and 2; Fish. 101 and 102. Two laboratory periods and three lectures a week. Five credits; autumn. Guberlet.

*157. *The Age and Growth of Game and Food Fishes.*

*158. *The Migrations of Game and Food Fishes.*

165, 166, 167. *Elementary Problems.* Students will be assigned problems to be worked out under the direction of an instructor. Prerequisite, 15 credits in fisheries. Two to five credits; any quarter. Staff.

195, 196, 197. *Seminar.* Reports and discussions of current fisheries literature. Prerequisite, 15 credits in fisheries. Two to five credits; any quarter. Thompson.

COURSES FOR GRADUATES ONLY

201, 202, 203. *Research.* Prerequisite, 25 credits in fisheries or its equivalent in Zoology. Credits to be arranged; any quarter. Thompson and staff.

205, 206, 207. *Graduate Seminar.* Required of all graduate students. Open to graduates in Zoology. Two to five credits any quarter. Thompson.

FORESTRY AND LUMBERING

Anderson Hall

Professors Winkenwerder, Grondal, Markworth; Associate Professor Pearce; Assistant Professors Hanley, Wangaard; Instructors Schmoe, Zumwalt; Associate Stone

1a. *Dendrology.* Identification, classification and distribution of the trees of North America. Three credits; spring. Wangaard and Assistants.

1b. *Dendrology.* Continuation of For. 1a. Prerequisite, For. 1a. Three credits; autumn. Wangaard and Assistants.

2. *Introduction to Forestry.* To familiarize the student with the field of work he is about to enter. Required of all freshmen. Two credits; autumn. Winkenwerder.

3. *Introduction to Forestry.* Continuation of For. 2, but need not be preceded by it. Two credits; winter. Winkenwerder and Assistants.

4. *Forest Protection.* Factors influencing the spread of forest fires, methods of detection and suppression. Required of freshmen. Three credits; spring. Winkenwerder and Assistants.

6. *General Forestry.* Survey of forestry as a whole for non-majors. Three credits; winter. Winkenwerder.

10. *Wood Technology.* Identification, taxonomy, physical and chemical properties of wood. Prerequisites, Physics 3 or 6, For. 1a, ten credits of chemistry, Botany 10 and 11. Three credits; autumn. Wangaard.

11. *Wood Structure.* Microstructure of wood; identification, xylotomy, and elementary microtechnique. Prerequisite, For. 10. Three credits; winter.

*Not offered in 1939-1940.

15. *General Lumbering.* Comparative methods of lumbering on the Pacific Coast and in other lumbering regions of the United States. Prerequisite to all courses in logging and milling. Four credits; autumn. Pearce.

40. *Silviculture.* Field studies of forest types and silvicultural problems. Given at Pack Forest. Prerequisite, For. 121. Two credits; spring or summer. Zumwalt.

60. *Forest Mensuration.* Theory of scaling, volume and taper tables, sample plot methods, determination of contents of stands, growth, yield. Prerequisites, For. 3, Math. 13. Four credits; winter. Zumwalt and Assistants.

62. *Forest Mensuration.* Studies in scaling, volume tables, cruising, mapping, growth and yield. Given at Pack Forest. Prerequisites, G.E. 7, For. 60, For. 1b. Six credits; spring or summer. Zumwalt and Assistants.

65. *Forest Recreation.* Recreational needs, values, resources, and objectives. Planning and developing outdoor recreational resources. Prerequisite, For. 3 or 6. Three credits; spring. Schmoe.

104. *Timber Physics.* General mechanics, stresses, tests, theory of flexure, moisture and strength; mechanical properties of wood. Required of juniors. Prerequisites, Math. 13, Physics 3 or 6. Five credits; autumn and spring. ———.

105. *Wood Preservation.* Factors influencing the development of fungi; classification and control of wood destroying agencies; mechanical properties of treated wood. Prerequisite, For. 11. Three credits; spring. ———.

106. *Wood Preservation Laboratory.* Evaluation of preservatives; methods of testing and inspection of treated material. Must be preceded or accompanied by For. 105. Two credits; spring. ———.

110. *Characteristics of Trees.* Identification, distribution, life habits, and uses of trees of the Pacific Northwest. Offered only to non-majors in forestry. Two credits; spring. Schmoe.

115. *Forest Protection.* Fire plans, relation of forestry practice in the control of insect and fungus attacks. Prerequisite, For. 4. Three credits; autumn. Schmoe.

119. *Forest Administration.* Objects, principles, and methods of administering private and public forest industries. Prerequisites, E.B. 1 or 3. Three credits; autumn. ———.

121. *Silvics.* Relation of trees and forests to soil, moisture, light and temperature as a foundation for forest practice; forest ecology. Prerequisites, Bot. 11, For. 1b, 3. Three credits; winter. Zumwalt.

122. *Silvicultural Methods.* Type and site classification; intermediate cuttings; final cuttings; natural and artificial regeneration. Prerequisite, For. 40, 121. Five credits; autumn. Zumwalt and Assistants.

126. *Forest Economics.* Position of forests in the economic structure of the United States and other countries. Four credits; winter. ———.

140. *Construction.* Machinery, specifications, cost estimates, maintenance and methods of constructing roads, trails, wooden bridges, telephone lines; land clearing. Prerequisites, G.E. 7, C.E. 56, For. 104. Four credits; winter. Pearce and Assistants.

151. *Forest Finance.* Mathematics of forest finance and operations; cost of growing timber; valuation of land for forest production. Required in senior or graduate year. Prerequisite, For. 122. Four credits; autumn. ———.

152. *Forest Organization.* Principles of forest organization and regulation; sustained yield management; forest working plans. Required in senior or graduate year. Prerequisite, For. 151. Four credits; winter. ———.

153. *Forest Management.* Lectures, assigned readings and extensive field work on large size tracts of timber. Required of management majors. Prerequisites, For. 119, 152. Sixteen credits; spring. ———.

154. *Wild Life Management.* Interrelations between forests and wild life. Life histories and habits of animals involved, their natural and existing environment and relationships between the animals and this environment. Prerequisite, For. 3. Three credits; autumn. Schmoe.

155. *Range Management.* Correlation of grazing with other forest uses; range regulation and economics. Prerequisite, For. 1b, Bot. 10 and 11; junior or senior standing. Three credits; winter. Zumwalt.

158. *Forest Utilization.* Classification and utilization of secondary and derived forest products from the viewpoint of forest economics. Prerequisite, For. 10. Five credits; winter. Wangaard.

160, 161, 162. *Undergraduate Studies.* These courses enable students to prepare themselves for work in fields for which there is not sufficient demand to warrant the organization of regular classes. Opportunities are offered in city forestry, tree surgery, wood fibers, microtechnique in the study of wood, research methods and advanced work in any of the regular forestry subjects. One to five credits; any quarter. Instructor assigned according to nature of work. Registration subject to approval of the dean. Staff.

171. *Forest Geography.* Silvicultural regions, relation to regional industrial development and problems of lumbering and management. Prerequisite, senior standing. Four credits; winter. Pearce.

183. *Milling.* Organization, planning, operation, and administration of timber conversion plants. Prerequisites, M.E. 82, For. 15, 104, 158. Five credits; autumn. Grondal.

184. *Manufacturing Problems.* Lumber producing regions; economics and geography of utilization; selling and distribution of lumber; financing methods. Prerequisites, E.B. 62, For. 183. Five credits; spring. ———.

185. *Forest Engineering.* Logging plans and costs; correlation of logging engineering methods with condition of stand, topography, forest management, etc. Prerequisite, senior standing. Five credits; autumn. Pearce.

186. *Logging Engineering.* Logging machinery and equipment. Machine costs, output and depreciation. Solution of machine and equipment problems. Prerequisites, For. 185, C.E. 57, M.E. 82. Five credits; winter. Pearce.

187. *Forest Engineering Field Trip.* One week field study types of logging and log transportation methods; costs and appraisals. Six weeks collecting data for plan to open new operation, four weeks compilation. Prerequisite, For. 186. Sixteen credits; spring. Pearce.

188. *Theory and Practice of Kiln Drying.* Wood-liquid relationships and hygrometry; application of gas laws. Problems in the design of dry kilns. Prerequisites, For. 11 and 158. Three credits; winter. Grondal.

189. *Wood Pulp.* Design of waste conversion plants; wood pulp manufacture. Prerequisites, For. 11, 158, 183, 188. Five credits; spring. Grondal.

193, 194. *Seminar.* Review and advanced work in dendrology, mensuration, silviculture and lumbering. Prerequisite, senior standing. Three credits; autumn, winter. Staff.

COURSES FOR GRADUATES ONLY

202. *Thesis.* Total requirement nine credits; instructors assigned according to nature of work. Three to six credits a quarter; autumn, winter, spring. Staff.

203. *Advanced Wood Preservation.* Theory of penetrance; design of wood preservation plants. Fire proofing and fire proofing compounds. Prerequisite, For. 105, 106. Three credits; autumn. Grondal.

204. *Forest Management Plans.* Development of data covering a working circle; valuation of forest area; organizing forest property to conserve earning and productive power. Prerequisite, For. 153. Three credits; autumn. ———.

208. *Graduate Seminar.* Reviews, assigned readings, reports and discussions on current periodical literature, Forest Service and state publications. Three credits; winter. Staff.

210, 211, 212. *Graduate Studies.* For students who wish to prepare themselves in fields in which the faculty of the department is prepared to give instruction but for which there is not sufficient demand to organize regular courses. Prerequisite, graduate standing. Three to five credits; any quarter. Staff.

213, 214, 215. *Research.* Ample opportunity is offered for research in special phases of forestry. Three to five credits; any quarter. Staff.

220. *Advanced Forest Engineering.* Logging management; analysis of costs. Economic selective logging and valuation. Stumpage and logging appraisal; financial reports. Prerequisite, graduate standing. Five credits; winter. Pearce.

221. *Forest History and Policy.* Forest policy of the United States; forestry in the states and island possessions; the rise of forestry abroad. Three credits; winter. ———.

GENERAL ENGINEERING

Education Hall

Professors Wilcox, Warner; Assistant Professors Brown, Jacobsen, Jensen, Rowlands; Instructors Boehmer, Cooper, Engel, Little, Peterson, Jr.; Associates ———, ———, ———

1. *Engineering Drawing.* Fundamental principles of orthographic projection; theory of related views; types of graphical representation. Should be preceded or accompanied by solid geometry. Three credits; autumn, winter, spring. Warner, Boehmer.

2. *Engineering Drawing.* Fundamental requirements of working drawings, including practice in their reading and execution. Prerequisite, G.E. 1. Three credits; autumn, winter, spring. Warner, Rowlands.

3. *Drafting Problems.* Detailed analysis and solution of engineering problems by drafting room methods. Descriptive geometry. Prerequisites, G.E. 1 and G.E. 2. Three credits; autumn, winter, spring. Warner, Tymstra.

7. *Engineering Drawing.* A special short course for forestry students. Three credits; winter, spring. Warner.

11. *Engineering Problems.* Training in methods of attacking, analyzing and solving engineering problems. Deals principally with problems in dynam-

ics. Student is assisted in orienting himself in his engineering work. Prerequisites, high school physics and advanced algebra. Three credits; autumn, winter, spring. Wilcox, Brown.

12. *Engineering Problems.* Elementary mechanics, statics, and graphics. Continuation of the work in G.E. 11. Prerequisites, G.E. 1, 11 and Math. 31. Three credits; autumn, winter, spring. Wilcox, Jensen.

21. *Plane Surveying.* Surveying methods, use of instruments, computations, mapping, U. S. public land surveys. Prerequisites, G.E. 1, 2, or equivalents, and trigonometry. Three credits; autumn, winter, spring. Engel.

151. *Inventions and Patents.* Law and procedure for patenting inventions, employer-employee relationship, trademarks. Prerequisite, junior standing. One credit; autumn. Kobe.

Engineering English

For courses in Engineering English, see department of English, Comp. B, 100, 101, 102, 103 and Speech 103.

GENERAL LITERATURE

Parrington Hall

Professor Benham

101. *Introduction to Literature.* The relation to life in the light of recent psychological, philosophic and social scholarship. (May receive credit in English.) Five credits; spring. Benham.

191, 192, 193. *Major Conference.* Individual conference once a week to correlate studies and for guidance in individual reading. Three credits; autumn, winter, spring. Benham.

GENERAL STUDIES

Education Hall

Advisory Committee

H. B. Densmore (Greek), Chairman; *Russell Blankenship* (English); *Carl Dakan* (Economics and Business); *Grace Denny* (Home Economics); *G. E. Goodspeed* (Geology); *Merrill M. Jensen* (History); *Edward McMahon* (History); *E. B. Stevens* (Education); *E. R. Wilcox* (General Engineering); *Curtis T. Williams* (Education)

For curricula see College of Arts and Sciences bulletin, page 21.

21-22-23. *American Social Trends.* A non-technical introduction to the various social sciences in terms of American experiences and institutions. Lectures, discussion sections, supervised reading and individual projects. Five credits; autumn, winter, spring. Jensen.

191, 192, 193. *Senior Study.* Seniors working for a degree who need extra time for their major project may enroll in these courses for credit to be arranged on consultation with their advisers. Autumn, winter, spring.

GEOGRAPHY

Johnson Hall

Associate Professors Martin, Seeman; Assistant Professors Church, Earle; Instructor Pierson

1. *Survey of World Geography.* The natural environment; man's changing relation to his habitat; background for social sciences. Not open to students who have had Geog. 7. Five credits; autumn, winter, spring. Earle.

2. *Physical Geography.* Physical basis of geography. Major and minor land forms; types and uses of soils; underground and surface waters; mineral products. Use and interpretation of topographic maps. Laboratory and field trips. Five credits; autumn, winter, spring. Seeman.

7. *Economic Geography.* Resources of the world; factors locating industries; commodities in international trade. Not open to students who have had Geog. 1. Five credits; autumn, winter, spring. Martin, Seeman.

11. *Weather and Climate.* World distribution of temperature, pressure, winds, precipitation. Climatic cycles. Interpretation of weather maps. Five credits; autumn, winter, spring. Church, Earle, Pierson.

70. *World Geography.* Economico - political geography especially designed for journalism. Not open to students who have had Geog. 7. Five credits; autumn. Martin.

101. *Survey of World Regional Geography.* Same as Geog. 1, but with additional work and readings. Not open to those who have had Geog. 1 or 7. Prerequisite, junior standing. Five credits; autumn, winter, spring. Earle.

102. *Geography of United States.* Regional specialization; sectionalism, growth of cities, internal problems. Prerequisites, Geog. 1-101, 7, or junior standing. Five credits; autumn, winter, spring. Church, Seeman, Martin.

103. *Geography of Asia.* Countries and natural regions. Distribution of resources; population problems. Transportation and trade. Prerequisites, Geog. 1-101, 7, or permission. Five credits; autumn. Earle.

104. *Geography of Europe.* Survey by countries. Localization of manufactures. Geographic bases for commerce. Prerequisites, Geog. 1-101, 7, or permission. Five credits; winter. Martin.

105. *Geography of South America.* Economic and social development; raw materials and potential markets; inter-American relations. Prerequisite, 1-101, 7, or permission. Five credits; spring. Seeman.

106. *Geography of Africa-Australasia.* European imperialism and colonization. The native problem. Resources, plantation agriculture, tropical trade. Prerequisites, Geog. 1-101, 7, or permission. Five credits; winter. Earle.

108. *Geography of Canada and Alaska.* Natural regions, resources, economic and social development; problems of northern settlement. Prerequisites, Geog. 1-101, 7, or permission. Three credits; spring. Pierson.

111. *Climatology.* Same as Geog. 11 but with additional work and readings. Not open to those who have had Geog. 11. Prerequisite, junior standing. Five credits; autumn, winter, spring. Church, Earle, Pierson.

112. *Meteorology.* Fundamentals of air physics as applied to climatic and weather phenomena. Prerequisite, Geog. 11 or 111. Five credits; winter. Church.

115. *Geography of Middle America.* Regions and resources of Mexico, Central America, and the West Indies. Transportation and trade. American policy in the Caribbean. Prerequisites, Geog. 1-101, 7, or permission. Three credits; winter. Seeman.

121. *Regional Climatology.* Descriptive analysis of climatic characteristics of continents. Controls of climate. Types and distribution. Climatic classifications. Prerequisite, 11, 111, or permission. Five credits; spring. Church.

122. *Synoptic Meteorology.* The troposphere. Construction and analysis of weather maps; forecasting. Clouds, fog, haze, thunderstorms, ice formation. Engineering juniors and seniors only. Three credits; winter. Church.

125. *Geographic Background of History.* Use of geographic data in interpretation of American history. Prerequisite, 10 credits of history or geography. Three credits; winter. Martin.

140. *Geography in the Social Studies.* The place of geography in the social science curriculum. Prerequisite, 10 credits in geography or consent. Three credits; winter. Earle.

152. *Air Mass Analysis.* The frontal theory. Vertical and horizontal properties of air masses. Life cycle of extra-tropical cyclones. Practice forecasting. Prerequisite, Geog. 112 or 122. Three credits; spring. Church.

155. *Influence of Geographic Environment.* Development of geographic theory; studies of occupance; urbanization; human adjustment. Prerequisite, 10 credits of geography or permission. Five credits; spring. Earle.

160. *Cartography.* Map projections, areal distribution, scales, sketch mapping, block diagrams. Five credits; winter. Pierson.

170. *Conservation of Natural Resources.* Public policy in the management of soils, forests, minerals, fisheries, etc. Land reclamation; problems in resource utilization. Five credits; autumn. Martin.

175. *Problems in Political Geography.* Geographic background of international relations. Geographic aspects of current international issues; territorial problems. Prerequisite, 10 hours of geography and permission. Five credits; autumn. Seeman.

192. *Research Problems in Meteorology and Climatology.* Prerequisite, permission. Hours and credits to be arranged; autumn, winter, spring. Church.

195. *Individual Conference and Research.* For advanced undergraduates. Prerequisite, permission. Two to five credits; autumn, winter, spring. Staff.

199. *Preseminar in Geography.* Training in research methods; preparation and presentation of paper. Permission necessary. Five credits; spring. Martin.

Teachers' Course in Geography. See Education 750.

COURSES FOR GRADUATES ONLY

200. *Seminar.* Preparation and presentation of paper on approved topic. Five credits; spring. Martin.

201. *Research.* The Tropics. Three credits; winter. Earle.

207. *World Resources and Industries.* Readings and research. Credits to be arranged; autumn, winter, spring. Martin, Seeman.

211. *Research in Meteorology.* Credits and hours to be arranged; autumn, winter, spring. Church.

GEOLOGY

Johnson Hall

Professors Goodspeed, Weaver; Associate Professor Fuller; Assistant Professors Barksdale, Coombs, Mackin

Courses in geology have the following aims:

(1) Geology 1, *Survey of Geology,* for those who desire a broad general knowledge of the subject rather than preparation for more specialized work.

(2) Geology 5 or 105, *Rocks and Minerals,* 6 or 106, *Physiography* and 7 or 107, *Historical Geology,* are the beginning professional courses in geology and are prerequisite for all advanced technical work. These courses are suitable for students desiring a minor in geology.

(3) The advanced courses in geology may be grouped as follows:

(a) Mineralogy, Petrology and Economic Geology: Courses 121, 123, 124, 125, 126, 127, 128, 201, 202, 220, 227.

(b) Physiography, Geomorphology and Structural Geology: Courses 112, 113, 114, 116, 122, 131, 142, 212.

(c) Paleontology: Courses 130, 132, 133, 134, 135, 136, 137, 230.

1. *Survey of Geology.* Lectures, laboratory and field trips. Five credits; autumn, winter, spring. Mackin, Barksdale.

5. *Rocks and Minerals.* Prerequisite, at least a high school course in chemistry. Five credits; autumn. Goodspeed.

6. *Elements of Physiography.* Processes and agencies affecting the earth's surface; relation of topography to structure, etc. Prerequisite, Geol. 1 or 5. Five credits; winter. Mackin.

7. *Historical Geology.* Origin and evolution of the earth with emphasis on the general history of North America. Prerequisite, five credits of geology or Zool. 1 and 2. Five credits; spring. Weaver.

101. *History of Geology.* The rise of geology as a science. Required of all majors in geology. Prerequisite, fifteen credits in geology. Three credits; autumn. Barksdale.

105. *Petrology as Applied to Engineering.* Same as Geol. 5, but with additional work, readings. For students in civil, electrical or mechanical engineering. Prerequisite, junior standing. Five credits; autumn. Goodspeed, Coombs.

106. *Elements of Physiography.* Same as Geol. 6 but with additional work and reading. Prerequisite, junior standing. Five credits; winter. Mackin.

107. *Historical Geology.* Same as Geol. 7 but with additional work, and reading. Prerequisite, 5 credits in geology or Zool. 1 and 2 and junior standing. Five credits; spring. Weaver.

*112. *Physiography of the Eastern United States.*

113. *Physiography of the Western United States.* Five credits; autumn. Mackin.

*Not offered in 1939-1940.

114. *Map Interpretation: Constructional Landforms.* Application of principles of geomorphology to interpretation of topographic maps. Emphasis on study of rock structures. Prerequisite Geol. 5, 6, 7, permission. Five credits; winter. Mackin.

*115. *Map Interpretation: Destructional Landforms.*

116. *Glacial Geology.* Mechanism of glacial action including field work on actual glaciers. Prerequisites, Geol. 5 and 6. Three to five credits; spring. Mackin.

121. *Mineralogy.* Elements of crystallography and blowpipe analysis. Descriptive and determinative mineralogy. Prerequisites, Geol. 5, and at least high school chemistry. Five credits; spring. Goodspeed, Coombs.

122. *Field Methods.* Methods of geologic and topographic surveying and recording in geologic field work. Prerequisites, Geol. 5, 6, 7. Five credits; spring. Barksdale.

123. *Optical Mineralogy.* Principles in the use of the petrographic microscope and recognition of common minerals in thin section. Prerequisites, Geol. 5, 121 (except for U.D. chemistry students). Three or five credits; autumn. Coombs.

124. *Petrography and Petrology.* Systematic study of rocks both in the hand specimen and in thin section with the petrographic microscope. Prerequisites, Geol. 5 and 123. Three or five credits; winter. Coombs.

125. *Petrography and Petrology.* Continuation of methods in Geol. 124. Special problems of petrogenesis and field petrology. Prerequisites, Geol. 123, 124. Three or five credits; spring. Goodspeed.

126. *Sedimentary Petrography.* Principles of correlation of sedimentary rocks by their mineral constituents. Prerequisite, Geol. 125. Two or five credits; winter. Coombs.

127. *Ore Deposits.* Form, structure, mineralogy, petrology and mode of origin of ore deposits. Prerequisites, Geol. 5 or 105, 121, 124. Five credits; winter. Goodspeed.

*128. *Mineral Resources—non-Metals.*

*129. *Mineral Resources—Metals.*

130. *General Paleontology.* Principles of paleontology and a general systematic study of fossils. Prerequisites, Geol. 7 or Zool. 1 and 2. Five credits; winter. Weaver.

131. *Stratigraphy.* Origin, deposition and methods of correlation of sedimentary strata. Prerequisites, Geol. 7, 122, 125 Three credits; fall. Barksdale.

132. *Invertebrate Paleontology.* Important type fossils of each geologic period. Prerequisite, Geol. 7 or Zool. 1 and 2. Five credits; spring. Weaver.

133. *Mesozoic Geology.* Geological history of the Mesozoic era and its fauna from a world-wide standpoint with special emphasis upon Europe. Prerequisites, Geol. 130 and 132. Five credits; winter. Weaver.

134. *Tertiary Geology.* Tertiary formations and their faunas with special emphasis upon Europe and correlation with North and South America. Prerequisites, Geol. 130 and 132. Five credits; spring. Weaver.

*Not offered in 1939-1940.

*135. *Study of Ammonites.*

136. *Geology of South America.* Geology of the South American continent including Central America. Reading knowledge of Spanish, French or German desirable. Prerequisite, Geol. 5, 6 and 7. Three credits; winter. Weaver.

137. *Tertiary Faunas of Washington.* Two credits; winter. Weaver.

142. *Structural Geology.* Interpretation of rock structures and their genesis. Prerequisites, Geol. 5, 6, 7. Five credits; winter. Barksdale.

143. *Structural Geology.* A continuation of Geol. 142, with special emphasis on the broader problems of earth structure. Prerequisite, 142. Two or three credits; winter. Barksdale.

150. *Elements of Seismology.* A study of the fundamental principles of the science of seismology, seismological methods, use of seismograph and interpretations of simple seismograms. Prerequisite, Geol. 51, 5 and 7, and at least high school physics. Three credits; winter. Barksdale.

*160. *Principles of Geomorphology.*

181. *Preparation of Geologic Reports and Publications.* The procedure in preparing and illustrating a geological report. Prerequisite, senior standing in geology. Three credits; spring. Coombs.

190. *Undergraduate Thesis.* Preparation of thesis in geology or any of its branches. Thesis must be submitted at least one month before graduation. Prerequisite, senior standing. Five credits allowed for thesis. Hours, credits to be arranged. Each quarter. Staff.

COURSES OPEN TO APPROVED SENIORS AND GRADUATES

200. *Field Studies.* Advanced work in geology or a general seminar. Credits and hours to be arranged. Open to advanced undergraduates upon permission of instructor. Each quarter. Staff.

COURSES FOR GRADUATES ONLY

Two modern languages, a Teutonic and a Romanic, are practically necessary for graduate work in geology.

201. *Advanced Petrography and Petrology of Igneous Rocks.* Credits and hours to be arranged; each quarter. Goodspeed.

202. *Advanced Petrography and Petrology of Metamorphic Rocks.* Credits and hours to be arranged; each quarter. Goodspeed.

212. *Advanced Studies or Field Work in Physiography.* Credits and hours to be arranged. Each quarter. Mackin.

220. *Advanced or Research Work in Mineralogy, Petrography, and Petrology.* Credits and hours to be arranged. Each quarter. Goodspeed, Coombs.

227. *Advanced or Research Work in Economic Geology.* Credits and hours to be arranged. Each quarter. Goodspeed.

230. *Advanced or Research Work in Paleontology and Stratigraphy.* Credits and hours to be arranged. Each quarter. Weaver.

240. *Advanced Studies in Structural Geology.* Credits and hours to be arranged. Each quarter. Barksdale.

*Not offered in 1939-1940.

GERMANIC LANGUAGES AND LITERATURE

Denny Hall

Professors Vail, Eckelman, Lauer, Meisnest; Assistant Professor Meyer; Instructors Ankele, Schertel; Associates Wesner, Wilkie

Students becoming majors or minors in the German department should have had college German 1, 2, 3, plus 3 credits of second year German, or German 1, 2, 3, with grade "A" in German 3, or the high school equivalent to be determined by the executive officer of the department. At least 50 per cent of the credits in the major must be in upper division courses. For the departmental or academic major or minor wishing a departmental recommendation to teach, see College of Education bulletin, major and minor requirements.

Students of mathematics and the applied sciences should take German 1, 2, 3, with grade "A" in German 3 or an additional course in second year German, 60, and the upper division scientific courses for specialized reading. Students of history and the social sciences should elect German 10 and the courses listed in the 120's. Students preparing for library work may substitute literary courses in German (not translation courses) for the departmental major requirements, German 110, 111, 112, 118. German 118 will not be recognized in fulfillment of the twenty-credit undergraduate reading requirement.

A German major may count not more than 6 credits of scientific German toward his major, and a minor may count not more than 3 credits of scientific German toward his minor.

Special arrangements are made to supply courses for candidates for the master's and doctor's degrees.

Credit is allowed for any quarter in any course except 1-2.

1-2. *First Year.* Stage pronunciation, grammar, reading of easy prose, oral and aural training. Five credits a quarter; autumn, winter, spring.
Meisnest, Meyer, Ankele, Schertel, Wesner, Wilkie, ———.

3. *First Year Reading.* Modern prose, oral and aural training, composition, continuance of grammar and vocabulary studies. Prerequisite, German 1-2, or one year in high school. Five credits a quarter; autumn, winter, spring. Staff.

3S. *First Year Reading for Science Students.* Modern prose and elementary scientific texts. Introduction to scientific reading and vocabulary, and study of grammatical constructions. Prerequisite, German 1-2, or one year high school. Five credits; spring. Raven.

4. *Second Year Reading.* Pronunciation, vocabulary building, modern prose, oral and aural training. Prerequisite, German 3 or two years high school. Five credits; autumn, winter, spring.
Meisnest, Ankele, Wesner, Wilkie.

5. *Second Year Reading.* Vocabulary building, modern prose, oral and aural training. Prerequisite, German 3 or two years high school. Not open to students having German 4. Three credits; autumn, winter, spring.
Meyer, Ankele.

*6. *Second Year Reading.*

7. *Second Year Grammar Review.* Systematic grammar review with some elementary composition. Prerequisite, German 3 or two years in high school. Three credits; winter. Wesner.

*Not offered in 1939-1940.

10. *Advanced Second Year Reading.* Pronunciation. Modern prose, vocabulary building, oral and aural training. Prerequisite, German 4, 5, 6, or 30. Three credits; autumn, winter, spring. Wesner, Wilkie.

*30. *Conversation Based on Rapid Reading.*

60. *Lower Division Scientific German.* Introduction to general scientific German. Outside and class reading. Vocabulary building. Students making a grade of "B" in this course may go directly to Upper Division Scientific German if they desire; all others must complete German 61 before taking the upper division scientific German. Prerequisite, German 3, grade "A," or either 4, 5, or 6. Three credits; autumn, winter, spring.
Schertel, Wilkie, Meyer.

61. *Intermediate Scientific German.* Continuation of German 60. Two credits; winter, spring. Wilkie.

100. *Literature in Translation: Main Currents in German Literature.* Middle Ages to the 19th century. Major tendencies and movements as reflected in personalities and masterpieces. Open to freshmen and sophomores. No knowledge of German required. Lectures, discussion, reports. Five credits; winter. Vail.

*101. *Literature in Translation: Novel.*

102. *Literature in Translation: Goethe.* Lyric, prose and dramatic works of Goethe's formative period: *Faust, Part I.* Lectures, special reports. No knowledge of German required. Three credits; autumn. Eckelman.

103. *Literature in Translation: Drama.* The nineteenth century drama up to the present. German forerunners of Ibsen; Hauptmann, post-war expressionism. Lectures, special reports. No knowledge of German required. Three credits; spring. Eckelman.

*104. *Literature in Translation: Frenssen and Thomas Mann.*

110, 111, 112. *Grammar and Composition.* Grammar and syntax, translation and original composition, dictation, oral work, letter writing, themes. Prerequisite, three years high school or eight credits second year German. Primarily for majors and minors. May repeat. Three credits a quarter; autumn, winter, spring. Vail.

113, 114, 115. *Upper Division Scientific German.* Scientific monographs, technical periodicals. Each student reports on reading in his own field in weekly conferences. Prerequisite, German 60, grade "B," or German 61 or equivalent, or three years in high school. May repeat for credit. Two or three credits a quarter; autumn, winter, spring. Schertel.

116. *Upper Division Scientific German for Pre-medics.* Reading in medical German. Prerequisite, German 60 grade "B," or German 61, or equivalent, or three years in high school. Three credits; winter, spring. Schertel.

118. *Phonetics.* Systematic study of the nature, production and classification of the German speech sounds; stage pronunciation; phonetic transcription; oral practice. Prerequisite, German 3. Two credits; spring. Meyer.

119. *History of the German Language.* From early Germanic to the present day; sound changes, the development of dialect and standard German. Open to seniors and graduates, majors and minors, and to junior majors. Five credits; spring. Meyer.

*120. *Introduction to Schiller.*

*Not offered in 1939-1940.

121. *Introduction to Goethe.* Reading of *Götz von Berlichingen* and *Torquato Tasso.* Prerequisite, three years high school or eight credits second year work in college. Three credits; autumn. Ankele.

122. *Introduction to Keller.* Reading of the *Sieben Legenden.* Prerequisite, three years high school or eight credits second year work in college. Three credits; winter. Schertel.

*123. *Introduction to Heimatkunst.*

*124. *Nineteenth Century Novelle.*

125. *Recent Novellen.* Reading of Novellen by present-day writers. Prerequisite, three years high school or eight credits second year work in college. Three credits; spring. Wesner.

*135. *Modern Novels.*

*137. *Modern Drama.*

138. *Modern Drama.* Reading of plays by Gerhardt Hauptmann. *Die Versunkene Glocke, Hanneles Himmelfahrt,* and *Die Weber.* Literary topics, oral and written. Prerequisite, German 121 or equivalent. Three credits; spring. Eckelman.

*139. *Studies in German Literature.*

*140, 141. *History of German Literature.*

142. *Lyrics and Ballads.* Goethe. The Romanticists. Uhland, Heine, Mörike, Storm. Schiller's ballads. Class reading and assigned topics. Prerequisite, German 121 or equivalent. Three credits; spring. Vail.

143. *Expressionism and Twentieth Century Realism.* Reading of Steinhauer's *Die deutsche Novelle* and *Das deutsche Drama.* Oral discussion and assigned topics. Prerequisite, German 121 or equivalent. Three credits; autumn. Eckelman.

*150. *Lessing. Life and Dramatic Works.*

152. *Goethe's Lyric Poetry.* A study of the form and content of the various types of Goethe's shorter poems; his theory of poetry, methods, relation to the Volkslied, etc. Prerequisite, German 121 or equivalent. Three credits; autumn. Vail.

153. *Goethe's Dramatic Works.* Reading of representative plays of Goethe from the several periods of his life; study of his dramatic technique and influence. Prerequisite, German 121 or equivalent. Three credits; winter. Vail.

*165. *Schiller's Historical Dramas.*

*166, 167. *Goethe's Faust, Parts I and II.*

180, 181, 182. *Nineteenth Century Literature.* Seminar. Kleist, Grillparzer, Hebbel, Ludwig, Raabe, Keller, Storm, C. F. Meyer. The naturalistic movement, *Heimatkunst,* the post-War expressionism. Lectures, special problems, term papers. Primarily for graduates. Three credits a quarter or six credits with consent of instructor; autumn, winter, spring. Eckelman.

*182, 184, 185. *Nineteenth Century Literature.*

*Not offered in 1939-1940.

COURSES FOR GRADUATES ONLY

*200, 201, 202. *Goethe's Lyrics and Letters.*

*203, 204, 205. *Storm and Stress Period.*

206, 207, 208. *Romantic School.* Seminar. Three credits; autumn, winter, spring. Eckelman.

*209, 210, 211. *Schiller.*

*220, 221, 222. *Interrelations of German and English Literature.*

*230. *Reformation.*

*234. *Age of Enlightenment.*

235. *Pietism and Sentimentalism.* Seminar. Three credits; autumn. Vail.

250. *Middle High German.* An introduction to the language and literature of the German twelfth century. Five credits; autumn. Meyer.

*251. *Middle High German Literature in the Original.*

255. *Old High German.* Introduction to the language and literature of the Old High German period (750 to 1100 A.D.). Five credits; winter. Meyer.

*256. *Old High German Literature in the Original.*

*258. *Gothic.*

*259. *Old Saxon.*

*270. *Renaissance.*

HISTORY

Denny Hall

Professors McMahon, Levy, Lucas; Associate Professors Dobie, Quainton; Assistant Professors Costigan, Gates, Jensen, Katz; Lecturer Kimmel; Acting Instructor Jenkins; Associate Davis

Requirements of the Department

The University requirements in history may be satisfied by one of the following courses:

Medieval andModern European History (1-2). It is desirable that this course be selected in fulfillment of the history requirements and that it be taken in the freshman year. It is repeated each quarter.

History 21-22-23 will satisfy Group II requirements.

History 21-22-23 can be taken by History majors toward their degrees, but not in lieu of History 1 and 2.

History of the United States (57-58-59). Primarily for sophomores.

English Political and Social History (5-6). Open without prerequisites to freshmen, sophomores and upper classmen.

Ancient History (72-73). Open without prerequisite to sophomores and upper classmen.

*Not offered in 1939-1940.

For a major at least 50 per cent of the credits in the department must be obtained in courses carrying upper division credit. Course 1-2 is required of all history majors.

It is recommended that all history majors shall take in excess of departmental requirements additional work in history and in certain related fields.

Selection should be made under advice.

Courses Offered

1-2. *Medieval and Modern European History.* General survey from the Roman world empire of Augustus to our own times. Five credits a quarter; autumn, winter, spring. Jenkins, Quainton, Dobie.

The above course is repeated beginning with the winter quarter.

3, 4. *Survey of Western Civilization.* Introduction to the social sciences. Five credits a quarter; autumn, winter. Lucas, Katz.

5-6. *English Political and Social History.* By special work, upper division students may receive upper division credit. Pre-law students may substitute Hist. 106-107 for 6. Five credits a quarter; autumn, winter. Costigan.

*10. *Representative Americans.*

*20. *Great Europeans of the Nineteenth Century.*

21-22-23. *American Social Trends.* A survey of social trends from the earliest times to the present. Lectures, discussion sections, supervised reading and individual projects. Five credits; autumn, winter, spring. Jensen.

57-58-59. *American History from 1607 to the Present Time.* Not open to freshmen. Three credits a quarter; autumn, winter, spring. McMahon.

72-73. *Ancient History.* The ancient Mediterranean world, Greece and Rome. By special work upper division students may receive upper division credit. Not open to freshmen. Five credits a quarter; winter, spring. Katz.

98. *History of American Industrial Society.* Industry, finance, commerce, and the development of urban institutions. Five credits; autumn. Gates.

*99. *History of American Rural Civilization.*

*100. *Greece in the Age of Pericles.*

*101. *Alexander the Great, and the Hellenistic Period.*

103. *Age of Caesar and Cicero: History and Culture.* Three credits; winter. Katz.

104. *The Roman Empire.* Three credits; spring. Katz.

106-107. *English Constitutional History.* Development of legal and governmental institutions of the English people to the present time. Prerequisite, Hist. 5. Five credits a quarter; winter, spring. Costigan.

111. *Greek and Roman Political Institutions.* Five credits; autumn. Katz.

114. *The Culture of the Renaissance.* Five credits; autumn. Jenkins.

115. *The Reformation.* Five credits; winter. Jenkins.

*Not offered in 1939-1940.

117. *France from the Reformation to the French Revolution.* Five credits; autumn. Quainton.

118. *Medieval Civilization: The Dark Ages from the Barbarian Invasions to the Age of Feudalism* (350-1000). Five credits; spring. Jenkins.

*119. *Medieval Civilization: Economic Aspects of the Middle Ages from the Decline of Rome to the Renaissance.*

*120. *Medieval Civilization: Art, Letters, Religion, Education, and Thought.*

124. *Economic History of Europe Since the Industrial Revolution.* Five credits; spring. Dobie.

*125. *Great European Treaties,* 1453-1925.

129. *The French Revolution and Napoleonic Era.* Five credits; winter. Quainton.

*130. *Europe* 1814-1870.

131. *Europe* 1870-1914. Five credits; spring. Quainton.

*132. *History of Modern Colonial Empires.*

133. *Europe since* 1914. A broad outline of history from the World War to the present. Five credits; autumn. Levy.

135. *History of Modern Military Systems from Gustavus Adolphus to the Present.* Junior standing or permission. Three credits; winter. Kimmel.

140. *American Colonial History.* Five credits; autumn. Jensen.

141. *American Revolution and Confederation.* Five credits; winter. Jensen.

144. *History of the United States,* 1789-1829. Five credits; winter. Gates.

145. *History of the United States,* 1829-1860. Five credits; spring. Gates.

147. *History of the Civil War Period.* Five credits; autumn. McMahon.

148. *History of the Reconstruction Period.* Five credits; winter. McMahon.

*149. *History of National Development: From the close of the Reconstruction Period to* 1900.

150. *History of National Development: From* 1900 *to the Present.* Five credits; spring. Gates.

155. *History of Canada.* Canadian development to the present time. Five credits; spring. Dobie.

158. *The United States in World Affairs:* 1776-1861. Five credits; autumn. Gates.

159. *The United States in World Affairs:* 1861 *to the Present Day.* Five credits; winter. Gates.

*165. *History of the West and Pacific Northwest.*

*Not offered in 1939-1940.

166. *Constitutional Law in Europe.* Three credits; winter. Levy.

*170. *Constitutional History of the United States: From the Colonial Foundations to* 1801.

*171. *Constitutional History of the United States: From* 1801 *to the Present.*

180. *History of the British Empire since* 1783: *Colonies and Dependencies.* Five credits; winter. Dobie.

*181. *History of the British Empire since* 1783: *Self Governing Units.*

182. *England in the Nineteenth Century.* Five credits; autumn. Costigan.

185. *England in Eighteenth Century.* Five credits; spring. Costigan.

190. *Roman Law.* The general importance of Roman Law, its sources and civil procedure. Three credits; autumn. Levy.

191. *Comparative Law.* A comparative examination of the treatment of selected subjects by Anglo-American Law and by some of the main legal systems of the European Continent; relationships to Roman Law and Common Law. Three credits; winter. Levy.

Teachers' Course in History. See Education 75M.

COURSES FOR GRADUATES ONLY

201. *Historiography.* Normally the first graduate course in history. Required of all majors and minors. Five credits; autumn. Katz.

*207-208-209. *Seminar in Greek and Roman History.*

*211-212-213. *Seminar in European History* (1300-1600).

216, 217. *Seminar in Philosophy of History.* Three credits each; winter, spring. Costigan.

218, 219. *Seminar in British Empire.* Three credits; autumn, winter. Dobie.

*221-222-223. *Seminar in American History.*

225-226. *Seminar in American History.* Subject for 1939-1940: Industrialism and urban development, 1815-1914. Three credits a quarter; winter, spring. Gates.

227-228-229. *Seminar in American History.* Three credits a quarter; autumn, winter, spring. Jensen.

231, 232, 233. *Seminar in European History* (1600-1815). Three credits a quarter; autumn, winter, spring. Quainton.

300, 301, 302. *Individual Research or Thesis Work.* Credits to be arranged. Staff.

*Not offered in 1939-1940.

HOME ECONOMICS

Home Economics Hall

Professors Raitt, Denny, Rowntree; Associate Professors Bliss, Dresslar, Fish, Payne; Assistant Professors Ingalls, Terrell, Tilden, Westerman; Lecturer Wade; Instructors Dorrance, Starr, ———, ———

7. *Introduction to Home Economics.* Function of home economics, history, present status in technological and relational aspects, place in curriculum, professional opportunities, personal accounts and budgets. Two credits; autumn. Raitt.

9. *Nutrition for Student Nurses.* Composition and nutritive value of foods; food preparation; physiological needs in relation to food. Open to student nurses only. Prerequisite, Chem. 21. Six credits; autumn, winter, spring. Bliss.

12. *Costume Design and Construction.* General enough to be of practical value if only one course is taken, yet basically organized as a foundation for the costume design courses which follow. Not open to freshmen. Five credits; autumn, winter, spring. Payne, Ingalls, Dorrance, Starr.

15. *Food Preparation.* General enough to be of practical value if only one course is taken, yet basically organized as a foundation for all the food preparation which follows. Technics presented by demonstration followed by laboratory practice. Not open to freshmen. Five credits; autumn, winter, spring. Dresslar, Tilden.

24. *Textiles for Non-Majors.* Textile fibers and fabrics, characteristics, varieties, uses and care. Two credits; autumn. Dorrance.

25. *Textiles.* Textile products and their uses, economic and esthetic values. Relation of raw material, construction and finish to quality and cost of fabrics. Not open to freshmen. Five credits; autumn, winter, spring. Denny, Starr.

41. *Home Furnishing for Non-Majors.* Furnishing of homes in terms of art structure, color harmony, cost and upkeep. Three credits; spring. Dorrance.

47. *Home Furnishing.* Economic and esthetic values in present day furnishing and appreciation of rare rugs and old silver, historic furniture, tapestry, china and pictures. Prerequisite, Art 9. Five credits; autumn, winter, spring. Denny.

101, 102. *Needlecraft.* Interpretation of the needle arts of various nationalities. Application of authentic and original designs. Study of historic laces and embroideries is carried through the courses. Prerequisites, H.E. 12, and Art 9. Two credits a quarter; autumn, winter. Payne.

104. *Nutrition for Non-Majors.* For physical education majors, premedics, social service workers and others for whom a specific nutritional knowledge is essential. Prerequisites, Physiology 7, high school or college chemistry, junior standing or permission of instructor. Two credits; spring. Rowntree.

105. *Diet Therapy for Graduate and Student Nurses.* Prerequisite, graduate nurse; or Home Economics 9, Chem. 1, 2, and 137, Physiology 53 and 54. Five credits; winter, spring. Bliss.

106. *Nutrition for Public Health Nurses.* Prerequisite, graduate nurse. Five credits; autumn. Bliss.

107-108. *Nutrition.* Fundamental principles of human nutrition. Prerequisites, Chem. 135-136. Pre-medical students and chemistry majors may enroll with instructor's consent. Prerequisite to all advanced courses in nutrition. H.E. 107, five credits; 108, three credits; autumn, winter. Rowntree.

109. *Cost-of-Living Studies and Family Budgets.* Cost-of-living and consumption studies; economic factors influencing family standards, expenditures and levels of living; attempts through social control to raise levels of living. Of special interest to social workers. Three credits; winter. Fish.

110. *Food Study for Technology.* Home and institution utilization of food as related to commercial fabrication of food and manufacture of equipment. Standards and processes in preparation. Prerequisite, Chem. 132. Three credits, spring. Dresslar.

*111. *Nutrition for Technology.*

112. *Costume Design and Construction.* Study and construction of children's clothing and wool dresses with choices based on personality, principles of design, and social and economic factors. Prerequisites, 12, Art 9. Three credits; autumn, winter. Staff.

113. *Costume Design and Construction.* Design of clothing by modeling garments in muslin. Final problem in silk. Psychology of dress, factory-made clothing, fashion, and sources of consumer information. Prerequisite, 112. Three credits; winter, spring. Ingalls.

114. *Costume Design and Construction.* Application of the basic principles of coat and suit construction. Selection and purchase of clothing as related to the budget. Prerequisite, 113. Three credits; spring. Dorrance.

115. *Food Preparation.* Relation of the fundamental sciences to the processes and technics of food preparation. An introduction to investigation methods. Prerequisites, H.E. 15, Chem. 1-2, Physiology 7. Three credits; autumn, winter. Dresslar, Tilden.

116. *Food Preparation.* Prerequisite, H.E. 115. Five credits; winter, spring. Dresslar, Tilden.

120. *Advanced Food Preparation.* Contribution of various countries to the art of food preparation. Food supply and selection at different economic levels. Adapted for institution administration majors. Prerequisite, H.E. 115. Three credits; winter, spring. Tilden.

121. *Institution Food Preparation.* A study of large quantity manipulation, cost accounting, standardization of formulas, and menu planning. Prerequisite, H.E. 120. Five credits; autumn, spring. Tilden.

122. *Institution Purchasing.* Factors influencing quality, grade and cost of food with a view to developing accurate judgments in food purchase. Prerequisite, H.E. 120. Three credits; winter. Terrell.

123. *Institution Management I.* Organization, housing, and furnishing standards for institutions. Open to students accepted for the professional curriculum and others by permission of instructor. Prerequisites, E.B. 1-2. Three credits; winter. Raitt.

124. *Institution Management II.* Efficiency analysis. Scientific principles applied to actual practice. Two-hour conference and six hours laboratory a week. Open to students accepted for the professional curriculum and others by permission of instructor. Prerequisite, H.E. 121. Three credits; winter, spring. Terrell.

*Not offered in 1939-1940.

131. *Clothing Selection.* Choice of clothing, emphasizing appropriateness to personality and occasion as well as judgment of quality and cost. Two lectures per week. No credit to those who take Home Economics 12. Two credits; winter, spring. Ingalls.

133. *History of Costume.* Fashion as an expression of the esthetic, social and economic life. Of special interest to students in dramatics and professional costume design. A large collection of national costumes enriches the course. Prerequisite, 112. Five credits; spring. Payne.

141. *Home Selection and Management.* Housing standards, materials, costs, financing, social problems, principles of scientific management; managing family resources and developing a satisfying home. Prerequisites or parallel, Physics 89-90 or Chemistry 1-2. Five credits; autumn, winter, spring. Fish.

144. *Income Management.* Planning personal and family expenditures in accordance with needs and aims in living; problems of choice-making and spending; factors influencing real income; guides and standards for planning expenditures; considerations for a savings and investment program. Prerequisite, E.B. 1 or 4, or permission of instructor. Three credits; autumn, winter, spring. Fish.

145. *Family Relationships.* Organization of the household. Basic principles and desirable attitudes in family relationships. Prerequisites, E.B. 1 or 4, Soc. 112, junior standing. Three credits; winter, spring. Raitt.

148. *Home Management House.* Organization, financial management, records, housekeeping, food preparation and service, and hospitality. For home economics majors. Two credits; autumn, winter, spring. Thorne.

160, 161. *Advanced Costume Design and Construction.* Creative designing of costumes by flat pattern and modeling methods. Open to students accepted for the professional curriculum and others by permission of instructor. Prerequisites, 114, Art 169. Five credits each; 160, autumn; 161, winter. Dorrance, Payne.

175. *Institution Equipment.* Construction, operation and care of equipment; routing of work. One-hour conference and eight hours laboratory work a week. Open to students accepted for the professional curriculum and others by permission of instructor. Prerequisite or parallel, H.E. 124. Three credits; spring. Terrell.

181. *Consumer Buying.* The consumer's position in present day markets; protection through legislation and other forces of social control; factors influencing consumer demand; standardization and informative labeling; advantages offered consumers by different types of retail-stores; installment buying and consumer credit; how consumers may influence and be influenced by marketing policies, costs and trends. Prerequisite, E.B. 1 or 4, or permission of instructor. Three credits; autumn, winter, spring. Fish.

187. *Experimental Cookery.* Study of fundamental principles of entire field of cookery through reading and laboratory experimentation. Prerequisite, senior or graduate standing, and permission of the instructor. Three credits; autumn. Dresslar.

188. *Advanced Textiles.* Technics and evaluation of testing methods, analysis of fabrics, textile legislation, standardization and consumer education. Prerequisites, H.E. 25, E.B. 4. Three credits; autumn. Denny.

189. *Hand Weaving.* Hand weaving as a medium of artistic expression. Color, design, texture, technic of weaving, loom threading, interpretation of

drafts. A collection of modern and traditional weaving of many countries is available for study. Prerequisites, Art 9, H.E. 25. Two credits; spring.
Starr.

190. *Child Nutrition and Care.* Problems of maternity and infancy, methods of improving physical and mental health of children. Laboratory work in University Child Nutrition Service. Prerequisite, H.E. 107. Five credits; winter, spring. Rowntree.

191. *Diet Therapy.* Open to students accepted for the professional curriculum and others by permission of instructor. Prerequisite, H.E. 108. Three credits; spring. Rowntree.

*195. *Research in Home Economics.*

196, 197. *Supervised Field Work in Institution Administration.* Prerequisite, 195 credits. Fifteen credits; winter, spring. Terrell.

198. *Historic Textiles.* A collection of rare materials is available for study of tapestry, rugs, lace, embroidery, damask, brocades and velvets in their historic settings. Prerequisite, H.E. 25, 47, Art 9, 10, 11, or equivalent. Three credits; winter. Denny.

Teachers' Course in Home Economics. For junior and senior high school. See Education 75NA.

Teachers' Course in Home Economics. For institution administration. See Education 75NB.

Supervised Field Work. Six months of supervised field work in the senior year. Prerequisite, 195 credits. The following are acceptable:

A. Hospital interneship approved by the American Dietetic Association.

B. Administrative interneship under the auspices of members of the Home Economics staff and approved by the American Dietetic Association.

C. Nursery School Service.

D. Field work in other lines as adequate supervision may be established.

COURSES FOR GRADUATES ONLY

200. *Investigation Cookery.* Introduction to methods of research, study of problems in food supply and preparation based upon related sciences. Prerequisite, H.E. 116 or 120. Three credits; autumn. Dresslar.

*202. *Home Economics Education.*

204. *Introduction to Research in Nutrition.* Elementary research carried on cooperatively in basal metabolism studies, animal experimentation, nitrogen, calcium and hemoglobin determination. Must parallel H.E. 214. Prerequisite, H.E. 108. Five credits; autumn. Rowntree.

205, 206. *Research in Nutrition.* Individual research in mineral or energy metabolism, animal feeding, or dietary studies. Prerequisite, H.E. 204. Credits to be arranged; winter, spring. Rowntree.

207, 208, 209. *Research in Textiles.* Prerequisite, graduate standing. Confer with instructor before registering. Credits to be arranged; autumn, winter, spring. Denny.

*Not offered in 1939-1940.

211, 212. *Research in Costume Design.* Prerequisites, H.E. 114, 133. Credits to be arranged; winter, spring. Payne.

214. *Readings in Nutrition.* Library research. Prerequisite, 108. Three credits; autumn. Rowntree.

215. *Readings in Nutrition.* Library research. Prerequisite, 214. Five credits; winter. Rowntree.

220, 221, 222. *Research in Institution Administration.* Problems dealing with food service and housing units in various types of institutions. Prerequisites, Home Economics 121, 122, 123, 124, 175, or equivalent. Credits to be arranged. Hours to be arranged; autumn, winter, spring. Terrell.

245. *Social and Economic Problems of the Consumer.* Readings and a survey of research in the field of consumption. Prerequisites, H.E. 144, 145, 181. Credits to be arranged; autumn. Fish.

JOURNALISM

Lewis Hall

Professors McKenzie, Jones; Associate Professors Benson, Christian, Kennedy; Assistant Professor Mansfield

1. *Journalism as a Profession.* Required in the freshman year of pre-journalism majors. One credit; autumn. McKenzie.

2. *The Newspaper and Society.* Required in the freshman year of pre-journalism majors. Prerequisite, Jour. 1, except for non-journalism majors. One credit; winter. McKenzie.

51. *Preliminary News Writing.* Not open to freshmen; and not open to students other than majors or minors in journalism. Required in the sophomore year of pre-journalism majors. Five credits; autumn, winter, spring. Christian, Benson, Mansfield.

90*, 91, 92. *Contemporary Affairs.* Current state, national and world movements. Not open to freshmen. Two credits a quarter; winter, spring. Christian.

130. *Fundamentals of Advertising.* The theory of advertising display, attention devices, media. Five credits; autumn. Jones.

131. *Display Advertising.* Layouts and copy for publications advertising. Prerequisite, Jour. 130. Five credits; winter. Jones.

132. *Advertising Typography.* A laboratory course in display advertising. Prerequisites, Jour. 130, 131. Three credits; spring. Jones.

147-148-149. *Fundamentals of Journalism.* Advanced news writing, reporting, court procedure, copy reading, history of American journalism, comparative journalism, problems of publishing, newspaper management, law of the press. Prerequisites, the prescribed seven credits of pre-journalism, and junior standing. Fifteen-twelve-ten credits. Continuous, autumn, winter, spring. Staff.

150. *Editorial Writing.* Prerequisite, Jour. 51. Three credits; spring. Jones.

*Not offered in 1939-1940.

171-172. *Magazine and Feature Writing and Trade Journalism.* Articles graded according to probable marketability. Three credits a quarter; autumn, winter. Jones.

173, 174-175. *Short Story Writing.* Critical appreciation and practical work in the writing of short stories. Not open to lower division students. Signature of instructor necessary before registration for autumn quarter. Five credits a quarter; autumn, winter, spring. Mansfield.

191, 192, 193. *Advanced Journalism.* A research and conference course, continuing junior journalism studies in journalistic problems. Prerequisite, Jour. 147-148-149. Registration by special permission of instructors only. Two credits; autumn, winter, spring. Staff.

195. *Independent Supervised Study.* Open only to journalism majors who have completed their third year. Five to ten credits; autumn, winter, spring. McKenzie.

199. *Problems of Journalism.* Actual research in the field. Open to seniors and graduate students only. Two to four credits; autumn, winter, spring. McKenzie.

201. *Propaganda.* A study of the crystallization of public opinion and of propaganda techniques. Five credits; spring. McKenzie.

225, 226, 227. *Advanced Short Story Writing.* Prerequisites, Jour. 173, 174-175. Class restricted to a maximum of eight students; admitted by permission of the instructor. Two to four credits a quarter; autumn, winter, spring. Mansfield.

250. *Research in Journalism.* Admission by consent of instructor. Three to five credits; autumn, winter, spring. Staff.

LAW

Condon Hall

Professors Falknor, Ayer, Beardsley, Levy, Luccock, Nottelmann, O'Bryan, Richards, Sholley; Associate Professors Harsch, Shattuck; Lecturers Shefelman, Thorgrimson

Three-Year Curriculum

THIRD YEAR

113. *Domestic Relations.* Shattuck, Washington Materials on Domestic Relations. Three credits; autumn. Shattuck.

117. *Legal Administration and Ethics.* Cheatham, Cases and Materials on the Legal Profession. Satisfactory completion of the course required for graduation. Three credits; autumn. Shefelman.

118. *Conflict of Laws.* Cheatham, Dowling, Goodrich, Cases on Conflict of Laws. Four credits; autumn. Sholley.

120. *Constitutional Law II.* Dowling, Cases on Constitutional Law. Three credits; winter. Sholley.

121. *Administrative Law.* Stason, Cases on Administrative Tribunals, 1937 edition. Four credits; spring. McAllister.

†122. *International Law.* Case book to be announced. (May receive political science credit.) Three credits; autumn, winter. Martin.

†123. *Real Property II.* (Formerly designated "Conveyancing.") Kirkwood, Cases on Conveyancing. (Required for students entering the Law School in or after the autumn quarter of 1937.) Three credits; winter, spring. Harsch.

124. *Community Property.* Mechem, Cases on Community Property. Three credits; spring. Sholley.

125. *Trade Regulation.* Handler, Cases on Trade Regulation (1937). Four credits; winter. McAllister.

†126. *Trusts.* Scott, Cases on Trusts, 2nd edition. Three credits; autumn, winter. Nottelmann.

128. *Damages.* McCormick, Cases and Materials on Damages. Three credits; winter. Richards.

*129. *Drafting of Legal Instruments.*

131. *Quasi-Contracts.* Woodruff, Cases on Quasi-Contracts, Laube's Edition. Three credits; winter. Richards.

132. *Legal Accounting.* Graham and Katz, Accounting in Law Practice and Assigned Cases. Three credits; autumn. McConahey.

133. *Public Utilities.* Welch, Cases on Public Utility Regulation. Five credits; autumn. Nottelmann.

134. *Federal Jurisdiction and Procedure.* Dobie, Cases on Federal Procedure (1935). Three credits; spring. McAllister.

136. *Insurance.* Patterson, Cases on Insurance. Three credits; autumn. Richards.

*137. *Water Rights.*

*138. *Future Interests.*

139. *Administration of Debtors' Estates.* Hanna, Cases on Creditors' Rights, 2nd edition 1935. Four credits; autumn. McAllister.

*140. *Mining Law.*

141. *Admiralty.* Sayre, Cases on Admiralty. Four credits; spring. Shefelman.

142. *Practice and Procedure I.* McBaine, Cases on Trial Practice, supplemented by Washington Code of Procedure and Washington Cases. Three credits; autumn. O'Bryan.

In Law 142, 143 and 144, Moot Court meets once each week. Each student is required to bring his case to issue, introduce the evidence and try the case before the court or jury. In the spring quarter the trials involve questions of probate law.

143. *Practice and Procedure II.* Prerequisite Law 142. Three credits; winter. O'Bryan.

144. *Practice and Procedure III.* Mechem and Atkinson, Cases on Wills and Administration, supplemented by the Washington Probate Code and Washington cases. Three credits; spring. O'Bryan.

*Not offered in 1939-1940.
†No examination for credit until completion of the entire course.

†145. *Credit Transactions.* Hanna, Cases and Materials on Security. Three credits; winter, spring. Shattuck.

†146. *Taxation.* Magill and Maguire, Cases on Taxation, 2nd ed. 1936. Three credits; autumn, winter. McAllister.

147. *Municipal Corporations.* Tooke, Cases on Municipal Corporations, 2nd ed. Four credits; spring. Thorgrimson.

†149. *Business Associations.* Frey, Cases and Statutes on Business Associations. Four credits; autumn, winter. Ayer.

150. *Corporation Practice.* Tracy, Corporation Practice (Vol. 19, Fletcher Cyclopedia Corporations). Prerequisite, Law 149, or equivalent thereof. Four credits; spring. Ayer.

190. *Roman Law.* Radin, Handbook of Roman Law. Three credits; autumn. Levy.

191. *Comparative Law.* Rheinstein, Cases and Materials on Comparative Law of Sales. Three credits; winter. Levy.

198. *Research Problems in Law.* Properly qualified third-year students may, with the consent of a member of the law faculty and dean of the Law School, receive from one to three credits for individual research in any of the major fields covered by the curriculum. One to three credits; hours by special arrangement. Autumn, winter and spring quarters.

Seminars

The following seminars are open to properly qualified third-year students, with the consent of the instructor and the dean of the Law School. Hours by arrangement with instructor.

199A. *Trusts.* Treatment in detail of some problems of trust administration and of rights of beneficiaries. Problems and materials to be selected. Three credits; spring. Nottelmann.

199B. *Banking Law.* (Prerequisite: Bills and Notes.) An examination of the legal aspects of the relation between Bank and Customer, including a study of the various types of deposits; the certified check; the certificate of deposit; the banker's lien; problems arising out of deposit for collection, etc. Excluded are matters relating to bank organization, general powers, liquidation, etc. Three credits; spring. Falknor.

Four-Year Curriculum

FIRST YEAR

All first-year subjects are required

100. *Personal Property.* Fraser, Cases on Property, Vol. 2. Three credcredits; autumn. Harsch.

†101. *Contracts.* Goble and Patterson, Cases on Contracts. Four credits, autumn; three credits, winter, spring. Shattuck.

†102. *Torts.* Bohlen, Cases on Torts, 3rd ed. Four credits, autumn; three credits, winter, spring. Richards.

†104. *Real Property I.* Fraser, Cases on Property, Vol. 1. Three credits, winter, spring. Harsch.

†No examination for credit until completion of the entire course.

†105. *Criminal Law and Procedure.* Harno, Cases on Criminal Law, supplemented by Washington statutes and cases. Three credits; autumn, winter. O'Bryan.

112. *Agency.* Steffen, Cases on Agency. Four credits, spring. Ayer.

130. *Legal Bibliography.* Beardsley, Legal Bibliography and the Use of Law Books. Three credits, winter. Beardsley.

SECOND YEAR

All second-year subjects are required

†110. *Sales.* Bogert and Britton, Cases on Sales. Three credits; autumn, winter. Ayer.

111. *Wills and Administration.* Casebook to be announced. Three credits; spring. Richards.

113. *Domestic Relations.* Shattuck, Washington Materials on Domestic Relations. Three credits; autumn. Shattuck.

†114. *Equity.* Walsh, Cases on Equity. Four credits; winter, spring. Nottelmann.

†115. *Evidence.* Morgan and Maguire, Cases on Evidence. Four credits; autumn, winter. Falknor.

†116. *Bills and Notes.* Aigler, Cases on Negotiable Paper and Banking. Three credits; winter, spring. Sholley.

119. *Constitutional Law I.* Dowling, Cases on Constitutional Law. Five credits; autumn. Sholley.

127. *Code Pleading.* Throckmorton, Cases on Code Pleading. Three credits; spring. O'Bryan.

THIRD YEAR

All third-year subjects are required

117. *Legal Administration and Ethics.* Three credits; one quarter.

120. *Constitutional Law II.* Three credits; one quarter.

121. *Administrative Law.* Four credits; one quarter.

123. *Real Property II.* Three credits; two quarters.

126. *Trusts.* Three credits; two quarters.

142. *Practice and Procedure I.* Three credits; one quarter.

143. *Practice and Procedure II.* Three credits; one quarter.

145. *Credit Transactions.* Three credits; two quarters.

149. *Business Associations.* Four credits; two quarters.

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†No examination for credit until completion of the entire course.

FOURTH YEAR

Required courses

118. *Conflict of Laws.* Five credits; one quarter.

124. *Community Property.* Three credits; one quarter.

135. *Legislation.* Four credits, one quarter.

146. *Taxation.* Three credits, one quarter.

199. *Seminars and Individual Research Courses.* Ten hours required of the following one-quarter courses, each carrying five hours of credit. In the main, the fields to be embraced within the seminars and individual research courses will be as indicated below. Necessarily, however, the program is in a measure tentative and is subject to some change and revision before the commencement of the first fourth year.

199A. *Trusts.*

199B. *Banking Law.*

199C. *Public Utility Regulation.*

199D. *Income Taxation.*

199E. *Corporate Reorganization.*

199F. *Corporation Practice.*

199G. *Comparative Law.*

199H. *Government Regulation of Business.*

199I. *Civil and Criminal Procedure.*

199J. *Labor Law.*

ELECTIVE FOURTH YEAR COURSES

(Seventeen hours of electives required. Of this seventeen, an additional five hours of seminar or individual research work may be undertaken with permission of the dean.)

122. *International Law.* Three credits; two quarters.

128. *Damages.* Three credits; one quarter.

132. *Legal Accounting.* Three credits; one quarter.

133. *Public Utilities.* Four credits; one quarter.

134. *Federal Jurisdiction and Procedure.* Three credits; one quarter.

136. *Insurance.* Three credits; one quarter.

138. *Future Interests.* Four credits; one quarter.

139. *Administration of Debtors' Estates.* Four credits; one quarter.

141. *Admiralty.* Four credits; one quarter.

144. *Practice & Procedure III* (Probate). Three credits; one quarter.

147. *Municipal Corporations.* Three credits; one quarter.

190. *Roman Law.* Three credits; one quarter.

LIBERAL ARTS

Philosophy Hall

Professor Cory; Associate Lutey

1. *Introduction to Modern Thought.* Especially for lower division students, but open to all. A study of man's place in the universe in the light of contemporary thought; cosmic origins; the origin and nature of life; mind and behavior; values. Upper division students may obtain upper division credits on the basis of extra reading and conferences. Five credits; autumn, spring. Corey, Lutey.

11. *Introduction to the Study of the Fine Arts.* The appreciation of masterpieces of architecture, painting, sculpture, poetry and music; a study of the problems common to them; the philosophy of art; the relations of beauty and truth and morality. Upper division students may obtain upper division credits on the basis of extra reading and conferences. Five credits; winter. Cory, Lutey.

214, 215, 216, 217. *Realism in Philosophy, Literature and the Arts.* Two to eight credits a quarter; autumn, winter, spring, summer. Cory.

LIBRARIANSHIP

Library

Professors Worden, C. W. Smith, Librarian; Associate Professor Alfonso; Assistant Professor Andrews; Lecturer Richards

‡170. *Introduction to Children's Work.* A basic course. Three credits; autumn, winter. Andrews.

†172. *Introduction to Library Work.* Library organization, problems of different types of libraries and current library topics. Two credits; autumn. Worden.

‡175, †184, †191. *Classification, Cataloging, Subject Headings.* Four credits, autumn; three credits, winter; three to five credits, spring. Alfonso.

‡177, †185, †194. *Bibliography and Reference.* Includes trade bibliographies and government documents. Three credits, autumn; three or four credits, winter; two or four credits, spring. Smith, Alfonso.

†178. *History of Books and Libraries.* Three credits; winter. Richards.

†179, †188, †196. *Books for Libraries.* A study of the book field, and the problems of selecting books. Four credits, autumn; two or three credits, winter; three credits, spring. Worden.

180. *Story Telling.* A study of folk and fairy tales, myths, epics and short stories as source material for story telling. Open to juniors and seniors in autumn. Three credits; autumn, †spring. Andrews.

†181. *Advanced Children's Work.* Organization of a children's department; problems of book buying and administration. Prerequisite, 170. Two credits; winter. Andrews.

‡182. *School Library Administration.* Three credits; autumn, winter, spring. Andrews.

‡Open to seniors and graduates who wish to qualify for teacher-librarian positions in high schools of five hundred or less.

†Open only to students registered in the school.

†183, †190. *Selection of Books for Children.* Three credits; winter, spring. Andrews.

†186. *Practice.* Four weeks (40 hours a week) of practice work under expert supervision in neighboring Northwest libraries. Five credits; spring. Worden.

†189. *Organization and Administration of Small Libraries.* Two credits; winter. Worden.

†192. *Administration.* Problems of library management, buildings, equipment, finance, and publicity. Two credits; spring. Worden.

‡195. *Book Selection for School Libraries.* Three credits; autumn, winter, spring. Andrews.

The following courses are open to graduates of accredited schools of librarianship only, on permission of the director of the school. The work will be a coordination of theory and practice, the theory to be taken at the University and the practice to be taken in half-time positions at Seattle Public Library. All courses are required and must be taken in prescribed order. The following courses, outside of the School of Librarianship are required: Child Psychology, and Education. It is recommended that they be taken as preparatory courses, but they may be carried along with the advanced work. Courses in the following are also strongly recommended as preparatory courses: Greek literature, Latin literature, early literature of various countries, playground and recreation.

*201, 202, 203. *Children's Literature.*

*204, 205, 206. *Administration of Children's Libraries.*

*207, 208, 209. *Traditional Literature.*

*210, 211, 212. *School Work.*

*213, 214, 215. *Field Work* (not required of students with library experience).

MATHEMATICS

Philosophy Hall

Professors Carpenter, Ballantine, Gavett, Moritz, Winger; Associate Professors Cramlet, Jerbert, McFarlan; Assistant Professors Jacobsen, Mullemeister, Neikirk, Taub; Acting Assistant Professor Birnbaum; Instructors Haller, Zuckerman.

Minimum Requirements of the Department

For a major in mathematics 42 credits, including courses 4, 5, 6, 107, 108, 109, or their equivalents, plus 12 additional approved upper division credits. Students planning to elect any of the above courses subsequent to course 31 must consult the department before registering.

Candidates who are not majors in mathematics but who wish to teach mathematics as a minor subject must have earned at least 25 approved credits in mathematics, including courses 4, 5, and 6, before receiving the recommendation of the department.

†Open only to students registered in the school.
‡See section regarding summer cruises, above. The cruises are offered only to those regularly enrolled in the Naval R.O.T.C.
*Not offered in 1939-1940.

Major students in mathematics should, if possible, select their courses in the following order: Mathematics 4, 5, 6, 107, 108, 109. In addition they should elect physics as their sophomore science.

Courses 1 and 2 must be taken by all students who select mathematics as a major or a minor if these subjects were not taken in high school.

Mathematics 1 can be taken concurrently with Mathematics 4; Mathematics 2 can be taken concurrently with 4, 5, 6, 107, and 102.

Candidates for the master's degree who elect mathematics as a minor shall present a minimum of 12 credits, satisfactory to the department, at least 9 of which shall be taken in residence. The candidate's undergraduate preparation in mathematics shall comprise courses at least through the calculus, and in no case shall his total credits fall short of an undergraduate major in mathematics, or equivalent.

1. *Advanced Algebra.* Algebra from quadratics on. Prerequisite, one year of high school algebra. Five credits; autumn, winter, spring. Staff.

2. *Solid Geometry.* Prerequisite, one year of plane geometry. Five credits; winter, spring. Staff.

3. *Survey of Mathematics.* Introduction to mathematical thought and procedure. Elementary processes and their applications. Not for majors. Prerequisites, one year algebra and one year plane geometry. Five credits; spring. Staff.

4. *Plane Trigonometry.* Primarily for students in the College of Arts and Sciences. Prerequisite, one and one-half years of algebra and one year of plane geometry. Five credits; autumn, winter, spring. Staff.

5. *College Algebra.* Primarily for students in the College of Arts and Sciences. Prerequisite, Math. 1 or one and one-half years of high school algebra. Five credits; autumn, winter. Staff.

6. *Analytic Geometry.* Primarily for students in the College of Arts and Sciences. Prerequisite, Math. 4. Five credits; winter, spring. Staff.

11. *Theory of Investment.* Interest, annuities, amortization, capitalization and depreciation, sinking funds, etc. Prerequisite, one year algebra. Five credits; autumn, winter, spring. Staff.

12. *Mathematics of Finance and Insurance.* Prerequisite, Math. 11. Five credits; spring. Staff.

13. *Elements of Statistical Method.* Prerequisites, one-year algebra, one year plane geometry. Five credits; autumn, winter, spring. Birnbaum.

21. *Mathematics for Foresters.* Prerequisites, one and one-half years algebra, one year plane geometry. Five credits; autumn. Staff.

31, 32, 33. *Engineering Freshman Mathematics.* Prerequisites, one and one-half years algebra, one year plane geometry; each course prerequisite to the following course. Five credits; autumn, winter, spring. Staff.

41, 42, 43. *Engineering Calculus.* Prerequisites, Math. 33 for 41; 41 and solid geometry for 42; 42 for 43. Three credits; autumn, winter, spring. Staff.

54, 55, 56. *Mathematics for Architects.* Prerequisites, one and one-half years algebra, one year plane geometry; each course prerequisite to the following course. Three credits; autumn, winter, spring. Neikirk.

*101. *Advanced Trigonometry.*

*Not offered in 1939-1940.

*102. *Advanced Analytic Geometry.*

*103. *Solid Analytic Geometry.*

107, 108, 109. *Calculus.* Differential and Integral. Prerequisite, Math. 6; also each course prerequisite for the following course. Five credits; autumn, winter, spring. Staff.

111, 112. *Introduction to Actuarial Science.* Intensive training for the first parts of the examinations given by the American Institute of Actuaries; theories of probability and finite differences. Prerequisite, Math. 109 or 42; 111 prerequisite to 112. Two credits, autumn; three credits, winter. ———.

113. *Mathematical Statistics.* The series of Bernoulli, Lexis and Poisson, normal probability curve, skew, partial and multiple correlation. Prerequisites, Math. 108 and 13 or permission. Three credits; spring. Birnbaum.

114, 115, 116. *Ordinary and Partial Differential Equations.* Prerequisite, Math. 109 or 42; each course prerequisite to the following course. Three credits, autumn and winter; two credits, spring. Carpenter.

*117, 118, 119. *Projective Geometry.*

121, 122, 123. *Theory of Equations.* Prerequisite, differential and integral calculus or permission. Two credits; autumn, winter, spring. Ballantine.

*124, 125, 126. *Algebraic Curves.*

*131. *Selected Topics in Mathematics.*

150, 151. *Advanced Analysis.* Selected topics in advanced differential calculus. Prerequisite, Math. 109 or 114; 150 prerequisite to 151. Two credits, winter; three credits, spring. Haller.

*164, 165, 166. *Partial Differential Equations of Mathematical Physics.*

Teachers' Course in Mathematics. See Education 75Q.

COURSES FOR GRADUATES ONLY

All courses numbered above 200 require a full year's work in differential and integral calculus as a prerequisite and the consent of the instructor in charge.

*201, 202, 203. *Projective Differential Geometry.*

204, 205, 206. *Modern Algebra.* Theory of matrices, linear dependence, linear transformations, bilinear and quadratic forms, algebraic invariants, and elementary divisors. Three credits; autumn, winter, spring. Jerbert.

*207, 208. *Analysis Situs.*

*209. *Finite Differences.*

*211, 212, 213. *Tensors, Invariants, Groups.*

214, 215, 216. *Higher Calculus.* Two lectures and one seminar period per week with readings from Wilson's and Goursat's treatises in the calculus. Three credits; autumn, winter, spring. Moritz.

217, 218, 219. *Finite Collineation Groups.* Groups of linear transformations in the binary and ternary domains with applications to geometry. The structure of the principal groups together with their invariant configurations

*Not offered in 1939-1940.

and invariant curves. Prerequisite, Math. 117 or permission. Three credits; autumn, winter, spring. Winger.

*221, 222, 223. *Higher Plane Curves.*

*224, 225, 226. *Functions of a Real Variable.*

*227, 228, 229. *Theory of Numbers.*

*231, 232, 233. *Theory of Infinite Processes.*

*234, 235, 236. *Analytical Dynamics.*

*237, 238, 239. *Theory of Invariants.*

*241, 242, 243. *Functions of Complex Variables.*

244, 245, 246. *Calculus of Variations.* Properties of extremals, Weierstrass theory, problem of Bolza. Prerequisites, Math. 114, 115, unless taken concurrently. Three credits; autumn, winter, spring. McFarlan.

*247, 248, 249. *Metric Differential Geometry.*

*251, 252, 253. *Harmonic Analysis.*

254, 255, 256. *Riemannian Geometry.* Fundamental concepts of metric differential geometry, extension to *n*-dimensional geometry by tensor methods. Three credits; autumn, winter, spring. Cramlet.

*257, 258, 259. *Theory of Relativity.*

*261, 262, 263. *Functionals and Integral Equations.*

*264, 265, 266. *Continuous Groups.*

*267, 268, 269. *Orthogonal Functions.*

271, 272, 273. *Advanced Differential Equations.* Existence theorems of ordinary and partial differential equations; linear equations and their applications in detail. Prerequisite, Math. 115. Three credits; autumn, winter, spring. Taub.

274, 275, 276. *Advanced Projective Differential Geometry.* Three credits; autumn, winter, spring. Carpenter.

MECHANICAL ENGINEERING

Guggenheim Hall

Professors Eastwood, McMinn, Schaller, Wilson, Winslow; Associate Professors Edmonds, McIntyre; Assistant Professor Tymstra; Instructors Crain, Sullivan

53. *Manufacturing Methods.* Principles of the founding of ferrous metals. One credit; autumn, winter, spring. Schaller.

54. *Manufacturing Methods.* Arc and oxy-acetylene welding, flame cutting, heat treating. One credit; autumn, winter, spring. Schaller, Sullivan.

55. *Manufacturing Methods.* Fundamental theory and practice of machining operations on metal. One credit; autumn, winter, spring. Sullivan, Schaller.

*Not offered in 1939-1940.

81. *Mechanism.* Operation of machines involving the transmission of forces and the production of determinate motions. Prerequisites, G.E. 3, Math. 32. Three credits; autumn, winter, spring. McIntyre, Edmonds, Crain.

82. *Steam Engineering.* Various steam apparatus used in modern steam plants. Not open to freshmen. Prerequisite, G.E. 2. Three credits; autumn, winter, spring. Eastwood, McMinn, Edmonds, Crain.

83. *Steam Engineering Laboratory.* Calibrations of instruments; horsepower tests; complete engine and boiler test. Preceded or accompanied by M.E. 82. Three credits; autumn, winter, spring. Wilson, McIntyre, Edmonds.

104. *Manufacturing Methods.* Founding, welding, and machining of non-ferrous metals. Prerequisites, M.E. 53, 54, 55. One credit; winter. Schaller.

105. *Advanced Manufacturing Methods.* Individual problems of machine tooling. Prerequisites, M.E. 53, 54, 55. One credit; autumn. Sullivan.

106. *Advanced Manufacturing Methods.* Study of machining problems from the standpoint of production. Prerequisite, M.E. 105. One credit; winter. Sullivan.

107. *Production Planning.* Design and equipment of a representative manufacturing plant. Prerequisite, M.E. 106. One credit; spring. Schaller.

108. *Production Management.* Study of location, operation, and organization of manufacturing plants. Three credits; autumn, spring. Schaller.

109. *Factory Cost Analysis.* Analyzing shop operations from the standpoint of manufacturing costs. Three credits; winter. Schaller.

110. *Heating and Ventilation.* Abridged for architecture students. Prerequisite, junior standing in architecture. Two credits; spring. Eastwood.

111, 112. *Machine Design.* Design of machine details. Prerequisite, C.E. 92. Three credits a quarter; autumn, winter, spring. McIntyre, Edmonds, McMinn, Crain.

113, 114. *Machine Design.* Advanced problems in machine design. Prerequisite, M.E. 112. Two credits a quarter; autumn, winter. Winslow.

115. *Steam Engine Design.* Computations and drawings for the design of a steam engine. Prerequisite, M.E. 114. Three credits; spring. Edmonds.

123, 124. *Engines and Boilers.* Analysis of power, speed regulation and forces in various types of engines. Steam boiler designs and specifications. Prerequisites, M.E. 83, C.E. 91. M.E. 123, two credits, autumn; M.E. 124, three credits, winter. Winslow.

*140. *Time Study and Job Analysis.*

151, 152, 153. *Experimental Engineering.* Continuation of M.E. 83, involving more extended and complete investigations. Prerequisite, M.E. 83. Three credits a quarter; autumn, winter, spring. Wilson, McIntyre, Edmonds.

167. *Engineering Materials.* Properties of the various materials used in engineering construction. Recitation and laboratory. Prerequisite, C.E. 92. Three credits; autumn, winter, spring. McMinn.

182. *Heating and Ventilation.* Various systems of heating and ventilating methods with designs. Prerequisites, M.E. 82, junior standing in engineering. Three credits; winter. Eastwood.

*Not offered in 1939-1940.

183. *Thermodynamics and Refrigeration.* Principles underlying transformation of heat into work. Special application to engineering. Prerequisites, M.E. 82, junior standing in engineering. Five credits; autumn, spring. Eastwood.

184. *Power Plants.* Design of steam power plants, involving their location, building, prime movers, and power transmission. Prerequisites, M.E. 83, 123. Five credits; spring. Winslow.

185. *Naval Architecture.* Theory of naval architecture. Displacement; stability; strength; construction. Junior standing. Three credits; spring. Rowlands.

191, 192, 193. *Research.* Two to five credits. Staff.

195. *Thesis.* Investigation, design or experiment under direction of the professor in charge. Two to five credits; senior year. Wilson.

198. *Gas Engineering.* Development of gas engineering; stationary, marine, automobile, and airplane motors, and gas-producer plants. Prerequisites, M.E. 82, junior standing in engineering. Three credits; autumn, winter, spring. Wilson.

199. *Gas Engine Design.* Calculations and plans for the design of a given type of motor. Prerequisite, M.E. 198. Three credits; spring. Wilson.

COURSES FOR GRADUATES ONLY

200. *Vibrations of Machinery.* Mathematical investigations of vibration phenomena, emphasis on applications to operating conditions of machines. Elective for approved seniors, graduates. Three credits; autumn. Winslow.

211, 212, 213. *Research.* Three credits a quarter; autumn, winter, spring. Staff.

Engineering English

For courses in Engineering English, see department of English, Comp. B, 100, 101, 102, 103 and Speech 103.

MILITARY SCIENCE AND TACTICS

The Armory

Colonel Ottosen; Lieutenant Colonel Quesenberry, Lieutenant Colonel Thebaud; Major Pierce, Major Parker, Major Owens, Major Wetherby, Major Ames, Major Spoerry; Captain Wilson; Staff Sergeants Hogwood, Collins; Sergeants Hoffman, Moore, Chandler, Kimbrough, Whitchurch, Roberts, Gage, Freeman, Dragneff, Harrison.

The instruction for the first two years, together with that provided for the third and fourth years, constitutes the courses prescribed by the War Department for institutional units of the Reserve Officers' Training Corps. The advanced courses, those of the third and fourth years, are open to students who have completed the first two years (basic course) of instruction and training.

First Year

1, 2, 3. *Basic Infantry.* Leadership; orientation (National Defense Act, obligations of citizenship, military history and policy); military discipline

and courtesy; military sanitation and first aid; military and infantry organization; weapons (the rifle, and rifle marksmanship, automatic rifle); combat training (scouting and patrolling, musketry). Two recitations and one laboratory period a week. Two credits a quarter; autumn, winter, spring.
Owens, Spoerry.

4, 5, 6. *Basic Coast Artillery.* Leadership; military fundamentals (National Defense Act, obligations of citizenship, military history and policy); military and coast artillery organization; military discipline and courtesy; military sanitation and first aid; map reading; rifle marksmanship; coast artillery instruction (ammunition, weapons and materiel, rigging). Two recitations and one laboratory period a week. Two credits a quarter; autumn, winter, spring. Ames.

11, 12, 13. *Band.* Two credits a quarter; autumn, winter, spring. Welke.

Second Year

51, 52, 53. *Basic Infantry.* Leadership; map reading, military fundamentals (organization, military history and current events); weapons (machine guns and characteristics of supporting weapons); combat training (combat principles of rifle squad and section, attack, defense and security). Two recitations and one laboratory period a week. Two credits a quarter; autumn, winter, spring. Quesenberry.

61, 62, 63. *Basic Coast Artillery.* Leadership; coast artillery instruction (weapons and materiel, fire control instruments for seacoast artillery, basic gunnery for anti-aircraft, identification of aircraft, characteristics of naval targets); coast artillery motor transportation. Two recitations and one laboratory period a week. Two credits a quarter; autumn, winter spring.
Ottosen, Pierce.

81, 82, 83. *Band.* Prerequisite, Mil. Sci. 13. Two credits a quarter; autumn, winter, spring. Welke.

Third Year

104. *Advanced Infantry.* Leadership; map and aerial photograph reading; care and operation of motor vehicles; administration; weapons, combat training (estimate of the situation and combat orders); defense against chemical warfare. Five hours a week. Three credits; any quarter. Thebaud.

105. *Advanced Infantry.* Leadership; weapons (machine guns, howitzer company weapons, rifle and pistol marksmanship); combat training (field fortifications, combat principles of the rifle platoon, machine gun platoon and howitzer company squad, review of rifle squad and section). Five hours a week. Three credits; any quarter. Thebaud.

106. *Advanced Infantry.* Leadership; weapons (machine guns, howitzer company weapons, rifle and pistol marksmanship; characteristics of infantry supporting weapons, rifle and hand grenades). Five hours a week. Three credits; any quarter. Thebaud.

114. *Advanced Coast Artillery.* Leadership; administration; coast artillery instruction (fire control and position finding for seacoast artillery, gunnery for seacoast artillery). Five hours a week. Three credits; any quarter. Parker.

115. *Advanced Coast Artillery.* Leadership; coast artillery instruction (gunnery for anti-aircraft artillery). Five hours a week. Three credits; any quarter. Parker.

116. *Advanced Coast Artillery.* Leadership; coast artillery instruction (signal communications, orientation); rifle and pistol marksmanship. Five hours a week. Three credits; any quarter. Parker.

130. *Advanced Camp.* Required practical training to supplement the theoretical and practical courses taken in the military department by advanced students of the R.O.T.C. Six weeks in summer, following the first year of the advanced course. Three credits.

Fourth Year

154. *Advanced Infantry.* Leadership; military fundamentals (military history and policy, military law, Officers' Reserve Corps regulations). Five hours a week. Three credits; any quarter. Wetherby.

155. *Advanced Infantry.* Leadership; combat training (review of 1st year advanced offensive and defensive combat and combat orders, combat principles of the rifle company, combat intelligence, infantry signal communication); property and funds. Five hours a week. Three credits; any quarter. Wetherby.

156. *Advanced Infantry.* Leadership; weapons (tanks, mechanization); combat training (combat principles of rifle and machine-gun company and howitzer company platoon, anti-aircraft defense). Five hours a week. Three credits; any quarter. Wetherby.

164. *Advanced Coast Artillery.* Leadership; military history and policy; military law and administration; mechanization; defense against chemical warfare; coast artillery instruction (combat orders). Five hours a week. Three credits; any quarter. Wilson.

165. *Advanced Coast Artillery.* Leadership; coast artillery instruction (artillery technique and tactics, field fortifications). Five hours a week. Three credits; any quarter. Wilson.

166. *Advanced Coast Artillery.* Leadership; artillery technique and tactics; aerial photograph reading; administration; property and funds; duties of Reserve Officers. Five hours a week. Three credits; any quarter. Wilson.

MINING, METALLURGICAL AND CERAMIC ENGINEERING

Mines Laboratory

Professors Roberts, Daniels, Wilson; Associate Professor Corey; Instructor ———; Associate Wick

Mining Engineering

51. *Elements of Mining.* Principles of mining, including prospecting, boring, drilling, explosives, rock breaking. Prerequisite, sophomore standing. Three recitations. Three credits; autumn. Daniels.

52. *Methods of Mining.* Continuation of Min. 51. Methods of working metal, coal, and placer mines, non-metallic deposits. Prerequisite, Min. 51. Two recitations and one laboratory period. Three credits; winter. Daniels.

101. *Milling.* Preliminary course in the principles and practice of mineral dressing. Prerequisite, junior engineering standing. Two recitations and one laboratory period. Three credits; autumn. Roberts, Wick.

103. *Mine Rescue Training.* Practice in the use of oxygen rescue apparatus, and instruction in first-aid; instruction during first four weeks of quarter. Physical examination required. One credit; winter. Daniels.

106. *Mine Excursion.* A five-day trip in spring of junior year to a neighboring mining region; detailed inspection of mines. Expense approximately $25. One credit; spring. Staff.

107. *Mine Excursion.* A five-day trip in spring of senior year, similar to Min. 106. One credit; spring. Staff.

122. *Coal Mining Methods.* Special methods involved in prospecting, development, and operation of coal and stratified deposits. Prerequisite, Min. 51 and Min. 52. Three recitations. Three credits; winter. Daniels.

151. *Mining Engineering.* Principles and practice as exemplified by typical mines. Laboratory studies of air compressors, drills, etc.; studies at nearby mines. Prerequisite, senior engineering standing. Two recitations, two laboratory periods. Four credits; spring. Roberts, Wick.

152. *Mineral Dressing.* The principal branches of mineral dressing, with laboratory practice in complete mill tests. Prerequisite, Min. 101. Two recitations and two laboratory periods. Four credits; autumn. Roberts, Wick.

162. *Economics of the Mineral Industry.* Mine valuation; costs of plant and operation; financial provisions; mining law. Prerequisite, senior engineering standing. Three recitations and one laboratory period. Four credits; winter. Roberts, Wick.

*163. *Mine Operation.*

171. *Mine Ventilation.* Composition and properties of mine gases; principles of ventilation applied to both coal and metal mines. Prerequisites, Min. 51, 52, and 103. Three recitations. Three credits; spring. Daniels.

176. *Coal Preparation.* Methods of preparing coal by dry and wet cleaning processes; control by float-and-sink methods. Examinations of washing plants at local mines. Prerequisites, Min. 101, and Met. 103. Two recitations and two 4-hour laboratory periods. Five credits; spring. Daniels.

182. *Mineral Industry Management.* Employment of labor, systems of payment, social and economic aspects of mineral engineering operations. Prerequisite, senior engineering standing and E.B. 3. Three recitations. Three credits; spring. Daniels.

191, 192, 193, 194. *Thesis.* Preparation of a graduation thesis in mining, metallurgical, or ceramic engineering. Completed thesis is due three weeks before graduation. Prerequisite, senior standing. Credits to be arranged; a minimum total of five required; autumn, winter, spring, summer. Staff.

COURSES FOR GRADUATES ONLY

201, 202, 203. *Seminar.* Lectures and discussions by Bureau of Mines staff, mining engineering faculty and fellows. Required of fellowship holders in the College of Mines. Prerequisite, graduate standing. One credit; autumn, winter, spring. Staff.

211, 212, 213, 214. *Graduate Thesis.* Preparation of a thesis in mining, metallurgical, or ceramic engineering. Finished thesis is due one month be-

*Not offered in 1939-1940.

fore graduation. Hours and credits to be arranged; total nine credits allowed for thesis. Autumn, winter, spring, summer. Staff.

221, 222, 223. *Metal Mining.* Studies in metal mining. Prerequisite, graduate standing. Hours and credits to be arranged. Roberts.

231, 232, 233. *Mineral Dressing.* Studies in ore dressing. Prerequisite, graduate standing. Hours and credits to be arranged. Roberts.

251, 252, 253. *Coal Mining.* Studies in coal mining or in the preparation of coal. Prerequisite, graduate standing. Hours and credits to be arranged. Daniels.

261, 262, 263. *Fuels and Combustion.* A course in fuels, their utilization and combustion. Prerequisite, graduate standing. Hours and credits to be arranged. Daniels.

271. *Cooperative Research with U. S. Bureau of Mines.* Investigations by holders of cooperative fellowships in College of Mines and Northwest Experiment Station. Six credits; autumn. Staff.

Metallurgical Engineering

53. *Elements of Metallurgy.* Properties of metals and alloys, fuels, refractory materials, furnaces, the extraction of the common metals from their ores. Open to all engineering students with sophomore standing. Prerequisite, Chem. 23. Three recitations. Three credits; spring. Corey.

101. *Fire Assaying.* Testing of reagents, crushing, sampling, and assaying of ores, furnace, and mill products. Prerequisite, Chem. 111. One recitation and two laboratory periods. Three credits; autumn. Corey, Wick.

102. *Metallurgical Laboratory.* Experiments illustrating metallurgical principles. Prerequisite, Met. 53. One 4-hour laboratory period. Two credits; spring. Corey, Wick.

103. *Fuel Technology.* Primary and manufactured fuels; source, composition, methods of utilization, and economy. Laboratory work in analysis of fuels. Prerequisite, junior standing. Three recitations and one laboratory period. Four credits; winter. Daniels, Corey.

104. *Non-ferrous Metallurgy.* Metallurgy of copper, lead, zinc, gold and silver, especially the methods of roasting, smelting, lixiviation and refining. Prerequisite, Met. 53. Three recitations. Three credits; autumn. Corey.

140. *Materials of Construction.* Methods of manufacture, properties, and engineering uses of ferrous and non-ferrous metals and alloys, and ceramic materials. Prerequisite, junior standing. Three lectures. Three credits; autumn. Corey, Daniels, Wilson.

153. *Wet Assaying.* Methods for the determination of elements in ores and furnace products. Prerequisite, Chem. 109, 110, or 111. One recitation and two laboratory periods. Three credits; winter, spring. Corey.

155. *Iron and Steel.* Metallurgy and manufacture of iron and steel; their properties and uses in engineering work. Prerequisite, junior engineering standing. Three recitations. Three credits; autumn. Daniels.

160. *Metallurgical Analysis.* Technical methods of analysis of slags, industrial products and (for ceramics and geology students) clays and rocks. Prerequisite, Met. 153. Two laboratory periods. Two credits; spring. Corey.

162. *Physical Metallurgy.* The constitution of metals and alloys, and their relations to the physical and mechanical properties of the metal. Open to all upperclass engineering students. Three recitations. Three credits; autumn. Corey.

163. *Metallography.* Preparation, photomicrography, and study of metal sections. One recitation and two laboratory periods. Open to all senior engineering students. Three credits; winter. Corey, Wick.

165. *Metallurgical Calculations.* Physical chemistry of the metallurgist, slag calculations, and furnace problems. Prerequisite, junior mines standing. Three recitations. Three credits; winter. Corey.

166. *Advanced Non-ferrous Metallurgy.* Study of methods and practice in the extraction of the minor non-ferrous metals. Prerequisite, senior mines or graduate standing. Three credits; spring. Corey.

COURSE FOR GRADUATES ONLY

221, 222, 223. *Advanced Metallurgy.* Studies in metallurgy. Prerequisite, graduate standing. Hours and credits to be arranged. Corey.

Ceramic Engineering

90. *Industrial Minerals.* Beginning study of non-metallic minerals and their products. Prerequisite, sophomore standing in mines, engineering, or science. Three recitations. Three credits; autumn, winter, spring. Wilson.

100. *Plasticity, Suspensions, and Drying.* Physical characteristics of ceramic materials in the plastic condition and as slip-suspensions. Prerequisite, Cer. 90. Three recitations. Three credits; autumn. Wilson.

101. *Firing.* The effect of heat on ceramic materials; vitrification of clay; melting, fusion, and crystallization of silicates. Prerequisite, Cer. 100. Three recitations. Three credits; winter. Wilson.

102. *Ceramic Decoration.* The value of decoration in ceramics; a study of ceramic colors, surface textures, and glazes. Prerequisite, Cer. 101. Three recitations. Three to six credits; spring. Wilson.

104. *Calculations for Bodies and Glazes.* Physics and chemistry of preparing, drying, firing, and testing ceramic materials and glazes. Prerequisite, junior standing in mines or engineering. Three recitations. Three credits; autumn. Wilson.

105. *Calculations for Drying and Firing.* Problems in the physics and chemistry of drying and firing. Prerequisite, junior standing in mines or engineering. Three recitations. Three credits; winter. Wilson.

110. *Ceramic Physical-Chemical Measurements.* Testing of clays and other ceramic materials. Prerequisite, junior standing in mines or engineering. One recitation and two laboratory periods. Two credits; spring. Wilson.

121, 122, 123. *Ceramic Products Laboratory.* Laboratory problems in preparing raw materials, and the manufacture and testing of ceramic and non-metallic products. Prerequisite, Cer. 90 to 110. Two recitations and three laboratory periods. Five credits a quarter; autumn, winter, spring. Wilson.

131, 132, 133. *General Ceramics.* Industrial and craft methods of manufacturing ceramic products, mainly architectural terra cotta and pottery; decorative processes; glaze studies. No prerequisites. One recitation and two laboratory periods. Two to five credits; autumn, winter, spring. Wilson, Denny.

161, 162, 163. *Glazes, Enamels and Colors.* Laboratory problems in the application of ceramic colors, glazes, and enamels. Hours and credits to be arranged; autumn, winter, spring. Wilson.

COURSE FOR GRADUATES ONLY

221, 222, 223. *Ceramic Research.* Studies of the ceramic resources of the Pacific Northwest or in the development of new products or processes. Prerequisite, graduate standing. Hours and credits to be arranged. Wilson.

Engineering English

For courses in Engineering English, see department of English, Comp. B, 100, 101, 102, 103 and Speech 103.

MUSIC

Music Building

Professors Wood, Rosen, Venino, Werner; Associate Professors Jacobson, Lawrence, McKay, Munro, Van Ogle; Assistant Professors Groth, Hall, Irvine, Kirchner, Welke, Wilson, Woodcock; Instructors Bostwick, Canfield, McCreery, Oliver; Associates Beck, Eichinger, Graf, Horsfall, Pauly, Phillips, Tustin

Music Materials and Composition

The following courses are recommended as electives for students not majoring in music. Such students should consult the music registration adviser before registering.

Music 15, 16, 21, 22, 23, 24, 46, 72, 73, 74, 104, 105, 106, 127, 128, 151, 152, 153, 190, 191, 192 and courses in vocal or instrumental study and ensemble.

15. *Music Fundamentals.* Laboratory work in hearing and reading; transposition; melody-writing. Three credits; autumn, winter, spring. Staff.

16. *Music Fundamentals.* To be taken with 46. Prerequisite, Music 15 or exemption. Two credits; autumn, winter, spring. Staff.

46. *Harmony I.* Structure and physical basis of chords. Dominant-tonic relation. Prerequisite, Music 9AX or equivalent. Two credits; autumn, winter, spring. Staff.

51. *Harmony II.* All primary harmonies and non-harmonic tones. Prerequisite, Music 16, 46. Four credits; autumn, winter, spring. Staff.

52. *Harmony III.* Laboratory course in analysis, keyboard harmony and ear training. Prerequisite, Music 51. Three credits; autumn, winter, spring. Bostwick, Wilson.

53. *Harmony IV.* Secondary harmonies and simple modulations. Prerequisite, Music 52 or exemption. Five credits; autumn, winter, spring. Eichinger.

101. *Harmony V.* Chromatic harmonies and modulations. Prerequisite, Music 53. Five credits; autumn, winter, spring. McKay, Wood.

109. *Counterpoint.* Regulation of concurrent melodies. Prerequisite, Music 53. Five credits; autumn, winter, spring. Wood, McKay, Eichinger.

112. *Musical Forms.* Analysis and exercises in composition. Prerequisite, Music 53. Five credits; autumn, spring. Wood, Woodcock.

117. *Elementary Composition and Arranging.* Original work and arrangements for combinations of voices or instruments. Prerequisites, Music 101, 109, 112. Five credits; autumn, spring. McKay.

127, 128. *Choral Literature.* A cappella singing with emphasis upon skill in part-singing, style and interpretation. Prerequisite, Music 51. Two credits a quarter; autumn, winter, spring. Groth, Hall, Munro.

143. *Orchestration.* Principles of orchestral composition. Prerequisite, Music 117. Five credits; winter. McKay.

157. *Free Composition.* Writing in the smaller forms for voices and for instruments. Prerequisite, Music 117. Five credits; autumn. McKay.

163. *Advanced Counterpoint.* The choral prelude, invention, and fugue. Analysis and composition. Prerequisite, Music 109. Five credits; winter. Wood.

197. *Advanced Composition.* Original writing in the larger forms. Prerequisite, Music 157. Two to six credits; spring. McKay.

Music Literature and History

21. *Survey of Music.* Illustrated lectures with supplementary readings to provide backgrounds for understanding of common musical forms, idioms and styles. Five credits; autumn, winter, spring. Woodcock, Irvine.

22, 23, 24. *Music Appreciation.* For the purpose of increasing understanding and enjoyment of music. For the general student. No credit to music majors. By special work, upper division students may receive upper division credit. Two credits a quarter. Irvine.

72. *Introduction to Music Literature and History.* Study of style, general design, historical background of standard concert repertoire with emphasis on current programs. Prerequisite, Music 15. Two credits; autumn. Woodcock.

73, 74. *Music Literature and History.* Historical survey of music literature. Prerequisite, Music 72. Three credits a quarter; winter and spring. Woodcock.

104. *Music Since 1850.* Development of the symphonic poem; Berlioz; Liszt; Strauss. Two credits; autumn. Van Ogle.

105. *Music Since 1850.* César Franck; Debussy; Ravel; Satie. Two credits; winter. Van Ogle.

106. *Music Since 1850.* Modern Spanish and British composers. Two credits; spring. Van Ogle.

151. *Modern Music.* Study of Wagner, illustrated by phonograph records. His theories and use of motives. Two credits; autumn. Van Ogle.

152. *Modern Music.* Russian music; Balakirew, Borodin, Cui, Moussorgsky, Rimsky-Korsakow. Two credits; winter. Van Ogle.

153. *Modern Music.* Tschaikowsky; Scriabin; Stravinsky. Two credits; spring. Van Ogle.

160. *Song Interpretation.* A study of the Art Song from the standpoint of interpretation. Permission required. Two credits; winter. Werner.

190. *Bach and His Forerunners.* Detailed study of music literature through performance. Prerequisite, senior standing. Three credits; autumn. Munro.

191. *Eighteenth and Nineteenth Century Music.* Study of the music of these periods through performance. Prerequisite, Music 190. Three credits; winter. Wilson, Woodcock.

192. *Contemporary Music.* Twentieth century music literature, its idioms and tendencies, through performance. Prerequisite, Music 191. Three credits; spring. McKay, Wilson.

Music Education

40. *Elementary Orchestral Instruments.* Fundamental playing principles of each wind instrument. For music majors. Three credits; autumn, winter, spring. Welke.

42. *Elementary Orchestral Instruments.* Fundamental playing principles of each string instrument. For music majors. Three credits; autumn, winter, spring. Kirchner.

113. *Elementary School Music.* Application of educational principles to the teaching of music in the first six grades. Prerequisites, Music 51 and 127. Five credits; autumn, winter. ———.

116. *Junior High School Music.* A study of the adolescent and the contribution of music to his needs. Prerequisite, Music 113. Three credits; autumn, winter. Hall.

154. *Senior High School Music.* An analysis of the high school problem in relation to music. Prerequisite, Music 116. Two credits; autumn, winter. Munro.

155. *Music Supervision.* Problems related to the organization and supervision of school music. Prerequisite, Music 154. Three credits; autumn, spring. ———.

165-166-167. *Piano Teaching.* Survey of teaching material, consideration of principles, supervised practice-teaching. Permission of instructor required. Two credits a quarter. Woodcock.

Choral Ensembles

10-11-12. *University Chorus.* Students registering for this course must have had some choral experience and be able to read music at sight. One credit a quarter. Upper division credit to students having been enrolled in music courses for at least two years. Lawrence.

65-66-67. *Choral Ensemble.* Men's and Women's Glee Clubs. Audition required. Men's auditions held in room 102 Meany Hall first week of autumn quarter; women's auditions, room 213 Music Building, 2 to 5 p. m., first week of autumn quarter. Two credits a quarter. Lawrence, Groth.

80-81-82. *University Choir.* Permission of the director required. Two credits a quarter. Lawrence.

122-123. *Madrigal Singers.* An organization of selected voices. Two credits a quarter; winter, spring. Hall.

129. *Choral Literature.* A cappella singing with emphasis upon skill in part-singing, style and interpretation. Prerequisite, Music 51, 128. Two credits; spring. Munro.

Instrumental Ensembles

30, 31, 32. *Elementary Band.* For underclassmen not registered in Military Band. One credit a quarter. Welke.

43, 44, 45. *Orchestral Literature.* Performance and analysis of school orchestra material. Two credits a quarter. Welke.

124, 125, 126. *Chamber Music.* Study of music literature for string trios, quartets, and quintets. Two credits a quarter. Rosen.

130, 131, 132. *University Band.* Study and production of more difficult compositions for band. Permission required. Two credits a quarter. Welke.

133, 134, 135. *University Symphony Orchestra.* Study and production of more difficult orchestral compositions. Auditions every afternoon, first week autumn quarter, 117 Meany Hall. Two credits a quarter. Kirchner.

137. *Symphonic Literature arranged for Piano.* Designed to provide pianists with reading experience. Prerequisite, permission. One credit; autumn, spring. Van Ogle.

138. *Accompanying.* Practical course in study of musical works of different types and periods for piano in combination with voice or instruments. Permission of instructor required. Two credits; autumn, spring. Woodcock.

139. *Piano Ensemble.* Designed to provide ensemble experience for advanced pianists. Permission required. Two credits; winter. Jacobson.

Conducting

136. *Technique of Conducting.* Principles of conducting with practical experience in directing groups. Prerequisite, Music 128. Three credits; autumn, winter, spring. Munro.

180. *Orchestral Conducting.* Practical experience afforded by combining with 43, 44, 45. Prerequisite, Music 136. Three credits; autumn, winter, spring. Welke.

195. *Choral Conducting.* Practical experience and analysis of choral compositions. Prerequisite, Music 136. Three credits; winter. Munro.

Vocal and Instrumental Music

Students register for a one-hour class in interpretation and repertory and for one or two individual half-hour lessons per week. Two or three credits a quarter. Fee $25 or $50. Elementary work in piano and voice for students majoring in a different branch of music is offered through group instruction. Two credits a quarter. Fee, $10.

The course numbers indicate successive grades of advancement, and any number may be used in any quarter. Detailed descriptions of these courses may be obtained from the secretary of the School of Music. A student who has registered for two credits may register under the same course number for one additional credit. The various branches of vocal and instrumental music are designated by capital letters immediately following the course number. See Music 40 and 42 for elementary group instruction in orchestral instruments.

A. *Piano.* Venino, Jacobson, Van Ogle, McCreery.

AX. *Group Piano.* Bostwick.

B. *Violin.* Rosen, Oliver.

C. *Voice.* Werner, Lawrence.

CX. *Group Voice.* Wilson.

D. *Violoncello.* Kirchner, Canfield.

E. *Organ.* Eichinger.

F. *Wind Instruments.* Horsfall, Flute; Pauly, Bassoon; Phillips. Clarinet; Tustin, Oboe.

G. *Harp.* Beck, Graf.

1AX, 2AX, 3AX. *Elementary Piano.* Group Instruction. For music students not majoring in piano. Fee, $10. Two credits a quarter. Bostwick.

1CX, 2CX, 3CX. *Elementary Voice.* Group Instruction. For music students not majoring in voice. Fee, $10. Two credits a quarter. Wilson.

7AX, 8AX, 9AX. *Elementary Piano.* Group instruction, second year. Fee, $10. Two credits a quarter. Bostwick.

7CX, 8CX, 9CX. *Elementary Voice.* Group instruction, second year. Fee, $10. Two credits a quarter. Wilson.

18, 19, 20. *Vocal or Instrumental Music.* Majors in vocal or instrumental music may not receive credit for Music 18, 19, 20, except in a different branch. Fee, $25 or $50. Two or three credits a quarter. Staff.

48, 49, 50. *Vocal or Instrumental Music.* First year for vocal or instrumental majors. Fee, $25 or $50. Two or three credits a quarter. Staff.

60. *Advanced Orchestral Instruments.* Class instruction in wood-wind and brass. Prerequisite, Music 40 or permission. Three credits; autumn, winter, spring. Welke.

62. *Advanced Orchestral Instruments.* Class instruction in strings. Prerequisite, Music 42 or permission. Three credits; autumn, winter, spring. Kirchner.

68, 69, 70. *Vocal or Instrumental Music.* Second year for vocal or instrumental majors. Fee, $25 or $50. Two or three credits a quarter. Staff.

118, 119, 120. *Vocal or Instrumental Music.* Third year for vocal or instrumental majors. Fee, $25 or $50. Two or three credits a quarter. Staff.

168, 169, 170. *Vocal or Instrumental Music.* Fourth year for vocal or instrumental majors. Fee, $25 or $50. Two or three credits a quarter. Staff.

199. *Senior Recital.* Prerequisite, permission of faculty committee. Two credits; autumn, winter, spring. Staff.

COURSES FOR GRADUATES ONLY

201, 202, 203. *Graduate Composition.* Credits to be arranged. McKay, Wood.

204, 205, 206. *Research.* Problems in music education or musicology. Credits to be arranged. Prerequisite, one year of approved teaching experience. Staff.

207, 208, 209. *Thesis.* Original contribution from student's field of research, or acceptable original composition performed before a committee of the faculty. Credits to be arranged. Staff.

218, 219, 220. *Graduate Vocal or Instrumental Music.* Open only to students having 30 undergraduate credits in one branch. Fee, $25 or $50. Two or three credits a quarter. Staff.

NAVAL SCIENCE AND TACTICS

Good Roads Building

Commander Barr, Commander Kelly, Commander Iverson (M.C.); Lieutenant Commander Menocal, Lieutenant Commander Nelson, Lieutenant Birtwell, Lieutenant Weigle; Chief Gunner's Mate Hamilton; Chief Quartermaster Harmony; Chief Turret Captain Zerbe; Chief Yeoman Campbell

All male students in the University who are American citizens, and are not physically disqualified, are required to take military training throughout the first two years of residence. The four-year course in Naval Science and Tactics, prescribed by the Navy Department for units of the Naval Reserve Officers' Training Corps, may be substituted by the student for military training. Enrollment in this course is limited by the Navy Department and students will be selected for enrollment by the Professor of Naval Science and Tactics from those applying. The course in Naval Science and Tactics leads to a commission as ensign in the United States Naval Reserve.

General Knowledge and Training. As the course in Naval Science is designed to train students to perform the duties of officers in the Naval Reserve, the student's cognizance of naval affairs will make him a more valuable citizen, fitted at once to take a responsible position in any national or general emergency. There are other distinct advantages to the student electing this course. The work is interesting, as well as beneficial. The graduate will gain a knowledge of the sea which few citizens possess, and his familiarity with maritime affairs will be of service in any business associated with shipping. In addition to his training in organization, discipline, leadership, and executive ability, his acquaintance with the extensive variety of mechanisms and appliances, both mechanical and electrical, used in the naval service, and knowledge of the use and safety precautions necessary in handling explosives, gases and fuels will be an asset to him in any business or profession.

Summer Cruises. For those students regularly enrolled in the Naval R.O.T.C., a summer cruise, without expense to the student is generally, but not always offered. Usually a four-week cruise on a battleship to Hawaiian waters is offered during the summer at the end of freshman and sophomore years, which approximately one hundred Basic Course students may take each summer if they desire. Practical instruction is given on the cruise in navigation (for sophomores), seamanship, and general ship's duty at deck and engineering stations. As this cruise is not required, no university credit is given for it.

Advanced Course students must take the Advanced Course cruise prior to receiving a commission (N.S. 110, see below).

In addition to the regular summer cruises, numerous week-end cruises in Puget Sound on an Eagle Boat are arranged for the instruction and entertainment of the students during the college year. These week-end cruises are voluntary. Inspection trips are made to the different vessels of the Fleet visiting in this vicinity, and to the Navy Yard at Bremerton. On occasion, permission is obtained for Naval R.O.T.C. students to take short trips on vessels of the U. S. Fleet; and when approved by parents or guardians, to take short flights at the Naval Air Station, Sand Point. Sailing or recreation parties may be taken in the 30-foot whaleboats which are part of the Unit's equipment.

First Year

1, 2, 3. *Basic Course—Indoctrination and Seamanship.* A theoretical and practical course in the elements of radio communication, the history and traditions of our Navy, military drill under arms, and small boats under oars and sail. The winter and spring quarters offer a thorough theoretical and practical course in seamanship, International and Inland Rules of the Road and the elements of pilotage. Three hours a week plus two hours of drill. Three credits; autumn, winter, spring.

Second Year

51-52-53. *Basic Course — Navigation and Nautical Astronomy.*‡ A thorough theoretical and practical course in pilotage and in ocean navigation. It includes methods of chart construction; variation and deviation of the compass; calculation of a ship's position by dead reckoning, by observation of celestial objects, and by bearings of terrestial objects, or by any combination of the three. Use of navigational instruments. Compensation of the compass. Calculation of tides and currents. Aerial navigation. Radio and navigation by radio bearings. Three hours a week plus two hours of drill. Prerequisite, plane trigonometry. Three credits; autumn, winter, spring.

Third Year

101, 102, 103. *Advanced Course—Ordnance, Gunnery, Naval Engineering and Electricity.* Offered to Naval R.O.T.C. students only. A theoretical course in ordnance and including interior and exterior ballistics, gunnery, powder and explosives. Electrical installations in the Navy. Naval machinery. Radio communications. Three hours a week plus two hours of drill. Three credits; autumn, winter, spring.

110. *Advanced Course Cruise.* Offered to Naval R.O.T.C. students only. Required practice cruise on a vessel of the United States Navy of about four weeks in the summer following completion of Nav. Sci. 103. Practical training in general ship's duties at deck and engineering stations, and gunnery practice to supplement theoretical work of the first three years in naval science courses. Three credits; summer.

Fourth Year

151, 152, 153. *Advanced Course.* Offered to Naval R.O.T.C. students only. Leadership, administration, strategy and tactics, naval communications, naval aviation, military law; supplemented by a Moot Court and week-end cruises (voluntary) in a naval vessel. Three credits; autumn, winter, spring.

Courses Open to General Registration

The following courses in naval science are open to general registration and are offered to all students registered in the University not enrolled in the Naval Reserve Officers' Training Corps.

55-. *Seamanship.* The same as Nav. Sci. 2. Three credits; winter.

-56. *Seamanship.* The same as Nav. Sci. 3. Prerequisite, Nav. Sci. 55. Three credits; spring.

61-. *Sea Navigation.* The same as Nav. Sci. 51. Prerequisite, plane trigonometry. Three credits; autumn.

62-. *Sea Navigation.* The same as Nav. Sci. 52. Prerequisite, Nav. Sci. 61. Three credits; winter.

-63. *Advanced Sea Navigation and Aerial Navigation.* The same as Nav. Sci. 53. Prerequisite, Nav. Sci. 62. Three credits; spring.

‡See section regarding summer cruises, above. The cruises are offered only to those regularly enrolled in the Naval R.O.T.C.

NAVAL AVIATION TRAINING

The Navy Department offers to students of junior standing or University graduates a complete course in Naval Aviation.

This training is divided into three phases:

(a) Elimination flight training at the Naval Air Station, Sand Point; four weeks.

(b) Preliminary and advanced flight training at the Naval Air Station, Pensacola, Florida; one year.

(c) Active duty as Aviation Reserve Ensign in the Aircraft Squadrons, U. S. Fleet; three years, or seven years if desired.

Enrollment in the Naval R.O.T.C. is not necessary.
For particulars apply to the Professor of Naval Science and Tactics, Good Roads Building.

NURSING EDUCATION

Nursing Education Hall

Professor Soule; Associate Professor Adams; Assistant Professors Felton, Leahy, Olcott; Instructors Baugh, Brandt, Byers, Cross, George, Greer, Scott; Lecturer Newsom

1. *History of Nursing.* Informational study of nursing from the earliest times; traditions of nursing as a profession. A survey of the present field of nursing. Open to any woman student in the University. Three credits; autumn, winter, spring. Soule.

5. *Home Care of the Sick, and Child Hygiene.* Practical course for women students. Instruction given in home nursing procedures including care of patients ill with common communicable diseases, care of chronics, and infants. Three credits; autumn, spring. Greer.

All Courses 50-100 Open Only to Nursing Majors Enrolled in Curriculum "A"

50. *Principles and Practice of Elementary Nursing.* Elementary nursing techniques used in general care of patients. Two lectures and three 2-hour laboratory periods. Five credits; autumn, spring. Olcott.

51. *Methods of Case Study.* Principles and practices of advanced nursing in relation to special types of disease. Project and clinical case study, practice in classrooms and wards. One credit; autumn, spring. Adams, Felton.

52. *Introduction to Hospital Practice.* Twelve weeks experience in practical application of principles of hospital organization and economy, and elementary nursing including four weeks practice in supply division—household, drugs, and surgical; four weeks medical or surgical wards; four weeks dietary department. Six credits; autumn, spring.
Olcott and department heads.

60. *Principles of Medicine and Nursing in General Medical Disease.* A survey of the field of medicine, metabolism, and cardiology, with etiology, pathology, symptoms, complications, treatment, prevention, and specialized nursing of each disease. Lecture, demonstrations, clinics. Recording and nomenclature included. Three credits; winter, summer.
George and physicians.

61. *Principles of Medicine and Nursing in Medical Specialities.* Including dermatology, syphilology, tuberculosis. Special emphasis on medical aseptic technique, modes of transmission and methods of prevention and control. Three credits; autumn, spring. George and physicians.

62. *Medical Nursing Practice.* Practical applications of principles of nursing in medical diseases. Twelve weeks experience in medical wards, including weekly clinics, conference, and case studies on each disease. Six credits; autumn, winter, spring. George.

64. *Principles of Special Therapy.* The use of light, electricity, heat, water, massage, exercise, and occupation as aids in the care or control of disease processes. Two credits; winter, summer. Olcott and department heads.

65. *Special Therapy Practice.* Four weeks experience in diet therapy, four weeks in physical therapy, four weeks in laboratory and X-ray. Six credits; autumn, winter, spring, summer. Adams and department heads.

66. *Principles of Preventive Medicine and Nursing Care in Acute Communicable Disease.* Etiology, modes of transmission, general symptomatology, complications, treatment, prevention, specialized nursing. Two credits; autumn, spring. George and physician.

68. *Acute Communicable Disease Nursing Practice.* Twelve weeks experience in practical application of principles of preventive medicine and nursing care of communicable disease; four weeks tuberculosis; four weeks acute communicable and four weeks chronic nursing in visiting nursing and field. Six credits; autumn, winter, spring, summer.
Adams, Brandt and department heads.

70. *Principles of Surgery and Nursing in General Surgical Diseases.* A survey of the field of general surgery with etiology, pathology, symptoms, complications, prevention and pre-operative, and post-operative treatment and nursing care of each type of surgical case. Nomenclature included. Lecture, demonstrations, clinics. Three credits; winter, summer. Doltz and surgeons.

71. *Principles of Surgery and Nursing in Surgical Specialities.* Includes gynecology, urology, orthopedics, neurology, and operating room technique. Three credits; autumn, spring. Doltz and surgical specialists.

72. *Surgical Nursing Practice.* Practical application of principles of nursing in surgical diseases. Twelve weeks experience in surgical wards, including weekly clinic, conference and case study of each surgical disease. Six credits; autumn, winter, spring, summer. Doltz.

73. *Operating Room Practice.* Practical application of principles of operating room technique, including twelve weeks experience in operative nursing and anaesthetic care. Six credits; autumn, winter, spring, summer. Steele.

75. *Nursing Practice in Clinics and Senior Night Duty.* Six weeks outpatient and emergency nursing practice and six weeks private hospital senior ward practice day and night. Includes clinics, conferences, and case studies. Six credits; autumn, winter, spring, summer. Cross and department heads.

76. *Principles of Nursing in Otolaryngology and Ophthalmology.* Lectures, demonstrations, clinics, dealing with anatomy and physiology of eye, ear, nose, and throat in relation to diseases of these organs with treatment, prevention, and principles of nursing care. Two credits; winter, summer.
Cross and medical specialists.

80. *Principles of Pediatrics and Pediatric Nursing.* Physical and mental development of normal children and principles of their care and feeding.

Clinical presentation of cases illustrating common diseases of infancy and childhood and the appropriate medical and nursing care, together with program of prevention. Five credits; autumn, winter, summer.
Kent and pediatrician.

82. *Pediatric Nursing Practice.* Twelve weeks practical experience in nursing care of infants and children, including practice in formula room, nursery, out-patient, orthopedic and pediatric wards, weekly ward clinics, conference and case study. Six credits; autumn, winter, spring, summer.
Kent.

86. *Principles of Obstetrics and Obstetrical Nursing.* Anatomical and physiological aspects of pregnancy, labor, and the puerperium, care during normal, operative and complicated labors, nursing care of mother and newborn baby. Lectures, demonstrations, clinics. Five credits; spring, fall.
Forman and obstetrician.

88. *Obstetrical Nursing Practice.* Practical application of principles of obstetrical nursing. Twelve weeks experience in nursing care of patients during pre-natal, labor, and post-partum periods, including care of the newborn. Weekly clinics, conference, case study. Six credits; autumn, winter, spring, summer. Forman and obstetrician.

90. *Principles of Psychiatry and Psychiatric Nursing.* Lectures, demonstrations, and clinics, dealing with various types of mental diseases, principles of mental hygiene, and nursing care of mentally ill patients. Five credits; autumn, winter, spring, summer.
Bradshaw, Scott, Baugh and psychiatrist.

92. *Psychiatric Nursing Practice.* Practical application of principles of psychiatric nursing. Twelve weeks experience in psychiatric wards, out-patient, and commitment clinics; weekly ward clinic, conference, and case study. Six credits; autumn, winter, spring, summer. Bradshaw, Scott, Baugh.

100. *Professional Problems in Nursing.* Includes study of nursing organizations, legislation, grading of schools of nursing and similar topics. Two credits; winter, summer. Smith.

101. *Introduction to Public Health Nursing.* Two credits; autumn, winter, spring. Soule.

102. *Principles of Public Health Nursing.* History, development and principles of public health nursing, including official and non-official agencies, with their community relationships. Prerequisite, graduate registered nurse. Five credits; autumn, spring. Soule, ———.

103. *Organization, Administration and Techniques in Special Fields of Public Health Nursing.* Prerequisite, Nurs. Edu. 102. Three credits; winter, summer. Leahy.

104. *Public Health Administration and Epidemiology.* Prerequisite, graduate registered nurse. Two credits; winter, summer. Newsom.

106. *Rural Public Health Nursing.* Organization, methods and programs in rural public health nursing, with special emphasis on federal, state, and county relationships. Two credits; winter, summer. Coolidge.

110. *Field Work.* Application of the principles of public health nursing by means of supervised field experience. Prerequisite, Nurs. Edu. 102. Eight to sixteen credits; autumn, winter, spring. Leahy.

112. *Advanced Field Work.* Supervised practice in the special fields of nursing. Two hours conference and 30 hours practice a week. Prerequisite, Nurs. Edu. 110. Twelve credits; autumn, winter, spring.
Leahy and field supervisors.

113. *Readings in Specialized Fields of Public Health Nursing.* Open only to students registering for, or having had 112. Two credits; autumn, winter, spring. Leahy.

150. *Principles of Teaching Nursing and Health.* Applied to the school of nursing or the field of public health. Prerequisite, graduate registered nurse. Five credits; autumn, winter, summer. Soule, Adams.

151. *Administration of Schools of Nursing.* Course deals with organization and equipment. Curriculum and content of courses. Class and ward schedule of instruction and classes. Five credits; spring. Adams.

152. *Supervision of Hospital Departments.* Organization, equipment and administration. Five credits; winter. Adams.

153. *Hospital Administration in Relation to Nursing Service.* Prerequisites, Nurs. Edu. 150, 152, graduate registered nurse. Five credits; spring.
Adams.

154. *Cadet Teaching and Ward Administration in Hospitals.* Prerequisites, Nurs. Edu. 150, 152, graduate registered nurse. Ten credits; autumn, winter, spring, summer. Adams.

160. *Methods of Supervision of Public Health Nursing.* Prerequisites, Nurs. Edu. 102, 103, 110, and 150, graduate registered nurse. Three credits; winter. Soule.

165. *Study of Contemporary Literature in Fields of Nursing and Public Health.* Prerequisite, Nurs. Ed. 102. Two credits; spring. ———.

171. *Psychiatric Information for Public Health Nurses I.* Factors affecting the growth and development of personality from infancy to old age. The interrelationships of the physical, emotional, intellectual, and environmental factors in human behavior and some of the social psychiatric principles involved. Two credits; autumn. Hoedemaker.

172. *Psychiatric Information for Public Health Nurses II.* Causes, diagnosis, and treatment of the mental and nervous disorders and deficiencies with emphasis upon the purposiveness of behavior and the interaction of organic, emotional, and environmental factors. Prerequisite, Nurs. Edu. 171. Two credits; winter. Hoedemaker.

175. *Health Problems in the Family.* Application of health knowledge to the family in the home, bringing out relationships with the community health program, private physician, official agencies. Three credits; winter, summer. ———.

COURSES FOR GRADUATES ONLY

*200. *Seminar.*

201, 202, 203. *Problems.* Prerequisites, graduate registered nurse, 30 credits in nursing. Credits to be arranged; autumn, winter, spring, summer.
Soule, Adams, Leahy.

205. *Research in Nursing Education, Hospital Administration, Public Health Nursing.* Prerequisites, Nurs. Edu. 102, 103; Bact. 101, 102, 103, or Nurs. Edu. 150, 151, 152. Credits to be arranged; autumn, winter, spring, summer. Soule, Adams, Leahy.

*Not offered in 1939-1940.

Service Courses for Other University Departments and Hospitals

Phys. Edu. 6. *Health Education.* Community Hygiene. Development of public health program in the community. Two lectures a week. Two credits; winter, spring. Greer.

Phys. Edu. 10. *Health Education.* (Equivalent of P.E. 4, 6, 8.) Five credits; autumn, winter, spring. Davidson, Greer, ———.

Nurs. Edu. 6. *Principles and Practice of Elementary Attendant Nursing.* An inservice course for men and women attendants resident in approved hospitals. Instruction and practice given in elementary nursing procedures and general hygienic care for persons chronically ill or convalescent. Five credits; autumn, winter, spring, summer. Baugh.

Nurs. Edu. 9. *Principles of Psychiatry and Psychiatric Nursing.* Lectures, demonstrations, and clinics, dealing with various types of mental diseases, principles of mental hygiene, and nursing care of mentally ill patients. Five credits; autumn, winter, spring, summer.
Bradshaw, Scott, Baugh and Psychiatrists.

Nurs. Edu. 10. *Psychiatric Nursing Practice.* Practical application of principles of psychiatric nursing. Twelve weeks experience in psychiatric wards, out-patient and commitment clinics; weekly ward clinic, conference, and case study. Six credits; autumn, winter, spring, summer.
Bradshaw, Scott, Baugh.

OCEANOGRAPHIC LABORATORIES

Professors T. G. Thompson, Guberlet, Kincaid, Rigg, Utterback; Associate Professors Henry, Norris, Phifer, Robinson; Assistant Professor Church

1. *Survey of Oceanography.* Origin and extent of the oceans; nature of the sea bottom; cause and effects of currents and tides; animal and plant life in the sea. Five credits; autumn, winter. ———.

101. *General Oceanography.* Same as Oceanography 1, but with additional work and readings. Prerequisite, junior standing. Five credits; autumn, winter. ———.

Chem. 155. *Oceanographical Chemistry.* Prerequisite Chem. 111, 132, or equivalent. Three credits; spring. Thompson.

Chem. 156. *Oceanographical Chemistry.* Laboratory methods. Taken concurrently with Chem. 155. Three laboratory periods. Three credits; spring. Thompson, Robinson.

Chem. 166. *Biochemical Preparations.* Extraction, separation, and purification of biochemical products from marine sources. Prerequisite, Chem. 162. Two or three credits; autumn, winter, spring. Norris.

Physics 166. *Physical Oceanography.* (1) Physical properties of sea water; (2) methods of observation and operation of instruments; (3) an introduction to the theory of the measurements of ocean currents; (4) introduction to tidal theory. Prerequisite, Physics 3. Two credits; spring.
Utterback.

Bact. 201. *Physiology of Bacteria.* Environmental factors influencing bacteria, bacterial metabolism and activities. Open to qualified students after consultation. Five credits; autumn. Henry, Ordal.

Bot. 205, 206, 207. *Physiology of Marine Plants.* Prerequisites, Physics 3, Bot. 145, Chem. 111 and 129, or equivalent. Three credits each quarter; autumn, winter, spring. Rigg.

Bot. 210, 211. *Phytoplankton.* These courses are given at the Friday Harbor laboratories by special arrangement with instructor. Prerequisites, Physics 3, Bot. 145, Chem. 111 and 132, or equivalent. Three credits; winter, spring. Phifer.

Physics 219. *Hydrodynamics.* Prerequisites, Physics 200, Math. 116. Utterback.

Zool. 213, 214, 215. *Advanced Invertebrate Embryology.* Development and life history of marine invertebrate animals, life history of parasites of marine fishes. Prerequisite, Zool. 5, 106 and 126. Three credits; autumn, winter, spring. Guberlet.

Chem. 225. *Problems in Analytical Chemistry.* As applied to the sea and sea products. Three to six credits. Thompson, Robinson.

249. *Graduate Seminar.* Assigned readings and reports dealing with special topics. Credits to be arranged; autumn, winter, spring. Staff.

250. *Research in Oceanography.* (1) Special investigations by advanced students; (2) research for the master's degree; (3) research for the doctor's degree. Maximum, 45 credits. Staff.

Special arrangements may be made for conducting research at the laboratories at Friday Harbor throughout the year.

ORIENTAL STUDIES

Denny Hall

Assistant Professor Taylor; Professor Gowen; Assistant Professors Schultheis, Spector, Tatsumi

Five curricula are offered to students desiring to major in Oriental Studies, of which the student is required, after consultation, to select one of the following: general major, major in Japanese language and literature, major in Chinese studies, major in Slavic studies, major in Oriental languages.

Courses 115, 116 give credit in the department of philosophy as well as in Oriental Studies. Upper division students may earn upper division credit in courses 50, 52, 90, 91, 92 by doing special work under the direction of the instructor.

1-2, 3. *Japanese Language.* First-year course. Elements of spoken and written language; grammar, *kana,* characters. Five credits; autumn, winter, spring. Tatsumi.

7-8, 9. *Russian Language.* First-year course. Grammar, pronunciation, reading, composition. Five credits; autumn, winter, spring. Spector.

10. *Survey of Asia.* Survey of the political, intellectual, social aspects of Asiatic life. Designed for freshmen. Five credits; autumn, winter, spring. Spector, Schultheis.

40. *Chinese Civilization.* The social, intellectual, institutional life of the Chinese; emphasis on recent changes. Five credits; winter. ———.

41. *Japanese Civilization.* The social, intellectual, institutional life of the Japanese; emphasis on recent changes. Five credits; spring. ———.

44-45, 46. *Chinese Language.* First-year *Kuo Yü;* grammar, pronunciation, translation, composition. Five credits; autumn, winter, spring. Schultheis.

50. *Literature of India.* Indian literature from the Vedas to Tagore. Upper division credit to upper division students. Five credits; autumn. Gowen.

52. *Literature of Persia.* Persian literature from Zoroaster to the present day, including Muhammad and the Qu'ran. Upper division credit to upper division students. Five credits; winter. Gowen.

90. *History of China.* Introduction to Chinese history, political, social, intellectual, aesthetic. Upper division credit to upper division students. Five credits; autumn. Schultheis.

91. *History of Japan.* Introduction to Japanese history, political, social, religious, aesthetic. Upper division credit to upper division students. Five credits; winter. ———.

92. *History of India.* Introduction to Indian history under Hindu, Muhammadan, British rule. Upper division credit to upper division students. Five credits; spring. Schultheis.

*101-102-103. *Hebrew.*

*104-105-106. *Sanskrit.*

107, 108, 109. *Japanese Language.* Intensive second-year course; ideographs, grammar, reading in Japanese literature. Prerequisite to 107, O.S. 3 or equivalent. Five credits a quarter; autumn, winter, spring. Tatsumi.

110. *Japanese Composition and Conversation.* Third-year course; advanced composition and conversation. Prerequisite, 109 or equivalent. Five credits; autumn. Tatsumi.

111. *Japanese Reading and Translation.* Third-year course. Prerequisite, 109 or equivalent. Five credits; winter. Tatsumi.

*114. *History of Religion.*

Primitive Religion. See Anthropology 142. Three credits; winter. Ray.

115. *History of Religion.* The religions of the Ancient Empires, and the religions of the Orient. Three credits; autumn. Gowen.

116. *History of Religion.* A survey of Judaism, Christianity, Muhammadanism. Three credits; winter. Gowen.

*117-118-119. *Arabic or Aramaic.*

*120. *Problems of Eastern Asia and the Pacific.*

International Relations of the Far East. See Political Science 129.

The Middle and Near East. See Political Science 130. Mander.

130. *Russian Literature.* Representative novels and plays, 1782-1930; special reference to works of Vonvisin, Pushkin, Gogol, Turgenev, Dostoyevsky, Tolstoy, Tchekhov, Gorky, Andreyev. Five credits; spring. Spector.

136. *The Russian Revolution.* The background of revolutionary change from 1825 to date; special attention to recent events in the U.S.S.R. Five credits; winter. Spector.

*Not offered in 1939-1940.

140, 141, 142. *Russian Language.* Second-year course. Prerequisite to 140, O.S. 9 or equivalent. Three credits; autumn, winter, spring. Spector.

146, 147, 148. *Chinese Language.* Second-year course. Prerequisite to 146, O.S. 46 or equivalent. Five credits; autumn, winter, spring. Schultheis.

*152, 153, 154. *Sanskrit.*

*155, 156, 157. *Hebrew.*

*158, 159, 160. *Arabic.*

162, 163. *Russian Language.* Third-year course. Readings in 19th century novel. Prerequisite, 142, or equivalent. Three credits; autumn, winter. Spector.

170. *Literature of China in Translation.* The Chinese classical philosophers; poetry, fiction, drama. Five credits; autumn. ———.

171. *Literature of Japan in Translation.* Poetry, the novel, the drama. Five credits; spring. Tatsumi.

180. *Topics in Chinese History.* Intensive topical treatment of periods in Chinese history; particular attention to modern developments. Five credits; winter. Schultheis.

181. *Topics in Japanese History.* Intensive topical treatment of periods in Japanese history; particular attention to modern developments. Five credits; spring. ———.

190. *West Asia Reading Course.* Directed reading, covering history and literature of Near East. Prerequisite, instructor's permission. Three credits; autumn. Spector.

*191. *India Reading Course.*

192. *China Reading Course.* Directed reading, covering fields of Chinese history, literature, civilization. Prerequisite, instructor's permission. Three credits; spring. ———.

193. *Japan Reading Course.* Directed reading, covering fields of Japanese history and culture. Prerequisite, instructor's permission. Three credits; spring. ———.

194. *Russia Reading Course.* Directed reading, covering fields of Russian history, literature, drama. Prerequisite, instructor's permission. Three credits; autumn. Spector.

NOTE: Courses 190, 191, 192, 193, 194 may, with consent of instructor, be repeated for credit.

COURSES PRIMARILY FOR GRADUATES

*220. *Seminar in Eastern Asia.*

*221. *Sources in East Asia.*

222. *Sources in West Asia and India.* Introduction to standard primary and secondary sources for study of West Asiatic and Indian history, religion, literature. Two credits; winter. Gowen.

225, 226. *Seminar in Oriental Diplomacy.* Topics in recent and contemporary diplomatic history of China, Japan. Three credits; autumn, winter. ———.

*Not offered in 1939-1940.

280, 281, 282. *Research.* Research in Oriental and Slavic studies for those qualified. Instructor's permission necessary. Credits, time arranged; autumn, winter, spring. Staff.

290, 291, 292. *Thesis.* Directed investigation and writing in connection with work for advanced degrees. Two to five credits; autumn, winter, spring. Staff.

PHARMACY, PHARMACEUTICAL CHEMISTRY, PHARMACOLOGY, TOXICOLOGY, MATERIA MEDICA AND FOOD CHEMISTRY

Bagley Hall

Professors Johnson, Goodrich, Rising; Associate Professor Dille; Assistant Professors Fischer, Kelly; Instructors Brokaw, Jones, Plein

Department of General and Practical Pharmacy

1, 2, 3, *Theoretical and Manufacturing Pharmacy.* Pharmaceutical operations and manufacture of U.S.P. and N.F. preparations. Two lectures, one lab. period a week. Three credits a quarter; autumn, winter, spring. Jones and assistants.

4. *The Profession of Pharmacy.* A survey of the development of pharmacy as a profession. Two lectures a week. Two credits; autumn. Jones.

9, 10, 11. *Prescriptions.* Theory and practical application of extemporaneous compounding. One lecture, one quiz and one laboratory period a week. Three credits a quarter; autumn, winter, spring. Plein and assistants.

15. *Home Remedies.* A study of medicines commonly used in the home. Open to all students. Two credits; autumn, winter, spring. Rising.

51. *Elementary Pharmacy.* Survey of fundamental knowledge of dispensing which the nurse should have. Two credits; autumn, spring. Brokaw.

113, 114, 115. *Advanced Prescriptions.* Problems in dispensing and manufacturing; preparation of diagnostic reagents; study U.S.P. and N.F. Two lectures, one quiz, and six hours of laboratory a week. Five credits; autumn, winter, spring. Rising and assistants.

173. *Cosmetic Manufacture.* Prerequisites, quantitative and organic chemistry. Three to five credits; autumn, winter, spring. Rising.

183. *New Remedies.* New and non-official remedies; modern modes of administering medicines. Three credits; winter. Jones.

184. *Pharmacy Laws, Study and Interpretation of the United States Pharmacopoeia and National Formulary.* Three credits; spring. Jones.

188. *Diagnostic Reagents.* The manufacture and use of diagnostic reagents. Two to five credits; autumn, winter, spring. Kelly.

191. *Research Problems.* Open to juniors, seniors and graduates. One to five credits; any quarter. Staff.

Department of Pharmacognosy

12, 13, 14. *Pharmacognosy.* Organic drugs, their source, methods of collection and preservation, identification, active constituents and adulterations. Three lectures a week. Three credits; autumn, winter, spring. Goodrich.

104, 105. *Pharmacognosy.* Microscopic study of crude and powdered drugs for purposes of identification and for detection of adulteration. One lecture, two laboratory periods a week. Three credits; winter, spring. Goodrich.

106. *Medicinal Plants.* A study of cultivated and native medicinal plants of the Northwest. One lecture and one laboratory period a week. Two credits; autumn. Goodrich.

112. *Biologicals.* A course dealing with those animal drugs and biological products used in medicine. Three credits; autumn. Goodrich.

193. *Research Problems.* Open to juniors, seniors, and graduates. One to five credits; any quarter. Staff.

Department of Pharmaceutical Chemistry and Toxicology

5. *Gravimetric Quantitative Analysis.* Two lectures, one quiz and two 4-hour laboratory periods a week. Five credits; autumn. Kelly.

6. *Volumetric Quantitative Analysis.* Two lectures, one quiz and two 4-hour laboratory periods a week. Five credits; winter. Kelly.

7. *Urinalysis.* One lecture and one laboratory period a week. Two credits; spring. Kelly.

8. *Pharmacopoeial Assay.* Assay of drugs by methods in the Pharmacopoeia. One lecture and three hours laboratory a week. Two credits; spring. Kelly.

192. *Research Problems.* Open to juniors, seniors, and graduates. One to five credits; any quarter. Staff.

195, 196, 197. *Pharmaceutical Chemistry and Toxicology.* The pharmacy and chemistry of alkaloids, glucosides, oils, volatile oils and other plant and animal principles. The course will also include the separation and identification of poisons from animal tissue. Two lectures, three laboratory periods. Five credits; autumn, winter, spring. Fischer.

Department of Pharmacology

61. *Pharmacology and Therapeutics.* The source, actions and uses of drugs. Three credits; winter. Brokaw.

101, 102, 103. *Pharmacology and Toxicology.* Survey of the action of drugs, their posology and rational uses in therapeutics with consideration of symptoms and treatment of poisoning. Three credits a quarter; autumn, winter, spring. Dille.

170. *Pharmacology.* Source, action, uses of the common drugs. Open to pre-medical students and others interested in a survey of the field of pharmacology. Two credits; autumn, winter, spring. Dille.

185. *Biological Assays.* Quantitative aspects of pharmacology. Prerequisite, Pharmacology 101, 102, 103. Two to three credits; spring. Dille.

186. *Pharmacology of Anesthetics.* Theory, action, and uses of the volatile and fixed anesthetics. Prerequisite, Pharmacology 101, 102, 103. One lecture and one laboratory period a week. Two to three credits; autumn. Dille.

187. *Pharmacology of the Autonomic Drugs.* Actions and uses of those drugs effective through their action on the autonomic system. Prerequisite, Pharmacology 101, 102, 103. One lecture and one laboratory a week. Two to three credits; winter. Dille.

194. *Research Problems.* Open to juniors, seniors and graduates. One to five credits; any quarter. Staff.

199. *Seminar in Pharmacology.* Open to qualified students after conference with instructor. Reports and discussions of current researches in pharmacology. One credit; autumn, winter, spring. Dille.

COURSES FOR GRADUATES ONLY

201. *Investigation in Practical Pharmacy.* Maximum of forty-five credits. Any quarter. Rising, Jones, Plein.

202. *Investigation in Pharmacognosy.* Maximum of forty-five credits. Any quarter. Goodrich.

203. *Investigation of Toxicology.* Maximum of forty-five credits. Any quarter. Johnson, Fischer.

204. *Investigation in Pharmaceutical Chemistry.* Maximum of forty-five credits. Any quarter. Johnson, Fischer, Kelly.

205. *Investigation in Pharmacology.* Maximum of forty-five credits. Any quarter. Dille.

210 *Graduate Seminar.* Reports on assigned reading under direction of members of the staff. One hour a week. No credit; autumn, winter, spring. Staff.

PHILOSOPHY

Philosophy Hall

Professor Savery; Associate Professor Nelson; Assistant Professors Phillips, Rader

Philosophy 2 or 3, 5, 101-102-103, and Psychology 1 are required of majors.

At least 50 per cent of the credits in the major must be in upper division courses.

1. *Introduction to Philosophy.* Main philosophic problems and typical solutions. Five credits; autumn, winter, spring. Phillips.

2. *Introduction to Social Ethics.* Social ideals and problems, with special emphasis upon democracy. Five credits; winter. Rader.

3. *Introduction to Ethics.* Moral principles and their application to the problems of life. Five credits; spring. Rader.

5. *Introduction to Logic.* Conditions of clear statement, adequate evidence, and valid reasoning, and their establishment in the mental processes of the student. Five credits; autumn, winter, spring. Phillips.

101-102-103. *History of Philosophy.* Ancient, medieval and modern. Juniors and seniors only. Three credits a quarter; autumn, winter, spring. Rader.

104-105-106. *Metaphysics.* The nature of reality, with special reference to the concepts and principles of science. Prerequisite, Phil. 1 and 5, or consent of instructor. Three credits a quarter; autumn, winter, spring. Savery.

*112. *Philosophy of History.*

113. *Philosophy of Religion.* A study of religious experience and religious belief. Prerequisite, Phil. 1. Five credits; winter. Phillips.

Oriental Studies 115, 116. *History of Religion.* Autumn quarter: the religions of the Far East. Winter quarter: Judaism, Christianity, Muhammadanism. Offered in alternate years. Three credits; autumn, winter. Gowen.

123. *Philosophy in English Literature of the Nineteenth Century.* From Wordsworth to Hardy. Prerequisite, Phil. 1, or consent of instructor. Three credits; winter. Rader.

129. *Esthetics.* Theories of the nature of art, the nature of beauty, and the various sources of esthetic effect. Juniors and seniors only. Five credits; autumn. Rader.

133. *Ethical Theory.* Fundamental concepts and principles of ethics. Prerequisite, Phil. 2 or 3. Three credits; spring. Phillips.

141-142-143. *Contemporary Philosophy.* Modern movements: idealism, intuitionism, positivism, pragmatism, realism, mechanism, and vitalism. Prerequisite, Phil. 1 or 101-102-103. Two credits; autumn, winter, spring. Phillips.

*154-155-156. *British Empiricism.*

*193. *Advanced Logic.*

197, 198, 199. *Reading in Philosophy.* Prerequisite, consent of chairman of department. Three credits a quarter; autumn, winter, spring. Staff.

COURSES FOR GRADUATES ONLY

207-208-209. *Seminar in Philosophy of Science.* An advanced study of metaphysics. Prerequisite, consent of instructor. Four credits a quarter; autumn, winter, spring. Savery.

*214-215-216. *Seminar in Logic.*

*234-235-236. *Seminar in Descartes, Spinoza, Leibnitz.*

*237-238-239. *Seminar in Locke, Berkeley, Hume.*

241-242-243. *Seminar in Plato and Aristotle.* Reading and interpretation of the Dialogues of Plato and the main philosophical works of Aristotle. Prerequisite, consent of instructor. Four credits a quarter; autumn, winter, spring. Rader.

*244-245-246. *Seminar in Kant.*

251, 252, 253. *Research in Philosophy.* Prerequisite, consent of instructor. One to six credits a quarter; autumn, winter, spring. Staff.

*Not offered in 1939-1940.

PHYSICAL EDUCATION AND HYGIENE FOR MEN

Athletic Pavilion

Professor Foster; Associate Professor Belshaw; Assistant Professors Auernheimer, Kunde, Peek, Reeves, Torney; Associates Clark, Edmundson, Graves, Johnson, Phelan, Stevens, Ulbrickson

The Required Health and Physical Education Program for Men

The required health and physical education program is primarily an instructional program with emphasis on knowledge and skills that may be useful to the student throughout life.

UNIVERSITY REQUIREMENTS FOR GRADUATION

1. Five quarters of physical education are required of all male students except men over 24 years of age at the time of original entrance, men entering with junior or senior standing, special students carrying not more than six credits, or men exempt by the University health officer.

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

(b) Students who pass the medical examination may elect any activity course with the provision that they participate in one group activity and two individual "carry over" activities during the five quarters of work.

2. A two-credit academic course in personal health (Physical Education 15) is required of all male students who have not satisfied this requirement in an accredited university or college.

(a) This requirement should be completed during the first year of University residence.

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

Health and Physical Education Courses for Men

1, 2, 3. *Adapted Activities.* Individual gymnastics, games and sports. Work adapted to meet the needs of the individual. One credit a quarter; autumn, winter, spring. Kunde.

*†6, 7, 8. *Physical Education Activities for Majors.*

†9, 10, 11. *Physical Education for Sophomore Majors.* One credit a quarter; autumn, winter, spring. Peek and staff.

16 to 67. *Physical Education Activities.* Course 16, handball; 17, basketball; 18, tennis; 19, playground ball; 20, golf; 21, track; 22, crew (class); 23, fencing; 24, boxing; 25, tumbling; 26, apparatus and stunts; 27, wrestling; 28, volley ball; 29, swimming; 30, soccer; 31, touch football; 32, badminton; 33, archery; 51, freshman varsity crew; 52, varsity crew; 53, freshman varsity football; 54, varsity football; 55, freshman varsity track; 56, varsity track; 57, freshman varsity swimming; 58, varsity swimming; 59, freshman varsity basketball; 60, varsity basketball; 61, freshman varsity baseball; 62, varsity baseball; 63, freshman varsity tennis; 64, varsity tennis; 65, varsity golf; 66, Pack Forest; 67, varsity skiing. Staff.

15. *Personal Health.* The approaches to healthful living. The laws of hygiene as they apply to the individual problem of adjustment. Health information that affords a basis for intelligent guidance in the formation of health habits and attitudes. Two academic credits; autumn, winter, spring. Reeves and staff.

*Not offered in 1939-1940.

†These courses satisfy in part the general University requirement in physical education.

PHYSICAL EDUCATION AND HYGIENE FOR WOMEN

Gymnasium

Professor Hutchinson; Associate Professor de Vries; Assistant Professors Davidson, McGownd, Rulifson; Lecturer Hoedemaker; Instructors MacLean, McLellan, Wilson; Associate Oddy

The Required Health and Physical Education Program for Women

The required health and physical education program is primarily an instructional program with emphasis on knowledge and skills that may be useful to the student throughout life.

UNIVERSITY REQUIREMENTS FOR GRADUATION

1. Five quarters of physical education are required of all women students except women over 24 years of age at the time of original entrance, women entering with junior or senior standing, special students carrying not more than six credits, or women exempt by the University health officer.

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

(b) Students who pass the medical examination may elect activities with the following provisions: one activity from the individual groups (tennis, golf, riding, canoeing, archery, fencing, badminton), one from the rhythmic group (folk, clog or interpretative dancing), one from swimming (unless student passes test). The remaining credits may be selected from the above and from volley ball, basketball, hockey and baseball.

2. A five-credit academic course in health education (P.E. 10) is required of all women students who have not satisfied this requirement in an accredited university or college.

(a) This requirement should be completed by the end of sophomore year.

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

Physical Education Activity Courses for Women

11, 12, 13. *Physical Education Activities for Freshmen Majors.* (Required of all freshmen major students.) Practice in folk and national dancing, clog and tap dancing, hockey, basketball, tennis, soccer, archery, baseball, volley ball, interpretative dancing, swimming. Two credits each; autumn, winter, spring. Rulifson, deVries, Wilson, MacLean.

51, 52, 53. *Physical Education Activities for Sophomore Majors.* (Required of all sophomore major students.) Practice in the skills and techniques of soccer, tennis, volley ball, badminton, basketball, folk dancing, tap and clog dancing, swimming, life saving, and contemporary dance. Two credits each; autumn, winter, spring. Rulifson, Wilson, MacLean, deVries.

57 to 98. *Physical Education Activities.* Course 57, fencing; 61, folk and national dancing; 62, clog and tap dancing; 63, advanced clog and tap dancing; 64, hockey; 65, basketball; 67, tennis; 69, advanced tennis; 75, archery; 76, advanced archery; 82, volley ball; 83, indoor baseball; 84, badminton; 85, canoeing; 86, advanced badminton; 87, golf; 88, advanced golf; 91, con-

temporary dancing; 92, advanced contemporary dancing; 94, equitation; 95, elementary swimming; 96, intermediate swimming; 97, advanced swimming; 98, diving; 99, life saving. One credit each; autumn, winter, spring. For section, see time schedule. Auernheimer, Rulifson, deVries, McGownd, Jefferson, McLellan, Wilson, MacLean.

Health Education Lecture Courses

4. *Health Education.* Personal Hygiene. The development of personal and social attitudes in matters of personal and community hygiene. Two lectures a week. Two credits; autumn, spring. Davidson.

6. *Health Education.* Community Hygiene. Development of public health program in rural communities and cities. Public health and communicable disease. Two lectures a week. Two credits; winter, spring. Greer.

8. *Health Education.* Nutrition. Food selection in relation to nutritive requirements of various age groups. Two lectures a week. Two credits; spring. Rogge.

10. *Health Education.* (Equivalent of Phys. Edu. 4, 6, 8.) Five credits; autumn, winter, spring. Davidson, Greer.

Professional Courses for Men and Women

101. *Methods and Materials in Gymnastics, Stunts and Tumbling.* (Women) Classification of gymnastic material. Principles and technique of teaching. Prerequisites or accompanying courses, Anat. 100 and Physiol. 50. Three credits; spring. McLellan, Wilson.

107. *Personal and General Hygiene.* (Men) An advanced course designed primarily for professional students in physical education. Prerequisite, Phys. Edu. 15 or equivalent. Three credits; spring. Reeves.

110. *First Aid and Safety.* (Men and Women) Emergency treatment for injuries common to the playground, gymnasium and athletic field. Safety measures for the prevention of injuries. Sec. A for men, three credits; Sec. B. for women, two credits; autumn. Reeves.

111. *Rhythmic Activities for Small Children.* (Women) Activities suited to the pre-school, kindergarten, and primary child. Educational value, significance in child development, methods of presentation. Lecture and practice. Two credits; autumn. Wilson.

112. *Elementary School Athletic Program.* (Women) Progressive series from the hunting games and elementary forms to the standard athletic activities of late adolescent years. Three credits; spring. Rulifson.

113. *Principles of Recreation.* (Men and Women) Principles underlying the organization and conduct of play and recreation; historical background; social and educational significance; a critical analysis of the various theories of play; aim, objectives, and scope. Three credits; autumn. Kunde.

115. *Physiology of Muscular Exercise.* (Men and Women) Physiology of muscular exercise as related to physical activities. A study of muscular efficiency, fatigue, recovery, chemical changes, and neuro-muscular control with special reference to games, sports, corrective work and posture. Prerequisites, Anat. 100 and Physiol. 50 or the equivalent. Five credits; spring. Belshaw.

118. *Analysis of Rhythm.* (Women) Principles underlying expression in rhythmic activities, including rhythmic form and analysis. Rhythm in relation to the physical education program; principles of building rhythmic

patterns to be used in teaching dancing; relation of musical form to dance form. Prerequisite, Phys. Edu. 12 or 62; Phys. Edu. 13 or 92. Three credits; autumn. deVries, Wilson.

122. *Kinesiology.* (Men and Women) Principles of body mechanics. The analysis of leverage in body movement and problems of readjustment in relation to posture and to physical education activities. Prerequisite, Anat. 100, and Phys. 50. Three credits; autumn for men, spring for women. Belshaw, McGownd.

124. *Activities and Recreational Methods.* (Men and Women) Activities suitable for various age levels, *i.e.,* handcraft, music, dramatics, nature study, low organized games, free play, social recreation, contests and tournaments, story telling, special features, and camping and outing activities. Prerequisite, Phys. Edu. 113. Five credits; winter. Kunde.

125. *Administration of Play and Recreation.* (Men and Women) Departmental organization and maintenance. Principles and policies. Prerequisites, Phys. Edu. 113, 124, 110. Three credits; spring. Kunde.

126. *Observation and Practice Teaching.* (Men and Women) Observation of recreational work in Seattle and vicinity. Fifty hours of practice teaching in organized recreation centers. Prerequisite, Phys. Edu. 125. Two credits; autumn. Kunde.

127. *Tests and Measurements.* (Men and Women) The place and possibilities of measurement in physical education. Study of statistical method and principles involved in construction of tests. Practical problems assigned for experimental study. Prerequisite, senior standing. Three credits; autumn. Belshaw.

128. *Organization and Administration of Camp Programs.* (Women) Theory and practice in camp organization and administration and in the conduct of camp activities; studies are made of the educational significance of current movements and existing local and national organizations. Prerequisite, Phys. Edu. 124. Three credits; spring. McLellan.

131-132-133. *Principles and Methods in Posture Education.* (Women) Application of principles of body mechanics in the maintenance of postural patterns. Fundamental manipulations of massage and its place in correction of postural defects. Prerequisites, Phys. Edu. 122, Anatomy 100, and Physiology 50. Three credits; autumn, winter, spring. McGownd.

135. *Adapted Activities.* (Men) Relation of postural defects to organic function; methods of prevention and improvement with practice in the selection and application of corrective exercise to actual cases under supervision. Prerequisites, Phys. Edu. 115, 122, and Physiology 50. Three credits; winter. Kunde.

145. *Principles of Health and Physical Education.* (Men and Women) Social, biological, and educational foundations. The place of health and physical education in the school program. Aims, objectives, content and standards. Prerequisites, Physiology 50, and junior standing. Five credits; autumn. Foster.

150. *Physical Education Administration.* (Men and Women) Organization and administration of the physical education program in secondary schools. Prerequisites, Phys. Edu. 158, 161, 163, or 162, 163, 164. Men, winter, five credits; women, spring, two credits. Foster, Belshaw, Hutchinson.

153. *Methods and Materials in Health Teaching.* (Men and Women) The place of health education in the school program, the general program of health teaching, subject matter and methods in health teaching in both the

elementary and high school. Prerequisites, senior standing and Phys. Edu. 145. Three credits; winter. Hutchinson.

155. *Dance Composition.* (Women) Practice in modern dance. Analysis of choreography. Opportunity for creative work. Prerequisites, Phys. Edu. 92 and 118. Two credits; spring. deVries.

156. *Methods and Materials in Teaching Dance.* (Women) Selection and organization of materials in educational program; methods of presentation; sources of material; music, and types of accompaniment. Prerequisite, Phys. Edu. 53 or 92; 118. Two credits; autumn. deVries.

158. *Methods in Teaching Apparatus, Tumbling and Stunts.* (Men) Prerequisites, 25, 26, and competence in ten additional physical education activities. Two credits; winter. Auernheimer.

161. *Methods in Teaching Boxing and Wrestling.* (Men) Prerequisites, 24, 27, and competence in ten additional physical education activities. Two credits; autumn. Kunde, Stevens.

162. *Methods and Materials in Teaching Folk, Tap and Clog Dancing.* (Men and women) Sec. A., Women, prerequisites, Phys. Edu. 52. Two credits. Spring. Sec. B., Men, prerequisites, competence in twelve physical education activities. Two credits; autumn. Wilson.

163. *Methods and Materials in Teaching Sports.* (Men and women) Sec. A., Women, prerequisites Phys. Edu. 51, 52, 112. Three credits; winter. Sec. B., Men, prerequisites, competence in twelve physical education activities. Two credits; spring. Rulifson, Peek, Reeves.

164. *Methods in Teaching Swimming.* (Men and Women) Methods and techniques in teaching swimming and diving; consideration of life saving; direction of the camp waterfront program. Sec. A., Women, prerequisites, Phys. Edu. 53, 85 (Phys. Edu. 97 and 99 may be substituted for 53.) Three credits; spring. Sec. B., Men, prerequisite, Phys. Edu. 29. Two credits. MacLean, Torney.

165. *The Administration of Health Education.* (Men and Women) 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, junior standing. Three credits; winter. Belshaw.

170. *Methods in Teaching Football.* (Men) Theory and practice of the fundamental principles underlying both individual and team play. Prerequisite, junior standing. Two credits; spring. Phelan.

171. *Methods in Teaching Basketball.* (Men) Individual and team development; offensive and defensive play. Prerequisite, junior standing. Two credits; winter. Edmundson.

172. *Methods in Teaching Track and Field.* (Men) Methods of training for the various events. Correct form in running. Conducting and officiating meets. Prerequisite, junior standing. Two credits; autumn . Edmundson.

173. *Methods in Teaching Baseball.* (Men) Fundamentals of batting, base-running, and position play; theory and practice. Prerequisite, junior standing. Two credits; spring. Graves.

Teachers' Course in Physical Education, see Edu. 75V.

COURSES FOR GRADUATES ONLY

201. *Problems in Physical Education.* (Men and Women) Special problems, including administration of school programs, organization of activities. Problems selected will depend upon personnel of class. Prerequisite, 20 credits in physical education. Three credits; autumn. Hutchinson.

203. *Problems in Health Education.* (Men and Women) A study of the problems relating to the school health education program. Problems selected will depend upon the personnel of class. Prerequisites, Phys. Edu. 145, 153, and 165. Three credits; spring. Hutchinson.

204. *Supervision of Physical Education.* (Men and Women) Problems and technique of the improvement of teaching as relating to the in-service education of teachers; visitation and conference; selection and organization of subject matter; standardization of the materials of instruction; use of tests and measurements. Prerequisite, 20 credits in physical education and teaching experience. Three credits; winter. Hutchinson.

205. *Organization and Administration of Physical Education in Colleges and Universities.* (Men and Women) Philosophy of education in institutions of higher learning; relation to the physical education program. Prerequisite, 20 credits in physical education. Three credits; spring. Foster.

206. *The Curriculum.* (Men and Women) Principles underlying the curriculum. Selection and organization of program content in relation to such problems as characteristics and needs of pupils and local conditions. Practical experience in curriculum making. Prerequisite, twenty credits in physical education. Three credits; spring. Foster.

PHYSICS

Physics Hall

Professors Brakel, Osborn, Utterback; Associate Professors Henderson, Loughridge; Assistant Professors Higgs, Kenworthy, Uehling; Instructor Sanderman

Students not in engineering, who do not have a year of high school physics, must elect Physics 4, 5, 6.

Students majoring in physics should elect the following courses: 1, 2, 3, or 4, 5, 6, ; 101, 102, 105, 106, 160, 191, 192 and elective physics courses to make 45 credits. Math. 4, 5, 6 and 107, 108, 109 are required of physics majors and Chem. 111, 131, 132, 181, 182, 183 and Math. 114, 115 are advised.

1, 2. *General Physics.* These courses will satisfy the science requirement in the College of Arts and Sciences, and may be taken by students in forestry and pharmacy. Prerequisite, a year of high school physics for 1, and Physics 1 for 2. Five credits; autumn, winter. Osborn, Utterback, Kenworthy.

3. *General Physics, Heat and Light.* Required of physics majors, of mathematics majors taking physics as a minor and pre-medic students. Prerequisite, Physics 1. Five credits; spring. Osborn, Kenworthy.

4, 5. *General Physics.* For students without a year of high school physics. These courses will satisfy the same requirements as Physics 1 and 2. Prerequisite, plane geometry, 4 prerequisite to 5. Five credits; autumn, winter. Kenworthy.

6. *General Physics, Heat and Light.* This course will satisfy the same requirements as Physics 3. Prerequisite, Physics 4. Five credits; spring. Kenworthy.

10. *Survey of Physics.* A general view of the fundamental principles of physics and their relation to the welfare of man. Students who expect to continue with physics should begin with Physics 1 or 4. Five credits; winter. Utterback.

50. *Sound and Music.* Five credits; spring. Kenworthy.

54. *Elementary Photography.* The principles and practice of the elementary photographic processes. Prerequisite, elementary physics or chemistry. Four credits; autumn, spring. Higgs.

89-90. *Physics of the Home.* For students in home economics and nursing. Five credits; autumn, winter. Osborn.

97. *Physics for Engineers—Mechanics.* Prerequisite, one year high school physics and 10 credits of college mathematics. Five credits; autumn, winter. Brakel, Uehling.

98. *Physics for Engineers—Electricity.* Prerequisite, Physics 97. Five credits; winter, spring. Brakel, Loughridge.

99. *Physics for Engineers—Light and Heat.* Prerequisite, Physics 97. Five credits; autumn, spring. Brakel, Henderson.

101-102. *Introduction to Modern Physics.* Prerequisite, Physics 3 or 6. Three credits; autumn, winter. Utterback.

105-106. *Electricity.* Prerequisite, Physics 3 or 6. Three credits; autumn, winter. Brakel.

109. *Pyrometry.* Prerequisite, 3 or 6. Three credits; spring. Utterback.

115. *Photography.* A quantitative study of the more important photographic processes and the application of photography to the sciences and arts. Prerequisite, Physics 54. Four credits; winter. Higgs.

140. *Sound.* Study of sound sources, transmission and absorption of sound with applications. Prerequisite, Physics 3 or 6. Three credits; winter. Kenworthy.

*150. *Heat and Introduction to Thermodynamics and Kinetic Theory.*

154. *Low and High Frequency Measurements.* Measurements of resistance, inductance, and capacitance as a function of frequency. A study of simple and coupled circuits, impedance of complex circuits and vacuum tube characteristics. Prerequisite, Physics 106, and calculus. Four credits; spring. Uehling.

160. *Optics.* Prerequisite, Physics 3 or 6, and calculus. Six credits; spring. Osborn.

166. *Physical Oceanography.* Physical properties of sea water; methods of observation and operation of instruments; theory of the measurements of ocean currents. Prerequisite, Physics 3 or 6. Two credits; spring. Utterback.

167, 168, 169. *Special Problems.* Prerequisite, special permission. Credits arranged; autumn, winter, spring. Staff.

170. *Spectrometry.* Prerequisite, Physics 160, or special permission. Three credits; winter. Osborn.

180. *History of Physics.* Prerequisite, Physics 3 or 6. Two credits; winter. Osborn.

*Not offered in 1939-1940.

191, 192. *Theoretical Mechanics.* Prerequisite, 20 credits in physics, and calculus. Four credits; autumn, winter. Loughridge.

195, 196. *Experimental Atomic Physics.* A course designed to acquaint the student with a group of phenomena representative of modern experimental physics. Prerequisite, 30 credits in physics. Three credits; autumn, winter. Higgs.

COURSES FOR GRADUATES ONLY

200, 201, 202. *Introduction to Theoretical Physics.* These courses constitute a thorough foundation for subsequent specialization and more intensive study. Prerequisite, 40 credits in physics, and Math. 114 concurrently. Six credits; autumn, winter, spring. Henderson, Loughridge, Uehling.

*204. *Thermodynamics.*

*205. *Kinetic Theory.*

*210. *Mathematical Theory of Sound.*

211. *Statistical Mechanics.* A discussion of classical, quantum statistics to serve as a foundation for application to absorption and emission of radiation, electron gas theories, equilibrium and rates of physical-chemical processes. Prerequisite, Physics 202. Six credits; winter. Loughridge.

*212. *Conduction of Electricity Through Gases.*

*213, 214. *Electricity and Magnetism.*

*216. *X-Rays.*

*219. *Hydrodynamics.*

220. *Advanced Dynamics.* Prerequisite, Physics 202. Six credits; autumn. Utterback.

*221. *Collision Theory.*

222. *The Metallic State.* Theories of electron emission. Metals and insulators, conductivity and super-conductivity. Prerequisite, Physics 202 and permission of the instructor. Six credits; spring. Henderson.

226, 227. *Electromagnetic Theory.* The electromagnetic theory of light. Propagation of electromagnetic waves in isotropic and anisotropic media. Physical optics. Prerequisite, Physics 202. Four credits; autumn, winter. Henderson.

230, 231. *Atomic Structure.* Prerequisite, Physics 202. Four credits; winter, spring. Utterback.

*239, 240. *Wave Mechanics.*

*241, 242, 243. *Relativity.*

245, 246, 247. *Advanced Quantum Mechanics.* Relativistic theories of charged and uncharged elementary particles. Quantum electro-dynamics with applications to problems of modern physics. Prerequisites, Physics 239, 240, or permission of the instructor. Four credits; autumn, winter, spring. Uehling.

250, 251, 252. *Seminar.* Prerequisite, graduate standing. Credit arranged. Staff.

256, 257, 258. *Research.* Credits arranged; autumn, winter, spring. Staff.

*Not offered in 1939-1940.

POLITICAL SCIENCE

Condon Hall

Professors Martin, Cole, Mander, Levy; Associate Professors Cook, Webster, Taylor; Assistant Professor von Brevern; Associate Johnstone

The courses in political science are offered to meet the needs of the following groups: (1) students seeking sufficient political training to aid them in understanding their civic duties; (2) those desiring courses in political science as a part of their liberal education; (3) students who desire to prepare themselves for positions in the public service, national, state, and local, and the foreign service; (4) students seeking courses in political science which are preparatory and supplementary to their work in the following professional schools: law, education, business administration, and journalism; (5) those who desire that systematic and intensive training which will prepare them as teachers or investigators in political science.

Prerequisites. The normal prerequisite for all courses in the department is Pol. Sci. 1. For upper division courses, Pol. 51, 52, 54, and 61 and elementary courses in economics, history and sociology are strongly recommended.

Subject Groups. The work of the department is divided into the following groups: I. Political Theory and Jurisprudence; II. International Relations; III. Politics and Administration. A major student must select any one group as his chief interest before proceeding with upper division courses.

The Major. Candidates for the bachelor's degree with political science as a major must offer 45 credits in political science, of which at least 30 shall be upper division courses.

Major programs must be approved by the department.

Programs must include 20 credits in one group and at least ten credits in each of the remaining groups.

Graduate Study. For admission to graduate courses and to candidacy for higher degrees, see the announcement of the Graduate School. Candidates for higher degrees in political science must register in the graduate seminar during every quarter of their residence, and in two research seminars, one of which must be in the field of the special investigation.

Lower Division Courses

ELEMENTARY COURSES PRIMARILY FOR FRESHMEN

1. *Survey of Political Science.* Forms and functions of modern government; political ideas and institutions, American and foreign. Five credits; autumn, winter, spring. Martin, Cook, Cole.

INTERMEDIATE COURSES PRIMARILY FOR SOPHOMORES

51. *Principles of Politics.* Origin, form, function and nature of the state; its relations to other social institutions, and other states. Five credits; autumn. Cook.

52. *Introduction to Public Law.* The legal construction of political organization. The state and the individual; leading concepts in constitutional, international and administrative law. Five credits; winter. Cole.

54. *International Relations.* The rise of modern states; alliances, imperialism, the League of Nations; present problems; factors underlying international relations. Five credits; autumn. Mander.

61. *Municipal Government.* Growth of cities, home rule, city charters, forms of city government, politics, and other problems. Five credits; spring. Johnstone.

71. *Great Personalities: Continental Europe.* The leading personalities of Great Britain, France, Germany, Italy, Spain, Poland and the Balkans; their influence in international relations. Three credits; winter. von Brevern.

72. *Great Personalities: The Near East and Asia.* Leading personalities of Turkey, Soviet Russia, Japan and China; their influence in national policies. Effect of these policies in international relations. Three credits; spring. von Brevern.

Upper Division Courses

Prerequisite: Political Science 1. Recommended are Pol. Sci. 51, 52, 54, 61, and one of the following courses: E.B. 1, Soc. 1, Hist. 1-2, 3-4.

101. *Introduction to American Constitutional Government.* Fundamental principles of American Constitutional system; function, evolution; unwritten constitution. Two credits; autumn, winter, spring. Webster, von Brevern.

GROUP I. POLITICAL THEORY AND JURISPRUDENCE

111. *History of Political Thought.* Historical development of Western interpretations of the state and theories of politics. Study of ancient, medieval and modern political thought. Five credits; autumn. Cook.

*112. *American Political Thought.*

113. *Contemporary Political Thought.* Recent political ideas in the West. Examination of socialism, communism, democracy, anti-democratic thought, fascism, idealism and pluralism. Five credits; spring. Cook.

114. *Oriental Political Thought.* Theories and principles of statehood and statecraft in the Orient, especially in China, India and Japan. Five credits; winter. Taylor.

115. *Political Dynamics.* Examination of motives, techniques and results of political behavior; processes of politics; class interpretations, personality types, public opinion, pressure groups and dictatorships. Three credits; winter. Cook.

Primitive Social and Political Institutions. (See Anthropology 185.)

118. *Law and the State.* Ancient, medieval, and modern conceptions of the relationship between political authority and the legal institution. Law and politics in an ideal commonwealth. Five credits; autumn. Cole.

119. *Jurisprudence.* The law as an agency of social control. Survey of such fundamental concepts as rights, persons, property, contract, liability. Sources of law: legislation, precedent, custom. Five credits; winter. Cole.

*Not offered in 1939-1940.

GROUP II. INTERNATIONAL RELATIONS

121. *Foreign Relations of the United States: Europe.* Traditional policies of the nineteenth century. New problems after 1914. Relations with international organization. Three credits; winter. Johnstone.

122. *The Foreign Service.* Department of State; diplomatic and consular services; American diplomatic practice and procedure. Three credits; spring. Martin.

123. *Foreign Relations of the United States: The Americas.* The Monroe Doctrine; Pan-Americanism; imperialism. Our special position in relation to Mexico, Central America, the Caribbean. Three credits; autumn. von Brevern.

124. *Contemporary World Politics.* Assumptions of pre-war international organization; principles of collective security and their apparent breakdown; recent developments in Europe and the Far East. Three credits; winter. McKenzie.

125. *Colonial Government and Administration.* Colonial policies and administrative practices; special reference to East and West Africa, Malaya, Ceylon, Pacific Islands, West Indies. Five credits; winter. von Brevern.

126. *Politics and Military Armament.* National policies of the major powers in regard to military preparedness; international policies toward maintenance of world peace. Three credits; autumn. von Brevern.

127. *International Organization and Administration.* International unions, conferences, commissions, especially the League of Nations. Five credits; spring. Mander.

129. *International Relations of the Far East.* China and Japan. Pacific and Far Eastern questions. Developments to 1895. The period 1895-1914. Recent problems. Five credits; autumn. Taylor.

130. *The Middle and Near East.* The New Moslem World. Effect of nationalism. Turkey, Egypt, Palestine, Iraq, Syria, Arabia, Persia, Afghanistan; India in the British Commonwealth. Five credits; spring. Mander.

*131. *International Practice and Procedure.*

133. *Europe Since 1914.* A broad outline of history from the World War to the present. Five credits; autumn. Levy.

International Law. (See Law 122, Principles of International Law.) The general principles of international law as developed by custom and agreement, and as exhibited in decisions of international tribunals and municipal courts. Three credits a quarter; autumn, winter. Martin.

Diplomatic History of Eastern Asia. (See Oriental Studies 125-126, 127.)

GROUP III. POLITICS AND ADMINISTRATION

151. *Problems in American Federal Government.* Significant national problems, including presidential "dictatorship," bureaucracy, the lobby, congressional investigations, executive justice. Five credits; autumn. Cook.

152. *Political Parties and Elections.* Organization and methods of political parties; campaigns and conventions; election administration. Five credits; spring. Johnstone.

*Not offered in 1939-1940.

153. *Introduction to Constitutional Law.* Growth, development of the United States Constitution as reflected in decisions of the Supreme Court. Political, economic, social effects. Five credits; spring. Martin.

154. *The Public Service.* Governmental employment in the United States, Great Britain, France, and Germany, and problems involved. Five credits; winter. Johnstone.

155. *Introduction to Public Administration.* A general survey of the field of public administration, including relationship of administration to other agencies of government. Five credits; autumn. Webster.

Public Finance. (See Economics and Business 124.)

156. *Parliamentary Governments in Europe.* The governments of Northern and Western Europe which have retained their parliamentary institutions. Five credits; spring. von Brevern.

157. *The New Governments of Europe.* Democracy and dictatorship in post-War Europe. Probable trends of government. Five credits; autumn. Mander.

158. *Governments and Politics of the Far East.* Political institutions of Japan. Establishment of the Chinese Republic; the Kuomintang; Chinese problems today. Five credits; autumn. Taylor.

159. *The British Empire.* The dominions and legal relations: India, and problems of unity. Three credits; spring. Mander.

161. *Government and Business.* Historical background, constitutional limitations, restraint of trade and manipulation of prices, government control of public utility activities. Five credits; autumn. Johnstone.

162. *Municipal Administration.* Civil service, finance, city planning, zoning, police, traffic, health, water, sewerage, public works, utilities, etc. Five credits; autumn. Johnstone.

163. *State Government and Administration.* Constitutions, governor, legislature, administrative organization, state activities, counties, parties, elections. Five credits; winter. Webster.

COURSES FOR ADVANCED UNDERGRADUATES

165. *The Legislative Process.* Comparative legislative systems with special reference to the United States and Great Britain. Principles of representations. Changes in legislative functions. Five credits; spring. Johnstone.

166. *Constitutional Law in Europe.* A comparative analysis of the constitutions of the major European countries, especially of Great Britain, France, Italy, Germany and Soviet Russia. Forms of government. Executive, legislative, judicial branches. Relations between government and individual. Three credits; winter. Levy.

190. *Introduction to Roman Law.* General importance of Roman law, its sources and civil procedure. Main features of classical law of persons, property, contracts, torts and succession in the light of modern research, with a background of political, economic and social factors. Five credits; autumn. Levy.

191. *Comparative Law.* A brief summary of the development, character and judicial organization of French and German legal systems. Introduction to comparative methods in such problems as specific performance in the law

of contracts, coincidence between delivery and payment, offer and acceptance, etc. Three credits; winter. Levy.

191. *Introduction to Modern Civil Law.* Main features of the law of persons, property, contracts, torts, and succession in the world today, as developed on the basis of Roman law. Five credits; spring. Levy.

199. *Individual Conference and Research.* For advanced undergraduates having high scholastic standing, with consent of instructor concerned. Two to five credits; autumn, winter, spring. Staff.

COURSES FOR GRADUATES ONLY

201, 202, 203. *Graduate Seminar.* For candidates for higher degrees in political science. Three credits; autumn, winter, spring. Martin.

211, 212, 213. *Seminar in Political Thought.* Readings and discussions based on the writings of first importance of the masters of political science. Three credits; autumn, winter, spring. Cole.

215. *Methods and Research in Political Science.* Political science and the social sciences; methods of research; bibliography of general and special fields. Three to five credits; spring. Cook.

221, 222. *Seminar in International Organization.* Three to five credits; autumn, winter. Martin.

234. *Seminar in Roman Law.* Introduction to modern research in Roman law. Readings in Justinian's *Institutes* and *Digest* in English translation. Three credits; winter. Levy.

251. *Seminar in Politics and Administration.* Research in special problems. Three to five credits; winter. Webster.

256. *Seminar in Government and Public Law.* Three to five credits; winter. Cook.

299. *Individual Research.* For advanced graduates admitted to candidacy for higher degrees, with the consent of the department. Two to five credits; autumn, winter, spring. Staff.

Seminar in Oriental Diplomacy. (See Oriental Studies 225, 226, 227.)

Constitutional Law. (See Law 119, 120.)

Administrative Law. (See Law 121.)

PSYCHOLOGY

Philosophy Hall

Professors Smith, Guthrie, Wilson, Esper; Associate Professor Gundlach; Assistant Professors Horton, Loucks; Associate Hermans

Students who have shown an aptitude in psychology, and who consider taking extensive work in this subject, are invited to confer with members of the staff in order to plan their work to advantage.

1. *General Psychology.* Survey of the science. Man's original nature, the way in which nature is altered by use; the individual and social behavior that results. No prerequisites. Five credits; every quarter. Wilson and Staff.

2. *Phychology of Adjustment.* Nature of personality and ways in which personalities are formed in adjusting to the world. Prerequisite, Psych. 1. Five credits; every quarter. Loucks, Horton, Wilson.

21. *Applied Psychology.* Psychology of personal efficiency, vocational guidance, scientific management, law, medicine, athletics, business, advertising. Upper division credit for upper division students. Prerequisite, Psych. 1. Five credits; winter. Gundlach.

102. *The Neural Basis of Behavior.* Action, emotions, regulatory functions, learning, thinking. Prerequisite, Psych. 1, and Zool. 1-2 or 3-4, and permission of instructor. Five credits; autumn. Esper.

106. *Experimental Psychology.* Training in laboratory methods. Prerequisite, Psych. 1, 108, 109 and permission of the instructor. Two lectures, six hours laboratory. Five credits; winter. Esper.

108. *Essentials of Mental Measurement.* The use of statistical methods in psychology. Prerequisite, Psych. 1; Math. 3 or 5, or 31-32-33. Five credits; winter. Guthrie.

109. *Advanced Mental Measurement.* Continuation of 108. Prerequisite, Psych. 108. Five credits; spring. Guthrie.

111. *History of Psychology.* A rapid survey of the chief developments in psychology in modern times. Prerequisite, 15 credits in psychology. Two credits; autumn. Gundlach.

112. *Modern Psychological Theory.* The contributions of living psychologists and a critical consideration of current theory. Prerequisite, Psych. 1. Three credits; spring. Guthrie.

116. *Animal Behavior.* The psychology of animals in the laboratory and under natural conditions. Prerequisite, Psych. 1. Three credits; autumn. Horton.

117. *Superstition and Belief.* Why we are superstitious. The psychological analysis and the historical development of certain false opinions. Prerequisite, Psych. 1. Two credits; autumn. Smith.

118. *Social Psychology.* Psychology of social human nature; language, custom, public opinion, morals, war, family, caste, nationalism, religion. Prerequisite, Psych. 1. Five credits; autumn. Guthrie.

124. *Psychology of Learning.* How habits are formed. Efficiency in learning, transfer of training, recent experimental findings. Prerequisite, Psych. 1 and 2. Five credits; spring. Guthrie.

126. *Psychology of Maladjustment.* Origin and mechanism of behavior that interferes with proper adjustment. Physiological pathology. Psychotherapy. Prerequisite, 15 credits in psychology including Psych. 2. Five credits; spring. Smith.

131. *Child Psychology.* Individual and social development and their causes, from infancy to adult age. Prerequisite, Psych. 1. Five credits; autumn. Smith.

133. *Advanced Child Psychology.* A study of recent research in child development. Prerequisite, Psych. 131. Two credits; spring. Smith.

140. *Conditioning.* Experimental work on conditioning. Significance for the several fields of psychology. Emphasis on specific research techniques. Prerequisite, 10 credits in psychology. Three credits; winter. Loucks.

141. *Sensory Basis of Behavior.* Sensory and perceptual phenomena; sensory equipment, and theories of sense-organ function. Prerequisite, 15 credits in psychology. Five credits; spring. Gundlach, Horton.

151, 152, 153. *Undergraduate Research.* Prerequisite, Psych. 106 and permission of department. Three credits each quarter. Staff.

COURSES FOR GRADUATES ONLY

Before a student registers for graduate courses, his topic for research must be approved by the department.

201, 202, 203. *Graduate Research.* Each quarter. Credit can be arranged. Staff.

211, 212, 213. *Seminar.* Open to all research students and majors. Two credits each quarter. Staff.

ROMANIC LANGUAGES AND LITERATURE

Professors Nostrand, Frein, Garcia-Prada, Goggio, Umphrey; Associate Professors Chessex, Helmlingé; Assistant Professors David, Simpson, Whittlesey, C. Wilson, W. Wilson; Instructor Hamilton

Students entering with high school credits in French or Spanish will be admitted to classes upon the basis of one high school semester counting as the equivalent of one University quarter.

For reasons of any interruption in the continuation of a language, some adjustment may be made, but all such cases must be determined by the executive officer of this department.

If, for any reason acceptable to the executive officer of this department, a student who has done one year of French or Spanish in high school needs to enter French 2 or Spanish 2, he will be given University credit therefor, but he will be required to finish French 3, 4, and 7, or Spanish 3, 4, and 7, in fulfillment of the language requirement.

Students who have done two years of French or Spanish in high school may, if there has been an interval of two years or more in their study of that language, enter with full credit a class lower than the one to which they would normally belong, provided they first obtain the approval and the signature of the executive officer of this department.

Students may not begin French 1 and Spanish 1 (nor Italian) during the same quarter; and it is better to have three quarters of one Romanic language before beginning another. In instances where a foreign language must be taken without credit to satisfy an entrance deficiency of two units, courses 1, 2, 3, 4 and 7 in any of the Romanic languages must be completed in fulfillment of this requirement. Freshmen and sophomores may enter any course, except graduate, for which they have the prerequisites. Graduate students working for the master's degree and offering a minor in French or Spanish, will do not less than is required of majors for the bachelor of arts degree in this department.

No student may have Romanic languages for a major; he must specifiy French, Italian or Spanish.

I. French

Requirements of the department: Majors and all who wish to be recommended to teach French shall be required to take French 41, 101, 102, 103 or 107, 158, 159, Edu. 75K, and electives amounting to nine or ten credits in French literature numbered above 117. At least six of the nine or ten credits shall be

in courses in literature conducted in French. Thirty-six credits or more in French are required for a major.

1-2, 3. *Elementary.* As much as possible, French will be used in the classroom. Each of the courses 1, 2, 3, is repeated each quarter. No credit will be given for French 1 until 2 has been completed. Five credits a quarter; autumn, winter, spring.

4, 5, 6. *Reading of Modern Texts.* Each of the courses 4, 5, 6, is repeated each quarter. French 4 may be combined with 7, making a five-hour course. The same is true of 5 and 8, 6 and 9. Prerequisite to French 4 is 3, or equivalent. Three credits a quarter; autumn, winter, spring.

7, 8, 9. *Grammar and Composition.* Each of the courses 7, 8, 9, is repeated each quarter. Must be taken by majors in French, unless they have done the equivalent in high school. French 7 may be combined with 4. The same is true of 8 and 5, 9 and 6. Prerequisite to French 7 is 3, or equivalent. Two credits a quarter; autumn, winter, spring.

34, 35, 36, or 134, 135, 136. *Comparative Literature of France, Italy, and Spain, in English Translation.* The main purpose of this course, besides being a brief survey of the three Romanic literatures, is to show the influence of each upon our modern thought and upon the other two respectively. (Lower division students must use the numbers 34, 35, 36; upper division students must use 134, 135, 136.) Lectures in English and collateral reading of English translations. No knowledge of French, Italian or Spanish necessary. For students choosing any of the Romanic languages for their major, all credits in this course may be counted toward the total of 36 to 60 credits required for the fulfillment of the major, but only three may be counted as part of the required nine hours in literature. Courses may be entered any quarter. The credits of any one quarter may be counted in one language only. Three credits a quarter; autumn, winter, spring. Goggio.

37, 38, 39. *Scientific French.* Scientific terms and expressions necessary for all sciences will be read together in class. This is preparatory to courses 137, 138, 139. If a student is, in the estimation of the instructor, able to pass from 37, or 37 and 38, directly to 137, he may do so; otherwise he must pass in 39. Prerequisite, French 4 and 7, or equivalent. Three credits a quarter; autumn, winter, spring. Whittlesey.

41. *Phonetics.* Prerequisite, French 3. Useful for all students of foreign languages, English, and public speaking. Upper division students may receive upper division credit. Three credits; repeated each quarter. David.

101, 102, 103. *Advanced Composition and Conversation.* With each of these courses is offered a course in advanced reading. See French 104, 105. Courses 103 and 105 are not offered in the autumn. Prerequisites, French 9, or three or more years of high school French. Three credits a quarter; autumn, winter, spring. Helmlingé, Chessex, David.

104, 105. *Advanced Reading.* Courses to be taken with 101, 102, 103, if so desired, to make five-hour courses. Prerequisite, French 6. French 105 is not offered in the autumn quarter. Two credits a quarter.
Chessex, Simpson.

107, 108. *Themes.* Writing of original compositions upon assigned topics. Prerequisite, French 102. Those taking French 107 or 108 are not required to take 103. This course is numbered 107 and 108 in alternate years, so that students may receive credit for two quarters of this work if they wish. Three credits; spring. Helmlingé.

118, 119, 120. *French Literature.* A survey with lectures in English and collateral reading of English translations. Students able to do so will read French texts. No prerequisites. (See above under "Requirements of the department.") Three credits a quarter; autumn, winter, spring. Nostrand.

121, 122, 123. *The French Novel.* Course conducted in French. History of novel with assigned reading from the several types. Prerequisite, French 6 and 9. Two credits a quarter; autumn, winter, spring. C. Wilson.

*124, 125, 126. *The Short Story.*

127, 128, 129. *Advanced Conversation for Majors.* Careful preparation for each day's exercise will be required, and full credit given. Prerequisite, French 101, or equivalent. Two credits a quarter; autumn, winter, spring. Helmlingé.

131, 132, 133. *Lyric Poetry.* Conducted in French. The best lyrics since the sixteenth century, especially those of Lamartine, Hugo and Musset. Prerequisite, French 104 or equivalent. Three credits a quarter; autumn, winter, spring. Helmlingé.

134, 135, 136. *Comparative Literature of France, Italy and Spain in English Translation.* (See French 34, 35, 36.)

137, 138, 139. *Scientific French.* (See French 37, 38, 39.) Conducted by individual conferences. Selection of needed scientific reading. Prerequisite, the instructor's permission. Two credits a quarter; autumn, winter, spring. Whittlesey.

141, 142, 143. *The French Drama.* Conducted in French. Lectures and assigned reading. Prerequisites, French 6 and 9 or equivalent. Three credits a quarter; autumn, winter, spring. Chessex.

151, 152, 153. *History of the French Literature of the Nineteenth Century.* Conducted in French. Lectures and assigned reading. Prerequisites, French 6 and 9 or equivalent. Three credits a quarter; autumn, winter, spring. Simpson.

154, 155, 156. *Contemporary French Literature.* From the symbolist movement of the 1880's to the present. Detailed study of representative novels, short stories, plays, poems, and critical essays, against the background of the artistic evolution and social history of France during this period. Discussions in English. Outside reading and essay topics to be chosen by the student with the consent of the instructor. Prerequisite, French 6 and 9, or equivalent. Three credits a quarter; autumn, winter, spring. Nostrand.

158, 159. *Advanced Syntax.* French syntax from the teachers' standpoint. If possible these courses should precede the teachers' course. Prerequisite, French 103 or 107, or 108. Two credits a quarter; 158 autumn, winter; 159 winter, spring. Chessex, David.

*161, 162, 163. *Eighteenth Century Literature.*

171, 172, 173. *Seventeenth Century Literature.* Conducted in French. First quarter, Pre-classical period; second quarter, Classical period; third quarter, Age of transition and of the prose writers. Assigned reading and reports. Prerequisite, French 6 and 9, or equivalent. Two credits a quarter; autumn, winter, spring. David.

*191, 192. *French Stylistics.*

Teachers' Course in French. (See Education 75K.)

*Not offered in 1939-1940.

COURSES FOR GRADUATES ONLY

No student working for the master's degree in another department will be accepted as a minor in any romanic language unless he shall have done at least as much as is required for students working for the bachelor of arts degree with a major in this department.

201, 202, 203. *Middle French and Sixteenth Century.* Lectures in French. Reading assigned from fourteenth, fifteenth and sixteenth century authors. Prerequisite, four years of French. Two credits a quarter; autumn, winter, spring. David.

221, 222, 223. *Old French Reading.* One of the most helpful courses for teachers of French. Open to graduates who have studied French at least four years. Graduates who are not French majors may, without prejudice, translate into English. Five credits a quarter; autumn, winter, spring. Frein.

*231, 232, 233. *History of Old French Literature.*

241, 242, 243. *French Historical Grammar.* Lectures in English upon the phonology and morphology of French words. Basic for English as well as French grammar. Prerequisite, four years of French and graduate standing. Three credits a quarter; autumn, winter, spring. Frein.

*281, 282, 283. *Seminar.*

291, 292, 293. *Conferences for Theses.* Graduates at work upon a thesis will arrange their conferences individually with the instructor in charge.

II. Italian

The department, through its scheme of alternate courses, offers enough work to satisfy the major or minor requirements. Students who desire to major or minor in Italian are requested, however, to plan their work early with the instructor in charge. (See also regulations under Romanic Languages, and French, applying to French, Italian and Spanish.)

1-2, 3. *Elementary.* No credit will be given for Italian 1 until 2 has been completed. Italian 1 is repeated in the winter and Italian 2 in the spring. Five credits a quarter; autumn, winter, spring. Goggio, Whittlesey.

*111, 112, 113. *Modern Italian Literature.*

121, 122, 123. *The Italian Novel.* Course conducted in English, or Italian if the students can all understand it. History of the Novel. Prerequisite, Italian 2. Two or three credits a quarter; autumn, winter, spring. Goggio.

181, 182. *Dante in English Translation.* The *Divine Comedy* and Dante's imaginative and philosophical ideas as related to medieval thought. No knowledge of Italian necessary. Two credits a quarter; autumn, winter. Goggio.

184. *Renaissance Literature of Italy in English Translation.* Lectures in English and collateral reading. No knowledge of Italian is necessary. Two credits; spring. Goggio.

*Not offered in 1939-1940.

COURSES FOR GRADUATES ONLY

221, 222, 223. *Italian Literature of the XIIth to the XVth Centuries.* Selections from predecessors of Dante, from some of Dante's works other than the *Divine Comedy* (see Italian 181, 182), from Petrarch and Boccaccio. Prerequisite, reading knowledge of modern Italian. Two to five credits a quarter; autumn, winter, spring. Goggio.

*231, 232, 233. *History of Old Italian Literature.*

*243. *Italian Historical Grammar.*

III. Provencal

233. *Old Provençal.* Reading, mostly lyric. Three credits; spring. Frein.

IV. Spanish

Requirements of the department: Spanish 101, 102, 103, 159, Edu. 75Y, and at least nine credits of literature are required of majors and of all who wish to be recommended as teachers. Not more than two credits from courses Spanish 118, 119, 120, will be accepted for the requirement of nine credits of literature. Freshmen and sophomores may enter any course, except graduate, for which they have the prerequisite. See also regulations under Romanic languages, and French, applying to French, Italian and Spanish.

1-2, 3. *Elementary.* No credit will be given for Spanish 1 until 2 has been completed. Five credits a quarter; autumn, winter, spring. Each course repeated every quarter.

4, 5, 6. *Reading of Modern Authors.* Spanish 4, 5, 6, may be combined with Spanish 7, 8, 9, making a five-hour course each quarter. Prerequisite to Spanish 4 is 3 or equivalent. Three credits a quarter; autumn, winter, spring. Umphrey, Garcia-Prada, W. Wilson.

7, 8, 9. *Grammar, Composition, Conversation.* May be combined with Spanish 4, 5, 6, making a five-hour course each quarter. Prerequisite to Spanish 7 is 3; Spanish 7 is prerequisite to 8. Two credits a quarter; autumn, winter, spring. Umphrey, Garcia-Prada, W. Wilson.

34, 35, 36, or 134, 135, 136. *Comparative Literature of France, Italy, Spain,* in English Translation. Three credits a quarter. (For description of course see French 34, 35, 36.)

101, 102. *Advanced Composition and Conversation.* Prerequisite, Spanish 9. Three credits a quarter; autumn, winter Garcia-Prada, W. Wilson.

103. *Spanish Themes.* Practice in writing original compositions. Prerequisite, Spanish 102, or equivalent. Three credits; spring. Garcia-Prada.

118, 119, 120. *Spanish Literature.* A survey with lectures in English and collateral reading of English translations. Those who are able to read Spanish will be assigned Spanish texts to read. No more than two of these six credits will be accepted for the requirement of nine credits in literature. Two credits a quarter; autumn, winter, spring. Garcia-Prada.

121, 122. *The Spanish Novel.* Course conducted in Spanish. The history of Spanish prose fiction. Lectures, collateral reading, reports. Prerequisite, Spanish 6 and 9, or equivalent. Three credits a quarter; winter, spring. Garcia-Prada.

*Not offered in 1939-1940.

131. *Lyric Poetry.* Conducted in Spanish. Spanish and Spanish-American poets since the sixteenth century. Prerequisite, Spanish 6 and 9. Three credits; autumn. Garcia-Prada.

*141, 142, 143. *Spanish Drama.*

*151, 152, 153. *Spanish Literature of the Nineteenth Century.*

159. *Advanced Syntax.* Problems in syntax studied from the teacher's point of view. Prerequisite, Spanish 102. Three credits; spring. Umphrey.

171, 172, 173. *Seventeenth Century Literature.* Course conducted in Spanish. One of the three greatest authors of this period (Lope de Vega, Cervantes, Calderon) will be studied each quarter. Prerequisite, Spanish 6 and 9, or equivalent. Two credits a quarter; autumn, winter, spring. Garcia-Prada.

181, 182, 183. *Spanish-American Literature.* Lectures, selected texts, collateral reading and reports. First quarter, general survey of Spanish-American civilization, with special attention to early literature. Second quarter, Nineteenth Century literature. Third quarter, Twentieth Century. Prerequisites, Spanish 6, or equivalent. Three credits a quarter; autumn, winter, spring. Umphrey.

Teachers' Course in Spanish. See Education 75Y.)

COURSES FOR GRADUATES ONLY

The *minor* will not be given to candidates for the master's degree in other departments until they shall have done at least as much as is required of majors for the bachelor's degree in this department.

221. *Old Spanish Readings.* Reading and linguistic study of the *Poema de mio Cid* and other Old Spanish texts. Five credits; autumn. Umphrey.

231. *Epic Poetry.* The epic material in Old Spanish literature and its later treatment in poetry and drama. Special investigations and reports. Five credits; winter. Umphrey.

241. *Spanish Historical Grammar.* Five credits; spring. Umphrey.

291, 292, 293. *Conferences for Theses.* Graduates at work upon a thesis will arrange their conferences individually with the instructor in charge. Umphrey.

SCANDINAVIAN LANGUAGES AND LITERATURE

Denny Hall

Professor Vickner; Associate Arestad

1-2, 3. *Elementary Swedish.* Courses 1-2, 3 may be taken with 4-5, 6, making a five-hour course; 1, 2, 3 are hyphenated if 4-5 are not taken. Three credits a quarter; autumn, winter, spring. Vickner.

4-5, 6. *Swedish Reading Course for Beginners.* Supplementary to courses 1-2, 3, but may also be taken separately. No previous knowledge of Swedish necessary. Two credits a quarter; autumn, winter, spring. Arestad.

10-11, 12. *Elementary Norwegian or Danish.* Courses 10-11, 12, may be taken with 13-14, 15, making a five-hour course: 10, 11, 12, are hyphenated

*Not offered in 1939-1940.

if 13-14 are not taken. Danish students will do their work in special conference. Three credits a quarter; autumn, winter, spring. Vickner.

13-14, 15. *Norwegian-Danish Reading Course for Beginners.* Supplementary to 10-11, 12, but may also be taken separately. No previous knowledge of Norwegian or Danish necessary. Two credits a quarter; autumn, winter, spring. Arestad.

20, 21, 22. *Norwegian or Danish Literature.* Prerequisite, ability to read easy Norwegian or Danish. Danish students will do their work in special conference. Two credits a quarter; autumn, winter, spring. Arestad.

23, 24, 25. *Swedish Literature.* Prerequisite, ability to read easy Swedish. Two credits a quarter; autumn, winter, spring. Vickner.

98. *Early Scandinavian Literature.* A lecture survey of the early Scandinavian literature. Reading in English translation. No prerequisites. Upper division credit to upper division students. One credit; autumn, winter, spring. Vickner.

99. *Outline of Scandinavian Culture.* Knowledge of the Scandinavian languages not required. Lectures. Upper division credit to upper division student. One credit; autumn, winter, spring. Vickner.

103, 104, 105. *Recent Swedish Writers.* Prerequisite, relatively fluent reading knowledge of Swedish. Two or three credits; four credits by permission; autumn, winter, spring. Vickner.

106, 107, 108. *Recent Norwegian or Danish Writers.* Prerequisite, relatively fluent reading knowledge of Norwegian or Danish. Danish students will do their work in special conference. Two or three credits; four credits by permission; autumn, winter, spring. Vickner, Arestad.

109, 110, 111. *Modern Scandinavian Authors in English Translation.* No knowledge of the Scandinavian languages necessary. One credit a quarter; autumn, winter, spring. Arestad.

180, 181, 182. *Recent Scandinavian Literature in English Translation.* No knowledge of the Scandinavian languages necessary. Two credits; autumn, winter, spring. Vickner.

COURSES FOR GRADUATES ONLY

*201-202. *Old Icelandic.*

205-206. *Scandinavian Literature in the Nineteenth Century.* Two to four credits a quarter; winter, spring. Vickner.

*208. *Scandinavian Lyric Poetry.*

Comparative Philology

190-191. *Introduction to the Science of Language.* General principles of linguistic development with special reference to English. Prerequisite, some knowledge of one of the classical languages or of one modern foreign language or Old English. Two credits; autumn, winter. Vickner.

192. *Life of Words.* Etymology and semasiology; growth of vocabulary; word values. Lectures, discussions, and exercises. Prerequisite, same as for courses 190-191. Two credits; spring. Vickner.

SLAVIC STUDIES (Russian Language)—See Oriental Studies

*Not offered in 1939-1940.

GRADUATE SCHOOL OF SOCIAL WORK

Commerce Hall

Professors Witte, Steiner; Assistant Professors Crounse, ————; Instructor Dorman; Lecturers Hall, Hoedemaker, Spence; Field Work Supervisors Braun, ————.

Permission of the School of Social Work required before Registration.

175. *Social Work and Health.* Introduction to the point of view and method of social case work, with emphasis on the social aspects of health needs of families and upon cooperative relationships between social and health agencies. Open to students from the School of Nursing Education. Four hours class and four hours laboratory. Prerequisites, Soc. 1 and 128, or equivalents. Five credits; winter, summer. Crounse, Dorman.

176. *The Rural Community.* A study of the organization and activities of life in the village and open country. Review of investigations and consideration of means of amelioration. Open to seniors with ten credits in sociology. Five credits; spring. Steiner.

197. *Social Aspects of the Law.* Discussion and study of case law and statutes relating to those fields of law which are of greatest concern to the social worker, such as familial relations, child dependency, delinquency, contractual relationships. Three credits; spring. ————.

198a. *Medical Social Aspects of Maternal and Child Health.* Medical lectures dealing with maternal health, prenatal and obstetrical care; normal development of the child; common diseases of childhood; orthopedic conditions. Social interpretation; use of resources. Two credits; summer.
Dorman and members of King County Medical Society.

199b. *Medical Social Aspects of Preventable Diseases.* Medical lectures dealing with the common preventable diseases of adult life, such as syphilis, heart disease, tuberculosis, cancer. Emphasis upon what the social worker should know of causes, treatment, and effects. Two credits; summer.
Dorman and members of King County Medical Society.

200. *Social Case Work I.* Discussion of case material presenting the basic principles of social case work, the approach to the individual and his social situation. Open only to professional students. Three credits; autumn. ————.

201. *Field Work I.* University field work centers are maintained in cooperation with several branch offices of the King County Welfare Department and the Family Society of Seattle. Minimum time requirement for all professional students, 16 hours a week under University supervision. Course 200 should be taken concurrently. Four credits; autumn.
Crounse, Dorman, Braun, ————.

202. *Social Case Work II.* A continuation of *Social Case Work I.* Special attention given to interviewing, recording, and treatment methods. Prerequisite, 200, or equivalent. Three credits; winter. ————.

203. *Field Work II.* A continuation of *Field Work I,* to teach practice in generic case work. Minimum time requirement, 16 hours a week. Prerequisites, 200 and 201, or equivalents. Course 202 should be taken concurrently. Four credits; winter. Crounse, Dorman, Braun, ————.

204. *Case Work with Psychiatric Interpretation.* Critical analysis of the causative factors in human behavior as a basis for understanding and treat-

ment, with psychiatric interpretation. A consideration of the field of psychiatric social work. Prerequisites, 200, 202, 231, 232, and 218, or equivalents. Three credits; spring, summer. ———.

205. *Field Work III.* Advanced field work practice in a family welfare or children's case working agency; 16 or 20 hours a week. Prerequisites, 200, 201, 202, 203, and 218 or equivalents. Course 204 or 208 should be taken concurrently. Four or five credits, spring; three or four credits, summer. Crounse, Dorman, Braun, ———.

208. *Child Welfare Case Work.* Application of case work principles to children who are without normal parental care. Prerequisites, 200, 202, and 218, or equivalents. Three credits; spring. Crounse.

209. *Field Work IV.* Specialized work in a children's case working agency; 16 or 20 hours a week. Prerequisites, 200, 201, 202, 203, and 218, or equivalents. Course 204 or 208 should be taken concurrently. Four or five credits, spring; three or four credits, summer. Crounse.

210. *Medical Social Aspects of Case Work.* Medical social aspects of relief and case work with emphasis upon interrelationship of medical and social factors; use of medical resources. Prerequisites, 200, 202, and 228, or equivalents. Two credits; winter. Dorman.

211. *Field Work V.* Specialized work with a medical agency, a children's agency, a family welfare agency, or in a rural County Welfare Department. Prerequisites, 200, 201, 202, 203, 204, and 205, or equivalent, autumn, winter, spring, summer. Hours of field work and credits to be arranged. Crounse, ———.

218. *Problems of Child Welfare.* A discussion of provisions for the health, education, recreation and protection of children. Methods of caring for the neglected, dependent, delinquent, and handicapped child. The care of the child in his own home, in an institution, and in a foster home. Three credits; winter. Crounse.

228. *Medical Information for Social Workers.* Lectures presenting elementary concepts of health, medicine, and the diseases which most frequently incapacitate individuals of various age groups; the significance of symptoms and effects of disease upon social treatment. Prerequisite, 200 or equivalent. Three credits; autumn. Dorman and members of King County Medical Society.

231. *Psychiatric Information for Social Workers I.* Factors affecting the growth and development of personality from infancy to old age. The interrelationships of the physical, emotional, intellectual, and environmental factors in human behavior and some of the social psychiatric principles involved. Prerequisite, ten credits in sociology and psychology. Two credits; autumn. Hoedemaker.

232. *Psychiatric Information for Social Workers II.* Causes, diagnosis, and treatment of the mental and nervous disorders and deficiencies with emphasis upon the purposiveness of behavior and the interaction of organic, emotional, and environmental factors. Prerequisite, 231, or equivalent. Two credits; winter. Hoedemaker.

243. *Problems of Public Assistance.* Discussion of such problems as types of administrative set-up, relief standards, work relief; relationship to permanent programs of public welfare, to private agencies, to sources of support. Three credits, autumn; two and one-half credits, summer. Witte.

245. *Public Welfare Administration.* Administrative principles and problems in development of public social services, with special reference to state and federal jurisdictions. Three credits; winter. Witte.

254. *Community Organization.* A study of the community movement with emphasis upon the organizations of community forces in the interests of social welfare. Three credits, spring; two and one-half credits, summer. Witte, Dunham.

256. *Administration of Social Agencies.* Problems of administration as they relate to executive, staff and board; policy making; budgeting; public relations; committee management. Three credits, spring; two and one-half credits, summer. Hall, Dunham.

260. *Introduction to Social Group Work.* The principles and procedures in group work as a basic approach and methods in social work, and the application of these methods to various types of groups with which the social worker has contact. Three credits; spring. Spence.

270. *Research in Public Welfare.* A course for students competent to carry on research dealing with special problems in public welfare administration. Prerequisite, permission. Hours and credits to be arranged; autumn, winter, spring, summer. Witte, Crounse.

273, 274, 275. *Seminar.* Open to graduate students capable of conducting independent investigations. Prerequisite, permission. Hours and credits to be arranged; autumn, winter, spring. Staff.

276. *Historical Backgrounds of Social Work.* Philanthropy and social reform from the 16th century, with special attention to the 19th century movements and their influence upon present methods, purposes and tendencies. Three credits; autumn. Witte.

281, *282, *283. *Community Research.* Original investigation of special community problems related to social work. Prerequisite, permission. Hours and credits to be arranged; autumn. Steiner.

For *The Field of Social Work,* see Sociology 128.

SOCIOLOGY

Physics Hall

Professors Steiner, Hayner, Woolston; Associate Professor Schmid; Instructors Cohen, Guthrie, LaViolette; Associate O'Brien

Sociology treats of the life of human groups. Its subject matter is closely related to that presented by the other social studies. Students should read the department leaflet and consult staff advisers before selecting courses.

Sociology 1 or its equivalent is required of those taking advanced work. Soc. 150, General Sociology, may be substituted by advanced students. The courses 31, 55, and 66 are fundamental for advanced work and these courses or their equivalents should be taken by major students before electing special lines.

1. *Survey of Sociology.* Basic principles for understanding social relationships. (Juniors and seniors may substitute 150, *General Sociology.*) Five credits; autumn, winter, spring. O'Brien and Staff.

2. *Social Trends.* Sociological analysis of current events and social changes. Prerequisites, Soc. 1 and sophomore standing. Five credits; autumn, spring. Cohen.

*Not offered in 1939-1940.

31. *Social Statistics.* Methods and sources for quantitative investigation, as applied to sociology and related fields. Prerequisite, Soc. 1. Five credits; autumn, winter, spring. Cohen.

55. *Human Ecology.* Factors and forces which determine the distribution of people and institutions. Prerequisite, Soc. 1. Five credits; autumn, winter. Steiner.

66. *Group Behavior.* Analysis of conditioning factors and collective response in typical social groups—crowds, assemblies, parties, sects, etc. Prerequisites, five credits in sociology and five credits in psychology. Upper division credit with consent of instructor. Five credits; winter, spring. LaViolette.

*70. *Family Standards.*

*90. *Social Change.*

112. *The Family.* The changing home; family and marriage customs; family interaction and organization; analysis and treatment of domestic discord. Prerequisite, Soc. 1. Five credits; autumn, winter, spring. Hayner, LaViolette.

*124. *Play and Leisure Time.*

128. *Field of Social Work.* Historical background and development. Present scope, aims and methods. Typical problems and agencies; field trips. Prerequisite, Soc. 1. Three credits; autumn, spring. Crounse.

132. *Methods of Social Research.* Theory and practice of conducting investigation of communities, institutions, and social conditions. Field and laboratory work. Prerequisite, Soc. 31 or approved equivalent. Five credits; spring. Schmid.

134. *Advanced Social Statistics.* The application of statistical methods to the analysis of sociological data. Prerequisite, Soc. 31. Five credits; winter. Cohen.

135. *Graphic Methods in Sociology.* The theory and practice of constructing various types of maps and graphs used in sociological research and exhibits. Prerequisite, Soc. 31, or approved equivalent. Three credits; autumn. Schmid.

140. *Population Problems.* The major quantitative and qualitative problems of population in our contemporary society. Prerequisite, five credits in sociology or five credits in economics. Three credits; autumn. Schmid.

141. *Human Migration.* Human migrations, the factors determining them and the problems arising therefrom. Prerequisite, five credits in sociology or five credits in economics. Three credits; winter. Steiner.

142. *Race Relations.* General survey of race problems and the conditions associated therewith. Special attention given to race contacts on the Pacific Rim. Prerequisite, five credits in sociology or five credits in economics. Three credits; spring. Steiner.

150. *General Sociology.* Major concepts of sociology and the scientific point of view in dealing with social phenomena. Prerequisites, five credits in psychology and five credits in social science. Five credits; autumn. Guthrie.

152. *Social Control.* Analysis of the technique and process by which changes in individual and collective actions are effected. Prerequisite, Soc. 1. Five credits; spring. Guthrie.

*Not offered in 1939-1940.

153. *Problems of Poverty.* Historical trends; standards by which poverty is measured; attitudes and social currents which it engenders; and the responses of the community to the problems of economic insufficiency. Prerequisite, Soc. 1. Three credits; autumn. Cohen.

155. *Human Ecology.* Same as 55, but with additional work and readings. Prerequisites, Soc. 1 and junior standing. Five credits; autumn, winter. Steiner.

156. *Criminology.* Individual and social factors in delinquency; history and methods of criminal justice. Field trips to local penal institutions. Prerequisite, Soc. 1. Five credits; autumn, winter. Hayner.

157. *Social Disorganization.* Introduction to the scientific study of contemporary social problems: crime, mental diseases, unemployment, etc. Prerequisite, ten credits of sociology or approved equivalent. Five credits; winter. Schmid.

*158. *Social Factors in Personality.*

159. *Juvenile Delinquency.* Family and community backgrounds; institutional treatment; juvenile court and probation; programs for prevention. Prerequisite, Soc. 1 and Soc. 156. Five credits; spring. Hayner.

164. *Social Education.* Purpose, content and method of courses intended to promote good citizenship. Recommended for teachers of social science subjects. Prerequisite, fifteen credits in social science. Three credits; spring. Woolston.

165. *The City.* Organization and activities of urban groups. A comparative and analytic study. Prerequisite, Soc. 1. Five credits; autumn. Woolston.

166. *Social Factors in Marriage.* A study of marital problems and their adjustment. Prerequisite, Soc. 1 and Soc. 112. Five credits; winter, spring. Hayner.

168. *National Traits.* Traditional differences between peoples. Historic backgrounds and prejudice. Problems of assimilation and amalgamation in America. Prerequisites, five credits in psychology and five credits in sociology. Five credits; winter. Woolston.

169. *Western Society.* Description, comparison, analysis, and evaluation of institutional and cultural patterns prevalent in Western Europe, America, and their dependencies. Prerequisite, 15 hours social science. Five credits; spring. Woolston.

170. *Contemporary Social Theory.* Survey and critical analysis of recent sociological theory. Prerequisite, ten credits of sociology or equivalent. Five credits; winter. Guthrie.

190. *Social Attitudes.* How persons develop and manifest dispositions to act in certain ways toward their fellows. Prerequisites, five hours psychology and five hours sociology. Upper division students may substitute for Sociology 66 with consent of instructor. Three credits; autumn. Woolston.

194. *Public Opinion.* Character and operation of beliefs formed by general discussion. Problems of propaganda, criticism and education. Advanced students only. Prerequisites, five credits psychology and 15 credits social science. Three credits; winter. Woolston.

(Attention is called to Psychology 117, *Superstition and Belief,* and Journalism 201, *Propaganda,* which articulate with and complete the work of this course.)

*Not offered in 1939-1940.

COURSES FOR GRADUATES ONLY

202. *Schools of Sociological Theory.* Critical analysis of the main approaches to sociological theory from its beginnings. Prerequisites, 25 credits of social science. Two credits; winter. Guthrie.

203, 204, 205. *Social Reform.* Critical survey of programs of amelioration. Prerequisite, 25 credits of social science. Two credits; autumn, winter, spring. Woolston.

210, 211, 212. *Departmental Seminar.* Open to graduate students completing independent investigations and to instructors in the department. Two credits; autumn, winter, spring. Staff.

220. *Population Redistribution.* A study of recent trends toward shifts in population designed to bring about a more effective utilization of human and material resources. Prerequisite, 25 credits of social science. Two credits; autumn. Steiner.

221. *Population Problems of Japan.* The pressure of population upon resources and the policies that have been devised to alleviate this situation. Prerequisite, 25 credits of social science. Two credits; winter. Steiner.

222. *Oriental Migration.* Population movements in Eastern Asia with special emphasis upon Oriental migration to North and South America. Prerequisite, 25 credits of social science. Two credits; spring. Steiner.

230, 231. *Field Studies in Criminology.* Research projects in criminology. Prerequisite, Soc. 156 or approved equivalent. Three credits; autumn, winter. Hayner.

240. *Research Topics in Population.* Special individual and group research projects in the fields of population and vital statistics. Prerequisite, Soc. 140, or approved equivalent. Three credits; winter. Schmid.

*247, 248, 249. *Social Criticism.*

266. *Marriage and Family Problems.* Courtship, marriage and family problems in America and the Orient. Prerequisite, Soc. 112 or approved equivalent. Three credits; spring. Hayner.

281, 282, 283. *Reading in Selected Fields.* Intensive reading in any of the major fields of sociology. Open only to qualified graduate students by consent of instructor. Two credits; autumn, winter, spring. Staff.

ZOOLOGY AND PHYSIOLOGY

Professors Kincaid, Guberlet, Smith; Associate Professors Hatch, Svihla; Assistant Professor Martin; Instructor Goodsell; Associate H. R. Smith

Zoology

1. *Animal Biology.* A survey of the more general aspects of animal life. Five credits; autumn, winter. Kincaid, Hatch and Assistants.

2. *General Zoology.* A survey of the animal kingdom, stressing structure, classification and economic relations. Prerequisite, Zool. 1 or equivalent. Five credits; winter, spring. Kincaid, Hatch and Assistants.

3-4. *Pre-Medical Zoology.* For students entering a medical course. Five credits a quarter; autumn, winter. Guberlet.

*Not offered in 1939-1940.

5. *General Embryology.* Comparative developmental history of animals, with emphasis on vertebrate forms. Prerequisite, Zool. 1, 2 or 3-4. Five credits; spring. Guberlet.

8. *Survey of Zoology.* Elementary facts and principles basic to the field of zoological science. Students who expect to continue with zoology should begin with Zool. 1 or 3. Five credits; spring. Svihla.

16. *Evolution.* Lectures on the more important biological problems related to the general theory of evolution. Two credits; autumn. Kincaid.

17. *Eugenics.* Principles of evolution in their relation to human welfare. Two credits; winter, spring. Kincaid.

101. *Cytology.* The structure and activities of the animal cell with special reference to problems of development, sex-determination, and heredity. Prerequisite, Zool. 1, 2 or 3-4. Five credits; winter. Svihla.

*102. *Experimental Zoology.*

106. *Plankton.* Classification, adaptions and inter-relationships of the microscopic fauna of the sea. Field work in Puget Sound. Prerequisite, Zool. 1, 2 or 3-4. Five credits; autumn. Kincaid.

107. *Parasitology.* Animal parasites. Prerequisite, Zool. 1, 2 or 3-4. Five credits; spring. Guberlet.

108. *Limnology.* Classification and inter-relationship of organisms found in lakes and streams. Field work in neighboring fresh-water bodies. Prerequisite, Zool. 1, 2 or 3-4. Five credits; spring. Kincaid.

111. *Entomology.* The structure, classification and economic relations of insects. Prerequisite, Zool. 1, 2 or 3-4 or equivalent. Five credits; spring. Hatch.

121. *Microscopic Technique.* Methods of imbedding, sectioning and staining animal tissues. Prerequisite, Zool. 1, 2 or 3-4 or its equivalent. Upper division only. Three credits; winter. Guberlet.

125, 126. *Invertebrate Zoology.* The structure classification and ecology of invertebrate animals. Prerequisite, Zool. 1, 2 or 3-4. Five credits a quarter; autumn, winter. Hatch.

127, 128. *Comparative Anatomy.* Comparative morphology of the vertebrate animals. Prerequisite, Zool. 1, 2 or 3-4. Five credits a quarter; autumn, winter. Svihla.

129, 130. *Vertebrate Zoology.* Taxonomy, morphology, and ecology of vertebrates. Prerequisite, Zool. 1, 2 or 3-4. Five credits; autumn, spring, Svihla.

131. *History of Zoology.* The history of zoology during ancient, medieval and modern times. Prerequisite, 20 credits of zoology. Two credits; autumn. Hatch.

135, 136, 137. *Museum Technique.* Methods of preparing skins of birds and mammals, and other specimens for museum use. Prerequisite, permission of instructor. Three credits; autumn, winter, spring. Flahaut, staff.

155, 156, 157. *Elementary Problems.* Students will be assigned minor problems under direction of an instructor. Prerequisite, 20 credits in zoology. Three credits; autumn, winter, spring. Staff.

Teachers' Course in Zoology. See Education 75Z.

*Not offered in 1939-1940.

COURSES FOR GRADUATES ONLY

201, 202, 203. *Research.* Students capable of carrying on independent work will be assigned problems under direction of an instructor. Prerequisite, 25 credits in zoology. Credits to be arranged. Staff.

205, 206, 207. *Advanced Problems.* Designed especially for graduate students working for doctor's degree. Hours and credits to be arranged. Staff.

210, 211, 212. *Seminar.* Reports and discussions of current zoological literature. The history of zoology. One credit; any quarter. Staff.

213, 214, 215. *Advanced Invertebrate Embryology.* Development and life history of invertebrate animals, particularly of marine forms; life history of parasites of marine fishes. Prerequisites, Zool. 5, 106 and 126. Three credits; autumn, winter, spring. Guberlet.

Physiology

6. *Elementary Physiology.* Human structure and function, designed to meet the needs of students in pharmacy. Five credits; spring. Goodsell.

7. *Elementary Physiology.* Structure and functions of the human body, with special emphasis on metabolism, and the nervous and vascular systems. Five credits; autumn, winter, spring. Smith, Goodsell.

11. *Survey of Physiology.* An outline study of the human mechanism and its functions, without laboratory. Four lectures and one quiz. Five credits; winter, spring. Smith.

50. *Physiology.* Required of students majoring in physical education. Six credits; winter. Martin.

53, 54. *Intermediate Physiology.* Adapted for students expecting to teach the subject in high school. Required of nursing majors; recommended for students in dietetics and sanitary science. Five credits; autumn, winter, spring. Goodsell.

115. *General Physiology.* Qualitative and quantitative study of the fundamental principles of physiology. Prerequisite, Chem. 2 or 22. Five credits a quarter; autumn. Martin.

151, 152, 153. *Advanced Physiology.* Arranged for pre-medical students and advanced students who wish to study experimental methods. Prerequisites, Zool. 2 or 5; Chem. 2 or 22. Five credits a quarter; autumn, winter, spring. Martin.

155, 156, 157. *Elementary Problems.* Students will be assigned minor problems under direction of an instructor in the department. Prerequisite, 20 credits in physiology. Three credits; autumn winter, spring. Staff.

163. *Physiology of Metabolism.* Advanced studies in digestion, absorption and metabolism. Prerequisites, 10 hours physiology, and Chem. 2 or 22. Three or five credits; spring. Martin.

173. *Physiology of Endocrine Glands.* A study of the functions and interrelationships of the endocrine organs. Prerequisites, ten credits in physiology. Three credits; autumn. Goodsell.

COURSES FOR GRADUATES ONLY

201, 202, 203. *Research.* Students capable of carrying on independent work may be assigned problems under the direction of an instructor. Prerequisite, 20 credits in physiology. Credits to be arranged. Staff.

210, 211, 212. *Seminar.* Reports and discussions of current physiological literature. One credit; any quarter. Staff.

SUMMER QUARTER

(See Summer Quarter bulletin for detailed information.)

Henry A. Burd, Ph.D.....*Director*

History. The first summer session of the University of Washington was held in June and July of 1904, with a total attendance of 114 and a faculty of 25. Since then the summer work has grown with almost uninterrupted steadiness.

The University of Washington year is organized in four quarters. The Summer Quarter is an integral part of the University year and its courses are co-ordinated with those of the other quarters. It is divided into two terms of equal length. Students may enroll for either term separately or for the entire quarter.

Resources. The entire physical resources of the University are available to summer students. Recitation halls, libraries, laboratories, the museum, the art gallery, the health service, and the commons are in regular use.

Special Advantages. Because of the season of the year, the extra-curricular activities of the regular academic year are largely discontinued, and because of the large number of teachers and visitors in attendance, special advantages in great variety are available to summer quarter students.

These include opportunities for industrial, educational, sociological, and historical study provided by the city of Seattle and its environs; a climate delightfully adapted to habits of study; world renowned scenic attractions and recreational opportunities at their best; organized trips to places of special interest; pageants, dramatic attractions, and concerts featuring famous artists; and a series of special lectures and entertainments from Monday to Thursday of each week.

Entrance Requirements. Entrance requirements for the summer quarter are the same as for any other quarter of the University year. As far as possible, all credentials for prospective students and applications for admission should be in the hands of the Registrar before the opening of the quarter.

Length of Session. The Summer Quarter covers a period of nine weeks. Class sessions are of 60 minutes' duration, so that the full session is equal to a regular quarter. The shortening of the calendar period provides leeway before and after the Summer Quarter for teachers and those at a distance to reach Seattle and return home without serious interference with their regular occupations.

Registration. Students may register for the first term up to noon, Saturday, June 16, and for the second term up to Wednesday, July 18, 4:30 p.m. Students living outside Seattle may register by mail. Write for application form.

Credits. Students desiring university credit will be required to pass examinations during the closing week of each term.

Amount of Work Registered For. The regular load is seven and one-half credits each term or fifteen credits for the entire quarter.

Fees. For statement of summer quarter fees, see pages 62-64.

Graduate School. The University lays special emphasis on graduate work during the summer quarter. More than a third of the students are enrolled in the Graduate School. Attendance during three summer quarters will satisfy the residence requirement for the master's degree. Candidates for the doctorate are not encouraged to register in courses during the summer quarter, beyond the

work of the first year. They may, however, proceed with work on their theses. Students taking graduate courses are limited to a load of twelve and one-half hours for the summer.

College of Arts and Sciences. Summer quarter instruction is provided in all the liberal arts and science departments. Beginning or fundamental courses are repeated each summer. Advanced and graduate courses are changed from summer to summer so that a variety is available to those attending year after year.

In comparison with the other quarters of the year, the summer session is a very desirable time for work in the science departments. The classes are usually not so large, the laboratories are not so crowded, and the opportunities for field trips about the campus and into the neighboring region are unsurpassed.

Education. The curriculum of the College of Education is expanded and its faculty augmented to meet the needs of the increasing numbers of teachers who attend. Those who plan to obtain a degree or a normal diploma therefore find greatly enriched opportunities in the summer quarter.

Economics and Business. An interesting curriculum is offered in the fields of accounting, commercial banking and credit administration, commercial teaching, economics, foreign trade, investment banking, labor, management, marketing, merchandising, advertising, public utilities, real estate, and transportation.

Law School. Summer work in law enables students to hasten the completion of their training and their entry into practice. In addition it offers advantages to school or college teachers intending to practice law who desire to complete part of their preparation for the bar before leaving their positions to enter a law school, to students in other law schools who wish to do extra work for credit in their own schools, and to practitioners who desire systematically to pursue particular subjects.

Journalism. Courses are planned primarily for teachers and for students of other schools and colleges, as well as for journalism majors.

College of Engineering. Courses for teachers of industrial arts are offered in engineering shop. General engineering courses are being expanded as the demand grows.

Librarianship. Courses offered are for the express purpose of aiding teacher-librarians to meet the standards set by the State Board of Education in their field of instruction.

Information. For bulletin and other information address Director of the Summer Quarter, 110 Education Hall.

UNIVERSITY OF WASHINGTON OCEANOGRAPHIC LABORATORIES

(See Oceanographic bulletin for detailed information.)

SEATTLE AND FRIDAY HARBOR

The Staff

Thomas G. Thompson, Ph.D. ..... *Director; Professor of Chemistry*
Lyman D. Phifer, Ph.D. ..... *Assistant Director; Assistant Professor of Oceanography*
John E. Guberlet, Ph.D. ..... *Professor of Zoology*
Trevor Kincaid, M.A. ..... *Professor of Zoology*
Bernard S. Henry, Ph.D. ..... *Associate Professor of Bacteriology*
Earl R. Norris, Ph.D. ..... *Associate Professor of Chemistry*
George P. Rigg, Ph.D. ..... *Professor of Botany*
Rex J. Robinson, Ph.D. ..... *Associate Professor of Chemistry*
Clinton L. Utterback, Ph.D. ..... *Professor of Physics*
Phil E. Church, Ph.D. ..... *Assistant Professor of Geography and Meteorology*
Forrest Fuller ..... *Curator*
Mary Bardue ..... *Secretary*
Mary Grier, B.S. ..... *Librarian*
Berniece Warner ..... *Dietitian*

Scope of the Work. The University of Washington Oceanographic Laboratories were created by action of the Board of Regents on March 29, 1930. The purpose of the organization is to correlate, and co-ordinate the research dealing with various problems of the sea, which previously were conducted independently by the several departments of the College of Science.

The main laboratories are situated on the shores of Lake Union, from which ready access to the sea is obtained through the Lake Washington canal. The laboratories are equipped for work in marine bacteriology, botany and plant physiology, chemistry, meteorology, physics, and zoology. A system of circulating sea water, maintained at a temperature averaging 10° C., is installed in the building.

A 75-foot boat, the *Catalyst*, designed and equipped for carrying out certain scientific investigations while at sea, is maintained and operated by the Laboratories.

The Oceanographic Laboratories also include the buildings and equipment located on a 484-acre tract with two miles of shore line near Friday Harbor. Problems receiving special attention are:

Bacteriology. Physiology of marine bacteriology.

Biochemistry. Marine biochemistry.

Botany. Plant physiology and ecology, phytoplankton.

Chemistry. Oceanographical chemistry, micro-chemistry.

Meteorology. Oceanographic meteorology.

Physics. Physics of the sea, hydrodynamics.

Zoology. Embryology, zooplankton, invertebrate zoology, ecology, parasitology.

Equipment. The laboratories and the library are equipped for work in some of the general problems of oceanography.

Admission. Graduate standing is required for admission to the work of the laboratories, although the applications of seniors with high scholastic records and potential research ability may be considered. Application for admission and information regarding tuition and fees should be made to the director. Transcript of scholastic record should accompany application.

Class Work. Classes are chiefly in the form of seminars held by various members of the staff.

Research. Properly prepared students are assigned research problems under a member of the staff according to the major interest of the student. The laboratories are open throughout the year to visiting research workers. Communications concerning research space should be addressed to the director.

THE UNIVERSITY EXTENSION SERVICE

(See Extension bulletins for detailed information.)

Harry Edwin Smith, Ph.D.....*Director*

General Statement

The Extension Service of the University of Washington provides university instruction by mail and in extension classes and lectures for those who cannot give full time to university study.

The Extension Service presents for 1939-1940 the following activities:

1. Evening Campus Classes.
2. Off Campus Classes (Seattle, Everett, Tacoma).
3. Home Study.
4. Saturday Classes.
5. Graduate Medical Lectures.
6. Speakers Bureau.
7. Institutes and Conferences.

About 350 courses are available either through correspondence or in classes, at moderate fees. This Service is an integral part of the University, and is maintained by the State for educational services to those engaged in gainful employment who desire to pursue advanced study.

University Credit

Most of the courses at present offered by classes and by correspondence may be taken by properly qualified students for credits toward a university degree. Credit work is of course subject to all rules and regulations of the University that are applicable.

Extension Courses and University Degrees

Students who are unable to spend in residence the full number of years required for a university degree may earn as many as half of the required credits for graduation through Extension Courses, provided that not less than one year of work is done in residence at the University of Washington. In the senior year at least 35 of the 45 credits must be earned in residence. For such extension courses, the student should plan well in advance and with the advice of University authorities. The studies required in the freshman and sophomore years are more largely available for Home Study. Therefore to make a combination of Home Study and residence study, students should plan for the first rather than the latter part of the University course in Home Study.

Tuition Fees

Fees are due and payable at the time of enrollment and are refunded if the applicant is rejected or in case of failure to give the course. Enrollment constitutes an agreement on the part of the student to complete the course and he must take the responsibility for any failure on his part to do it.

Fees are based upon a uniform charge of $4 for credit hour; five 2-hour sessions are required for one credit in a class and six assignments for one credit in home study.

Extension Courses

Extension Courses of Instruction. Anthropology, art, astronomy, botany, classical languages and literature, economics and business administration, education, English language and literature, geology, Germanic language and literature,

history, home economics, mathematics, music, navigation, Oriental studies, parliamentary law, philosophy, political science, psychology, Romanic languages and literature, Scandinavian languages and literature, sociology, zoology.

The University reserves the right to change this list without notice. Faculty changes, the publication of new text books, changes in the material to be emphasized may compel the withdrawal or shifting of courses. It is planned to keep the list of courses revised and as nearly permanent as circumstances warrant.

Saturday Classes

These classes meet only once in three weeks from October to May, there being two two-hour sessions for each credit the course carries. The classes all meet on the University campus on Saturday mornings and carry residence credit.

Extension Credits for Students in Residence

Extension courses are not intended for students in University residence and can be taken by them only in exceptional cases. A student may take courses in the Extension Service while regularly enrolled in the University, provided the consent of his dean and the approval of the Registrar of the University and the director of the Extension Service are filed in writing with his application. If a student has begun a course while not in residence and desires to complete it after he begins his residence work, he should file his application in writing at the time he begins his residence work. Such application will generally be denied if it is not filed until the Extension work has been done while in residence and also if the student's previous grades would not justify his carrying the number of hours that his residence plus his extension work would total. Blanks for this purpose may be secured at the office of the Extension Service.

Graduate Medical Lectures

In co-operation with the Washington State Medical Society and the King County Medical Society, the Twenty-third Graduate Medical Lectures were held July 17-21, 1939.

Speakers Bureau

The Extension Service has published a bulletin giving the names of members of the faculty who are willing to give addresses and the subjects on which they will speak. The Extension Service will try to supply satisfactory speakers upon request.

Institutes and Conferences

During the year at irregular times there are held institutes and conferences for government employees, lawyers, educators, engineers, foundry men, and the like.

SUMMARY OF DEGREES, DIPLOMAS AND CERTIFICATES GRANTED

1938-1939

BACHELOR'S DEGREES

Bachelor of Arts (College of Arts and Sciences)	634
Bachelor of Arts (College of Education)	55
Bachelor of Arts in Economics and Business	216
Bachelor of Arts in Education	45
Bachelor of Arts in Librarianship	35
Bachelor of Arts in Music	6
Bachelor of Architecture	7
Bachelor of Laws	65
Bachelor of Science (College of Arts and Sciences)	150
Bachelor of Science (College of Education)	13
Bachelor of Science in Aeronautical Engineering	17
Bachelor of Science in Anatomy	2
Bachelor of Science in Bacteriology	3
Bachelor of Science in Botany	4
Bachelor of Science in Ceramic Engineering	2
Bachelor of Science in Chemical Engineering	22
Bachelor of Science in Chemistry	26
Bachelor of Science in Civil Engineering	23
Bachelor of Science in Commercial Engineering	10
Bachelor of Science in Education	3
Bachelor of Science in Electrical Engineering	37
Bachelor of Science in Fisheries	14
Bachelor of Science in Forestry	72
Bachelor of Science in Geology	5
Bachelor of Science in Home Economics	31
Bachelor of Science in Mathematics	4
Bachelor of Science in Mechanical Engineering	26
Bachelor of Science in Metallurgical Engineering	7
Bachelor of Science in Mining Engineering	18
Bachelor of Science in Mining Engineering and Geology	2
Bachelor of Science in Mining and Metallurgy	1
Bachelor of Science in Nursing	64
Bachelor of Science in Pharmacy	55
Bachelor of Science in Physics	1
Bachelor of Science in Zoology	5
TOTAL	1680

Advanced and Professional Degrees

Master of Arts	103
Master of Arts in Education	3
Master of Arts in Home Economics	1
Master of Business Administration	4
Master of Education	4
Master of Fine Arts	2
Master of Forestry	1
Master of Music	1
Master of Physical Education	2
Master of Science	24
Master of Science in Ceramic Engineering	1
Master of Science in Ceramics	1
Master of Science in Chemical Engineering	4
Master of Science in Civil Engineering	1
Master of Science in Forestry	1
Master of Science in Mining Engineering	1
Master of Science in Pharmacy	1
Professional Degree, Civil Engineer	2
Professional Degree, Mechanical Engineer	1
Juris Doctor	2
Doctor of Philosophy	35
Total	195

Diplomas and Certificates

Certificate in Nursing Supervision	11
Certificate in Public Health Nursing	45
University Life Diploma	130
University Three-Year Normal Diploma	267
Certificate in Government Service	2
Total	455

SUMMARY OF ENROLLMENT, 1938-1939

I. BY SCHOOLS AND COLLEGES

Schools and Colleges	Summer Quarter			Autumn Quarter	Winter Quarter	Spring Quarter	Total Individ. Acad. Yr.
	1st Term	2nd Term	Total Individ.				
	1	2	3	4	5	6	7
Arts & Sci...	1411	1202	1535	6200	6145	5620	6960
Men.....	407	360	437	2886	2901	2574	3272
Women...	1004	842	1098	3314	3244	3046	3688
Econ. & Bus.	134	133	146	1449	1416	1226	1617
Men.....	102	105	108	1241	1232	1053	1390
Women...	32	28	38	208	184	173	227
Education...	615	423	715	212	203	193	236
Men.....	149	119	171	103	106	99	115
Women...	466	304	544	109	97	94	121
Engineering	54	36	56	1260	1222	1045	1380
Men.....	54	36	56	1258	1220	1043	1378
Women...	..	..	..	2	2	2	2
Forestry....	39	39	39	333	337	269	371
Men.....	39	39	39	332	337	269	370
Women...	..	..	..	1	..	..	1
Graduate....	1520	1159	1673	904	890	854	1130
Men.....	720	607	774	499	516	476	629
Women...	800	552	899	405	374	378	501
Law.....	50	50	50	232	222	213	240
Men.....	49	49	49	217	210	199	224
Women...	1	1	1	15	12	14	16
Mines.....	7	7	7	105	110	89	119
Men.....	7	7	7	105	110	89	119
Women...	..	..	..	..	..	..	..
Pharmacy...	16	12	17	210	209	203	218
Men.....	12	10	13	169	170	165	177
Women...	4	2	4	41	39	38	41
Totals.....	3846	3061	4238	10,905	10,754	9712	12,271
Men.....	1539	1332	1654	6810	6802	5967	7674
Women...	2307	1729	2584	4095	3952	3745	4597

Note: The number of individuals in column 7 is based upon the classification of the autumn quarter to which is added the new students entering the same classification for the first time for the winter and spring quarters. In this column, students who have changed their classification during the year are counted as of their first classification.

SUMMARY OF ENROLLMENT, 1938-1939

II. BY CLASSES

Classes	Summer Quarter			Autumn Quarter	Winter Quarter	Spring Quarter	Total Individ. Acad. Yr.
	1st Term	2nd Term	Total Individ.				
	1	2	3	4	5	6	7
Freshmen...	130	104	133	3276	3004	2540	3730
Men.....	76	60	77	2041	1850	1497	2334
Women...	54	44	56	1235	1154	1043	1396
Sophomores	274	256	291	2520	2446	2114	2797
Men.....	105	99	111	1576	1566	1328	1751
Women...	169	157	180	944	880	786	1046
Juniors.....	502	420	536	2144	2203	2033	2338
Men.....	173	171	182	1378	1431	1291	1518
Women...	329	249	354	766	772	742	820
Seniors.....	759	637	800	1872	2005	1974	2018
Men.....	280	252	297	1151	1265	1220	1243
Women...	479	385	503	721	740	754	775
Graduates...	1564	1203	1717	1071	1048	996	1302
Men.....	763	650	817	654	665	607	788
Women...	801	553	900	417	383	389	514
Specials.....	21	9	21	22	48	55	86
Men.....	11	2	11	10	25	24	40
Women...	10	7	10	12	23	31	46
Transients...	596	432	740	..	..	..	..
Men.....	131	98	159	..	..	..	..
Women...	465	334	581	..	..	..	..
Totals.....	3846	3061	4238	10,905	10,754	9712	12,271
Men.....	1539	1332	1654	6810	6802	5967	7674
Women...	2307	1729	2584	4095	3952	3745	4597

Note: The number of individuals in column 7 is based upon the classification of the autumn quarter to which is added the new students entering the same classification for the first time for the winter and spring quarters. In this column, students who have changed their classification during the year are counted as of their first classification.

TOTAL STUDENTS IN RESIDENCE

During regular academic year		12,271
During summer quarter		4,238
Total		16,509
Deduct summer duplicates		892
Men	441	
Women	451	
Individuals (Academic year and summer)		15,617

EXTENSION STUDENTS

Classes		
Men	796	
Women	2,181	2,977
Home Study		
Men	675	
Women	405	1,080
Total		4,057

INDEX

INDEX—(Continued)

INDEX—(Continued)

INDEX—(Continued)

UNIVERSITY PUBLICATIONS

The University of Washington Bulletin (general series) includes the general catalogue, bulletins of the colleges and schools, University Directory (price $1), Extension Service, General Information, University News Letter, Oceanographic Laboratories, Summer Quarter, Vocational Information (price 50 cents). The general catalogue is limited to exchange purposes; the college bulletins are distributed without charge.

The following series are published at irregular intervals and are sold for stated charges. Persons wishing to obtain any of these publications are requested to correspond with the publications editor. Libraries or institutions offering material of equivalent value may secure exchanges by corresponding with the University librarian.

The University of Washington Publications contain the results of research in various departments of the University. These publications include the following series: Anthropology, Biology, Fisheries, Geology, Language and Literature, Mathematics and the Social Sciences.

The Publications of the Engineering Experiment Station include bulletins of information and investigation concerning engineering and scientific problems.

The Publications in Oceanography are based on the investigational work carried on at the Friday Harbor Laboratories, as well as on the University of Washington campus.

The Extension Service Series includes monographs of interest and value to the layman. While authentic, they are not written in highly technical terms with which the general public is unfamiliar.

The College of Education Record is published monthly during the school year. It contains articles on progressive practices in education of interest to administrators in general, as well as specialized material particularly for school men in the Pacific Northwest.

The Pacific Northwest Quarterly is a quarterly magazine devoted to the publication of articles and materials dealing with all phases of the history of the Pacific Northwest.

EVERETT I. ROLFF, *Director of Publications.*