

# CATALOGUE

OF THE

# University of Washington

FOR 1912-1913

AND


# ANNOUNCEMENTS

FOR 1913-1914

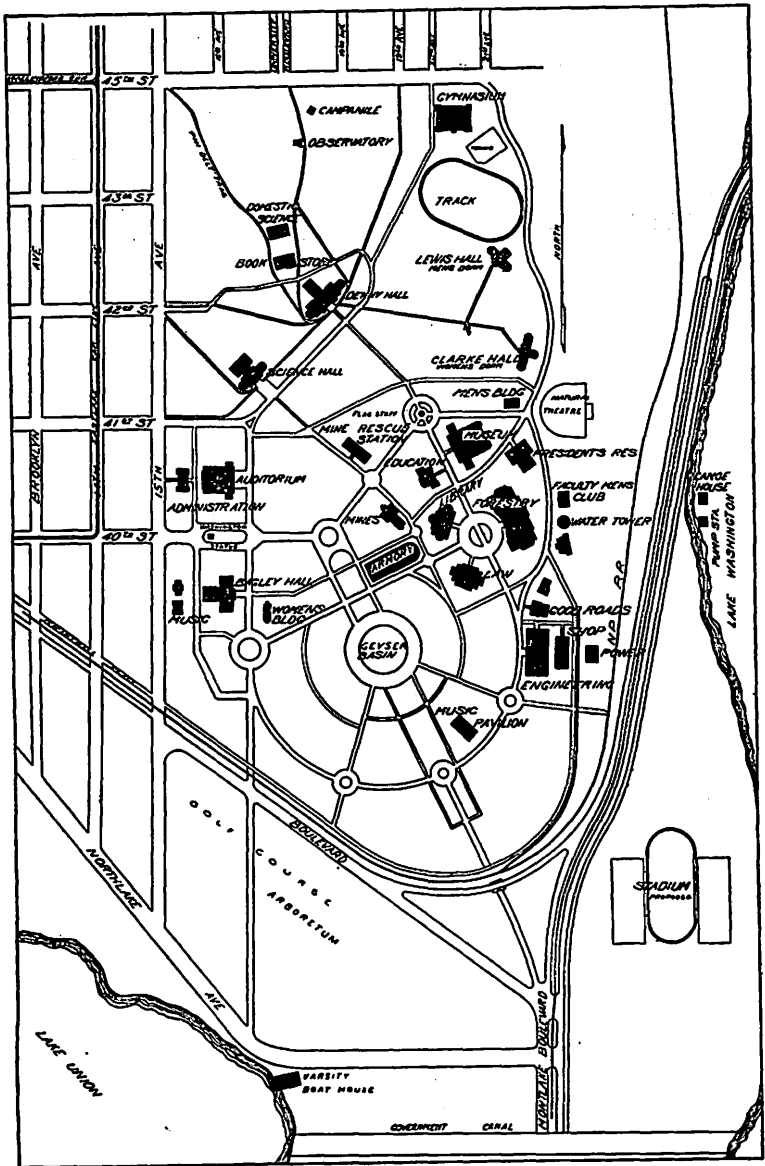


**SEATTLE  
WASHINGTON**

OLYMPIA, WASH. :

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1913



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# UNIVERSITY CALENDAR

1912-1913

Campus day.....Friday, May 2  
Junior day.....Saturday, May 10  
Memorial day (holiday).....Friday, May 30  
Semester examinations.....Monday, June 9, to Friday, June 13  
Baccalaureate Sunday.....June 15  
Class day and President's reception.....Monday, June 16  
Alumni day.....Tuesday, June 17  
Commencement.....Wednesday, June 18  
Summer session begins.....Monday, June 23  
Summer session closes.....Friday, August 1

1913-1914

## FIRST SEMESTER.

Examinations for admission....Friday and Saturday, Sept. 12-13  
Registration days.....Monday and Tuesday, September 15-16  
Recitations begin.....Wednesday, September 17  
President's annual address.....10 o'clock Friday, September 19  
Thanksgiving vacation.... { Wednesday, November 26, 6 p. m.,  
to Monday, December 1, 8 a. m.  
Christmas vacation..... { Friday, December 19, 6 p. m., to  
Monday, January 5, 8 a. m.  
Semester examinations.. { Monday, Tuesday, Wednesday, Thurs-  
day, Friday, January 26, 27, 28, 29, 30

## SECOND SEMESTER.

Registration day.....Monday, February 2  
Recitations begin.....Tuesday, February 3  
Spring vacation..... { Friday, April 3, 6 p. m. to  
Monday, April 13, 8 a. m.  
Campus day.....Friday, May 1  
Junior day.....Saturday, May 9  
Memorial day (holiday).....Saturday, May 30  
Semester examinations.....Monday, June 8, to Friday, June 12  
Baccalaureate Sunday.....June 14  
Class day and President's reception.....Monday, June 15  
Alumni day.....Tuesday, June 16  
Commencement.....10 o'clock Wednesday, June 17

## THE BOARD OF REGENTS

HON. HOWARD G. COSGROVE, President, term expires 1915..Seattle  
HON. JOHN C. HIGGINS, term expires 1914.....Seattle  
HON. CHAS. P. SPOONER, term expires 1914.....Seattle  
HON. JOHN A. REA, term expires 1916.....Tacoma  
HON. A. L. ROGERS, term expires 1916.....Waterville  
HON. F. A. HAZELTINE, term expires 1917.....South Bend  
HON. ALEX F. McEWAN, term expires 1917.....Seattle  
WILLIAM MARKHAM, Secretary of the Board.

## ADMINISTRATIVE OFFICERS

### THE UNIVERSITY.

THOMAS FRANKLIN KANE, PH. D., LL. D., President, Administration Building.  
HERBERT THOMAS CONDON, LL. B., Bursar, Administration Building.  
EDWARD NOBLE STONE, A. M., Recorder, Administration Building.  
EDWIN BICKNELL STEVENS, A. M., Secretary to the President, Administration Building.  
ISABELLA AUSTIN, A. B., Dean of Women, Denny Hall.

### THE COLLEGES AND SCHOOLS.

ARTHUR SEWALL HAGGETT, PH. D., Dean of the College of Liberal Arts, Administration Building and Denny Hall.  
ALMON HOMER FULLER, M. S., C. E., Dean of College of Engineering, Engineering Building.  
MILNOR ROBERTS, A. B., Dean of the College of Mines, Mines Building.  
CHARLES WILLIS JOHNSON, PH. C., PH. D., Dean of the College of Pharmacy, Bagley Hall.  
JOHN THOMAS CONDON, LL. M., Dean of the School of Law, Law Building.  
HUGO WINKENWERDER, M. F., Dean of the College of Forestry, Good Roads Building.  
J. ALLEN SMITH, PH. D., Dean of the Graduate School, Denny Hall.  
HENRY LANDES, A. M., Dean of the College of Science, Science Hall.  
FREDERICK ELMER BOLTON, PH. D., Dean of the School of Education, Education Building.

### THE EXTENSION DIVISION

EDWIN AUGUSTUS START, A. M., Director, Administration Building.

### THE LIBRARY

WILLIAM ELMER HENRY, A. M., Librarian, Library Building.

## FACULTY AND OTHER OFFICERS\*

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### THOMAS FRANKLIN KANE, PH. D., LL. D., President.

A. B., De Pauw University, 1888; A. M., 1891; Ph.D., Johns Hopkins University, 1895; LL. D., De Pauw University, 1911; (Principal, Public Schools, three years; Tutor in Latin, De Pauw University, 1886-88; Professor of Latin and Greek and Vice-President, Lewis College, 1888-90; Acting President, 1890-91; Scholar in Latin, Johns Hopkins University, 1893-94; Fellow in Latin, 1894-95; Professor of Latin, Olivet College, 1895-1900; Principal Preparatory Department, 1897-1900;) Professor of Latin, University of Washington, 1900-02; Acting President, 1902-03; President, 1903.

### ORSON BENNETT JOHNSON, LL. B., Professor Emeritus of Zoology.

LL. B., Union College Law School, 1869; Professor of Natural Science, University of Washington, 1882-92; Professor of Biology, *ibid.*, 1892-96; Curator of Museum, 1896; Professor Emeritus of Zoology, *ibid.*, 1910.

### HENRY LANDES, A. M., Professor of Geology and Mineralogy, Dean of the College of Science.

A. B., Indiana University, 1892; A. B., Harvard University, 1892; A. M., 1893; Assistant U. S. Geological Survey, 1891 and 1893; Assistant to State Geologist, New Jersey, 1892-94; Principal of Rockland (Me.) High School, 1894-95; Professor of Geology and Mineralogy, University of Washington, 1895-; State Geologist, 1901.

### EDMOND STEPHEN MEANY, M. L., Professor of History.

B. S., University of Washington, 1885; M. S., 1899; M. L., University of Wisconsin, 1901; Member of Washington Legislature, 1891 and 1893; Secretary of the Board of Regents, University of Washington, 1894-97; Registrar and Lecturer on Northwest History and Forestry, 1895-97; Professor of History, 1897.

### J. ALLEN SMITH, PH. D., Professor of Political and Social Science, and Dean of the Graduate School.

A. B., University of Missouri, 1886; LL. B., 1887; Ph. D., University of Michigan, 1894; Attorney-at-Law, Kansas City, 1887-92; Professor of Economics and Sociology, Marietta College, 1895-97; Professor of Political and Social Science, University of Washington, 1897.

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\* The faculty list is arranged in six groups—professors, associate professors, assistant professors, instructors, lecturers, graduate assistants. In each group the names occur in the order of academic seniority.

**CAROLINE HAVEN OBER, Professor of Spanish.**

Student, Wheaton Seminary, Norton, Mass., 1882-86; Massachusetts Normal School, Salem, 1888-89; Teacher, Public School, Palisade, Nevada, 1886-87; Instructor in Modern Languages, Bozeman Academy, Montana, 1887-89; Regent and Vice-Directress, Government Normal Schools, Argentine Republic, 1889-93; Instructor in Spanish, San Diego High School, California, 1896-97; Professor of Romanic Languages, University of Washington, 1897-1903; Professor of Spanish, 1903-.

**ALMON HOMER FULLER, M. S., C. E., Professor of Civil Engineering and Dean of the College of Engineering.**

C. E., Lafayette College, 1897; M. C. E., Cornell University, 1898; M. S., Lafayette College, 1900; Mem. Am. Soc. C. E.; Fellow in Civil Engineering, Cornell University, 1897-98; Professor of Civil Engineering, University of Washington, since 1898; absent on leave, with American Bridge Company, Philadelphia, 1900-1901; Dean of College of Engineering, 1899-.

**JOHN THOMAS CONDON, LL. M., Professor of Law, and Dean of the School of Law.**

Student, University of Washington, 1875-79; LL. B., University of Michigan, 1891; LL. M., Northwestern University, 1892; Assistant, in charge of Evidence, Northwestern University, 1891-92; Member of Seattle Bar since 1892; Professor of Law and Dean of School of Law, University of Washington, 1899-.

**HORACE G. BYERS, PH. D., Professor of Chemistry.**

A. B., and B. S., Westminster College, 1895; A. M., 1898; Ph. D., Johns Hopkins University, 1899; University of Leipzig, 1907-08; Professor of Chemistry, Tarkio College, 1895-96; Instructor in Physics, Westminster College, 1896-97; Instructor in Chemistry, Maryland University, 1898-99; Instructor in Chemistry, University of Chicago, (Summer Session) 1902-1903-1904; Professor of Chemistry, University of Washington, 1899-.

**TREVOR KINCAID, A. M., Professor of Zoology and Director of the Puget Sound Marine Station.**

B. S., University of Washington, 1899; A. M., 1901; Instructor in Biology, University of Washington, 1895-99; Assistant, American Fur Seal Commission, 1897; Acting Professor of Entomology, Oregon Agricultural College, 1897-98; Entomologist, Harriman Alaska Expedition, 1899; Austin Scholar, Harvard University, 1905-6; Assistant Professor of Biology, University of Washington, 1899-1901; Professor of Zoology, 1901-.

**FREDERICK MORGAN PADELDFORD, PH. D., Professor of English.**

A. B., Colby College, 1896; A. M., 1899; Ph. D., Yale University, 1899; Scholar in English, Yale University, 1896-98; Fellow, 1898-99; Professor of English University of Idaho, 1899-1901; Research Work at British Museum, 1905-06; Professor of English Language and Literature, University of Washington, 1901-.

**MILNOR ROBERTS, A. B., Professor of Mining Engineering and Metallurgy, and Dean of the College of Mines.**

A. B., Stanford University, 1899; Instructor in Mineralogy, Stanford University, 1899-1900; Professor of Mining Engineering and Metallurgy, and Dean of the School of Mines, University of Washington, 1901-.

**ARTHUR SEWALL HAGGETT, PH. D., Professor of Greek and Dean of the College of Liberal Arts.**

A. B., Bowdoin College, 1893; A. M., 1894; Ph. D., Johns Hopkins University, 1897; Student, University of Berlin and American School at Athens, 1897-98; Scholar in Greek, Johns Hopkins University, 1895-96; Fellow in Greek, 1896-97; Instructor in Greek, Bangor, (Maine) High School, 1898-99; Instructor in Greek and Latin, Worcester Academy, 1899-1901; Assistant Professor of Greek and Latin, University of Washington, 1901-02; Professor of Greek Language and Literature, 1902-.

**FREDERICK ARTHUR OSBORN, PH. D., Professor of Physics and Director of Physics Laboratories.**

Ph. B., University of Michigan, 1896; Ph. D., 1907; Graduate Student, University of Michigan, 1900-1902, and 1906-7; Assistant in Physics, Saginaw High School, 1890-91; Instructor in Physics, Ann Arbor High School, 1893-96; Professor of Physics, Olivet College, 1896-1902; Professor of Physics and Director of Physics Laboratories, University of Washington, 1902-.

**WILLIAM SAVERY, PH. D., Professor of Philosophy.**

A. B., Brown University, 1896; A. M., Harvard University, 1897; Ph. D., 1899; Assistant in Ethics, Harvard University, 1896-97; James Walker Fellow (traveling), Harvard University, 1897-98; Student in University of Berlin, 1897-98; Morgan Fellow, Harvard University, 1898-99; Assistant in History of Philosophy, Harvard University and Radcliffe College, 1899-1900; Professor of Psychology and Philosophy, Fairmount College, Kansas, 1900-1902; Professor of Philosophy, University of Washington, 1902-.

**DAVID THOMSON, A. B., Professor of Latin.**

A. B., University of Toronto, 1892; Classical Master in the High School, Orillia, Ontario, 1898-99; Fellow in Latin, University of Chicago, 1899-1901; Assistant in Latin, University of Chicago, 1901-02; Student, University of Munich, 1908-09; Professor of Latin, University of Washington, 1902-.

**CHARLES WILLIS JOHNSON, PH. C., PH. D., Professor of Pharmaceutical Chemistry, and Dean of the College of Pharmacy.**

Ph. C., University of Michigan, 1896; B. S., University of Michigan, 1900; Ph. D., University of Michigan, 1908; Practical Pharmacist, Detroit, Michigan, 1896-98; Assistant Instructor in Chemistry, University of Michigan, 1898-01; Instructor in Chemistry, University of Iowa, 1901-02; Assistant Professor in Chemistry, University of Washington, 1903-04; Chemist, State Dairy and Food Commission, 1909; Professor of Pharmaceutical Chemistry, and Dean of the School of Pharmacy, University of Washington, 1904-.

**PIERRE JOSEPH FREIN, PH. D., Professor of French.**

A. B., Williams College, 1892; Ph. D., Johns Hopkins University, 1899; Instructor in Modern Languages, Holbrook Military School (New York), 1892-93; Instructor in French and Greek, Oahu College (Honolulu), 1893-95; Student in Europe and Johns Hopkins University, 1895-99; Fellow in Romanic Languages, Johns Hopkins University, 1898-99; Instructor (1889-1900) and Assistant Professor (1900-03) of Romanic Languages, Leland Stanford, Jr., University; Professor of French, University of Washington, 1903-.

**THEODORE CHRISTIAN FRYE, PH. D., Professor of Botany.**

B. S., University of Illinois, 1894; Ph. D., University of Chicago, 1902; Principal of High School, Monticello, Ill., 1894-96; Superintendent of City Schools, Batavia, Ill., 1897-1900; Graduate Student, University of Chicago, 1896-97, 1900-02; Fellow in Botany, 1901-02; Professor of Biology, Morningside College, Iowa, 1902-03; Professor of Botany, University of Washington, 1903-.

**ROBERT EDOUARD MORITZ, PH. D., PH. N. D., Professor of Mathematics and Astronomy.**

B. S., Hastings College, 1892; Ph. M., University of Chicago, 1896; Ph. D., University of Nebraska, 1901; Ph. n. d., Universitaet Strassburg, 1902; Student in Goettingen and Paris, 1902; Instructor in Mathematics, Hastings College, 1893-4; Professor, 1894-8; Instructor in Mathematics, University of Nebraska, 1898-1901; Adjunct Professor, 1902-3; Assistant Professor, 1903-4; Professor of Mathematics and Astronomy, University of Washington, 1904-.

**CARL EDWARD MAGNUSSON, PH. D., E. E., Professor of Electrical Engineering.**

B. E. E., University of Minnesota, 1896; M. S., 1897; E. E., 1905; Scholar in Physics, University of Minnesota, 1895-1897; Graduate Student, University of Wisconsin, 1898-1900; Ph. D., 1900; Fellow in Physics, University of Wisconsin, 1899-1900; Professor of Physics University of New Mexico, and School of Mines, 1901-04; absent on leave, with the General Electric Co., Schenectady, N. Y., 1911-1912; Professor of Electrical Engineering, University of Washington, 1904-.

**HARVEY LANTZ, A. M., LL. B., Professor of Law.**

Ph. B., De Pauw University, 1888; A. M., 1891; LL. B., Kent Law School, 1893; Superintendent of Schools, Spencer, Ind., 1888-91; Law Clerk with Schuyler & Kremer, Chicago, 1892-5; Admitted to Bar Supreme Court of Illinois, 1893; Practiced law, member firms of Chase & Lantz, Chase, Proudft & Lantz, and Proudft & Lantz, 1896-1905; Lecturer on Medical Law, Hering Medical College, Chicago, 1898-99; Admitted to Bar, United States Supreme Court, 1905; Professor of Law, University of Washington, 1905.

**EVERETT OWEN EASTWOOD, C. E., A. M., Professor of Mechanical Engineering.**

C. E., University of Virginia, 1896; A. B., 1897; A. M., 1899; B. S., Massachusetts Institute of Technology, 1902; Fellow, Astronomy, University of Virginia, 1897-1900; Practical work Bureau of Construction and Repair, Navy Department, Washington, D. C., 1902-03; with the Fore River Ship Building Company, Quincy, Mass., 1903-04; Instructor in Mechanical Engineering, in charge of Marine Engineering and Naval Architecture, Lehigh University, 1904-05; Professor of Mechanical Engineering, University of Washington, 1905.

**FREDERICK WILLIAM MEISNEST, Ph. D., Professor of German.**

B. S., University of Wisconsin, 1893; Ph. D., 1904; Graduate of the State Normal School, Milwaukee, Wis., 1889; Principal of High Schools, Montello, Wis., 1889-91; Green Bay, Wis., 1893-94; Boscobel, Wis., 1894-96; Instructor in German, University of Wisconsin, 1897-1906; Student, University of Leipzig, Germany, 1901-02; Professor of German, University of Washington, 1906.

**DAVID CONNOLLY HALL, Sc. M., M. D., Director of Physical Training.**

Ph. B., Brown University, 1901; Sc. M., University of Chicago, 1903; M. D., Rush Medical College, University of Chicago, 1907; Acting Physical Director and Graduate Student, Wesleyan University, Connecticut, 1901-02; Physical Director and Instructor in Physiology and Pharmacology, University of Oklahoma, 1902-08; Medical School on leave of absence, 1906-07; Director of Physical Training, University of Washington, 1908.

**ELMER JAMES MCCAUSTLAND, C. E., M. C. E., Professor of Municipal Engineering.**

C. E., Cornell College, 1895; M. C. E., Cornell University, 1897; Mem. Am. Soc. C. E., Graduate Scholar in Civil Engineering Cornell University, 1896-97; Instructor in Civil Engineering, 1897-1900; Assistant Professor of Civil Engineering, 1902-07; Professor of Mining Engineering, University of Alabama, 1907-08; ten years' practice engineering work as designing, constructing and consulting engineer, two years as City Engineer of Salem, Oregon; two years as Assistant Chief Engineer of the Chicago Transfer and Clearing Co., of Chicago; member State Board of Health, 1911; Professor of Municipal Engineering, University of Washington, 1908.

**ISABELLA AUSTIN, A. B., Dean of Women.**

A. B., University of Minnesota, 1895; Graduate, State Normal School, Winona, Minnesota, 1897; Minneapolis Public Schools, 1897-99; Critic Teacher, State Normal School, Winona, Minnesota, 1899-1902, 1905-06; Graduate Scholar, Teachers' College, Columbia University, 1902-03; Critic Teacher, Speyer School, Teachers' College, Columbia University, 1903-05; Critic Teacher, Michigan State Normal College, 1907-08; Supervisor, Primary Grades, Tacoma Public Schools, 1908-09; Dean of Women, University of Washington, 1909-.

**REV. HERBERT HENRY GOWEN, D. D., F. R. G. S., M. R. S. A., Professorial Lecturer on Oriental History, Literature and Institutions.**

Member Society of Arts, London; Oriental Scholar, S. Augustine's College, Canterbury, 1883-6; First Class Oxford and Cambridge Prelim., 1886; Rector Trinity Parish Church, Seattle, 1897; D. D., Whitman College, 1912; Professorial Lecturer on Oriental Philosophy and Literature, University of Washington, 1909-.

**OLIVER HUNTINGTON RICHARDSON, PH. D., Professor of European History.**

A. B., Yale University, 1889; A. M., Ph. D., Heidelberg (Germany), 1897; Foote Scholar, Yale University, 1889; Instructor in History and Political Economy, Colorado College, 1889-90; European Travel and Study, 1890-92; Professor of History, Drury College, 1892-97; Research Work in Germany, 1895-97; Assistant Professor of History, Yale University, 1897-1909; Professor of European History, University of Washington, 1909-.

**\*WILLIAM T. PATTEN, Captain Fifth Infantry, U. S. A., Professor of Military Science and Tactics.**

Graduate of the United States Military Academy, West Point, class of 1899; Graduate of the Infantry and Cavalry School, Fort Leavenworth, Kansas, class of 1905; Professor of Military Science and Tactics, University of Washington, 1909-.

**GEORGE SEAVERNS COLE, LL. B., Professor of Law.**

LL. B., Kent Law School, Chicago, 1893; LL. B., Lake Forest University, College of Law, 1896; Student, Northwestern University, College of Law, 1891-2; Graduate Student, Lake Forest University, College of Law, 1895-6; Law Clerk with William Jay Manning, Esq., Chicago, 1892-7; Practiced Law as member of the firms of Manning & Cole, and Manning, Cole & Manning, Chamber of Commerce Building, Chicago, 1897-1908; Practiced individually, Borden Block, Chicago, 1906-9; Admitted to Bars, U. S. District and Circuit Courts, Chicago; Professor of Law, University of Washington, 1909-.



**IVAN WILBUR GOODNER, LL. B., Professor of Law.**

Admitted to Bar, Territory of Dakota, 1885; Clerk of Supreme Court of South Dakota, 1889-1896; LL. B., University of Nebraska, College of Law, 1897; City Attorney, Pierre, South Dakota, 1898-9; State's Attorney, Hughes County, S. D., 1899-1905; Admitted to Bar, United States Supreme Court, 1901; Attorney-at-Law, Seattle, Wash., 1908; Lecturer in Law, University of Washington, 1910-12; Professor of Law, 1912.

**WALTER GREENWOOD BEACH, A. M., Professor of Social Science.**

A. B., Marietta College, 1888; A. B., Harvard, 1891; A. M., Harvard, 1892; Instructor, Marietta College, 1888-90; Instructor, Oberlin University, 1892-93; Professor, Marietta College, 1893-98; Graduate Student Stanford University, 1898-99; Assistant Professor, Economics, Washington State College, 1899-1905; Professor and Head of the Department of Economic Science and History, Washington State College, 1905-10; Professor of Social Science, University of Washington, 1910.

**IRVING MACKEY GLEN, M. A., Professor of Music and Director of Fine Arts.**

Graduate, California State Normal School (San Jose), 1890; Graduate, California School of Education and Oratory, 1899; Graduate, Elwood School of Music, 1890; B. A., University of Oregon, 1894; M. A., 1897; Graduate Student, Johns Hopkins University, 1894-96; Professor of English and Latin, McMinnville College, 1897; Professor of Oratory, University of Oregon, 1897-99; Professor of English Language and Literature, 1899-1911; Dean of the School of Music, 1901-11; Professor of Music, University of Washington, 1911.

**CHARLES CHURCH MORE, M. S., C. E., Professor of Civil Engineering.**

C. E., Lafayette College, 1898; M. C. E., Cornell University, 1899; M. S., Lafayette College, 1901; Graduate Scholar in Civil Engineering, Cornell University, 1898-99; five and one-half years' practice in bridge and construction work with the following: Pencoyd Iron Works and American Bridge Co., Pencoyd, Penn.; D. H. Burnham & Co., Archts., Chicago; T. L. Condron, C. E., Chicago; U. S. Engineer Dep't., Fort Worden, Wash.; C., M. & St. P. Ry. Co., of Washington, Seattle; Acting Professor of Civil Engineering, University of Washington, 1900-01; Assistant Professor, 1904-06; Associate Professor, 1907-12; Professor, 1912.

**HENRY KRETZER BENSON, PH. D., Professor of Industrial Chemistry.**

A. B., Franklin and Marshall College, 1899; A. M., 1902; Ph. D., Columbia University, 1907; Superintendent of Schools, Kent, Washington, 1900-03; Graduate Student, Johns Hopkins University, 1903-04; Fellow in Chemistry, Columbia University, 1906-07; Assistant Professor of Chemistry, University of Washington, 1904-09; Acting Professor of Chemistry, 1907-08; Associate Professor, 1909-12; Professor of Industrial Chemistry, 1912.

**JOHN WEINZIRL, PH. D., Professor of Bacteriology.**

B. S., University of Wisconsin, 1896; M. S., 1899; Ph. D., 1906; Assistant Professor of Biology, University of New Mexico, 1897-1900; Professor of Biology and Chemistry, *ibid.*, 1900-07; Fellow in Biology in University of Wisconsin, 1905-06; Assistant Professor of Bacteriology, University of Washington, 1907-9; Associate Professor, 1909-12; Professor, 1912-.

**HUGO WINKENWERDER, M. F., Professor of Forestry and Dean of the College of Forestry.**

B. S., University of Wisconsin, 1902; M. F., Yale University, 1907; Laboratory Assistant in Botany, University of Wisconsin, 1901-2; Instructor in Botany and Physiography, High School, Sheboygan, Wisconsin, 1902-5; Graduate Student, Yale University, 1905-7; U. S. Forest Service, 1907; Assistant Professor of Forestry, Colorado College, 1908-9; with U. S. Forest Service as Collaborator, 1908-; Associate Professor of Forestry, University of Washington, 1909-12; Professor, 1912-.

**VERNON LOUIS PARRINGTON, M. A., Professor of English.**

A. B., Harvard University, 1893; M. A., College of Emporia, 1895; studied in the British Museum, on leave of absence, 1903-1904; Instructor in English and French, College of Emporia, 1893-97; Instructor in English and Modern Languages, State University of Oklahoma, 1897-98; Professor of English Literature, State University of Oklahoma, 1898-1908; Assistant Professor of English, University of Washington, 1908-12; Professor, 1912-.

**FREDERICK ELMER BOLTON, PH. D., Professor of Education and Dean of the School of Education.**

Graduate of the State Normal School, Milwaukee, Wis., 1890; B. S., University of Wisconsin, 1893; M. S., 1896; Student, University of Leipzig, Germany, 1896-97; Fellow in Psychology, Clark University, 1897-98; Ph. D., 1898; Teacher in Public Schools, 1885-88; Principal of High School, Fairchild, Wis., 1890-91; Principal of Park School, Kaukauna, Wis., 1893-95; Professor of Psychology and Pedagogy, State Normal School, Milwaukee, Wis., 1898-1900; Lecturer in Education, University of Wisconsin, Summer Session, 1899; Assistant Professor of Pedagogy, State University of Iowa, 1900-01; Professor and Head of the Department of Education, 1901-12; Director of the Summer Session, 1902-10; Secretary, 1910-12; Director of the School of Education, 1906-12; Professor of Education, University of Washington, 1912-; Director of Summer Session, 1913-; Dean of the School of Education, University of Washington, 1913-.

**EDWIN JOHN VICKNER, PH. D., Professor of the Scandinavian Languages.**

A. B., University of Minnesota, 1901; A. M., 1902; Ph. D., 1905; Student, Paris and Berlin, 1902-1903; Professor of German and Spanish, Gustavus Adolphus College, 1903-1912; Student, Leipzig, Brussels, and Scandinavia, 1906-1907; Instructor in French, Summer Session, University of Minnesota, 1908; Student, Paris, Summer 1909; Graduate Student, University of Michigan, Summer Session, 1910; Student, Christiania, Summer, 1912; Professor of Scandinavian Languages, University of Washington, 1912.

**EDWARD EUGENE McCAMMON, First Lieutenant, Third Infantry, U. S. A., Professor of Military Science and Tactics.**

Student, University of Washington, 1899-1900; Student, University of Minnesota, 1900-1901; Appointed from the Army, 1903; Professor of Military Science and Tactics, University of Washington, 1913.

**HERBERT GALEN LULL, PH. D., Associate Professor of Education.**

Graduate Michigan State Normal College, 1898; A. B., University of Michigan, 1904; M. A., University of Washington, 1911; M. Pd. (Honorary) Michigan State Normal College, 1912; Ph. D., University of California, 1912; Principal Public School, Carson City, Michigan, 1898-1902; Superintendent of City Schools, Mt. Clemens, Michigan, 1904-05; Supervisor of Training School, Washington State Normal School, Bellingham, Washington, 1905-07; Assistant Professor of Education, University of Washington, 1907-08; Associate Professor of Education, University of Washington, 1908-; on leave of absence from the University of Washington and Acting Assistant Professor of Education, University of California, 1911-12.

**HERBERT CAMPBELL STEVENS, PH. D., Associate Professor of Psychology.**

A. B., University of Michigan, 1901; Ph. D., Cornell University, 1905; Assistant Professor of Psychology, University of Washington, 1905-12; Associate Professor, 1912.

**ALLEN ROGERS BENHAM, PH. D., Associate Professor of English.**

A. B., University of Minnesota, 1909; A. M., 1901; Ph. D., Yale University, 1905; Assistant in English, University of Minnesota, 1899-1901; Principal of High School, St. James, Minn., 1901-02; University Fellow, Yale University, 1902-05; Assistant Professor of English Literature, University of Washington, 1905-12; Associate Professor, 1912.

**FRANK MARION MORRISON, A. B., Associate Professor of Mathematics.**

A. B., University of Michigan, 1892; Graduate Student, University of Chicago, 1897-99; Instructor in Mathematics in the High Schools, Elkhart, Indiana, Sioux City, Iowa, Circleville, Ohio, 1892-97; Instructor in Mathematics, Grand Prairie Seminary, Onarga, Illinois, 1899-1900; Professor of Mathematics, Illinois College, 1900-03; Professor of Mathematics, Buchtel College, Akron, Ohio, 1903-05; Assistant Professor of Mathematics, University of Washington, 1905-12; Associate Professor, 1912-.

**LOREN DOUGLAS MILLIMAN, A. B., Associate Professor of English.**

A. B., University of Michigan, 1890; Graduate Student, University of Chicago, 1892-94; Fellow in English, 1893-94; Professor of English, Searcy College, Arkansas, 1890-92; Instructor in English, Olivet College, Michigan, 1894-98; Professor of Rhetoric and English, Ohio University, Athens, Ohio, 1898-1899; Superintendent of City Schools, Cebu, P. I., 1901-03; Professor of English, Hanover College, Indiana, 1903-04; Assistant Professor of English, University of Washington, 1905-12; Associate Professor, 1912-.

**LEE EMERSON BASSETT, A. B., Associate Professor of Public Speaking and Debate.**

A. B., Leland Stanford, Jr., University, 1901; Graduate Comstock School of Expression, Los Angeles, 1898; Instructor in Public Speaking, University of Southern California, 1898-9; Student, Boston School of Expression, 1901; Student, University of Chicago, Summer, 1904; Student of Oxford, 1907-8; Instructor of English, Leland Stanford, Jr., University, 1901-5; Assistant Professor, 1905-12; Associate Professor of Public Speaking and Debate, University of Washington, 1912-.

**SAMUEL LATIMER BOOTHROYD, B. S., M. S., Associate Professor of Astronomy and Mathematics.**

B. S., Colorado Agricultural College, 1893; M. S., 1904; Graduate Assistant and Student of Mathematics and Physics, Colorado University first semester, 1893-4; Graduate Student in Mathematics and Astronomy, Chicago University, 1894-95; Professor of Mathematics and Astronomy, Mount Morris College, Mount Morris, Illinois, 1895-97; Assistant Astronomer at Lowell Observatory, 1897-99; Professor of Mathematics and Astronomy, Bellevue College, Bellevue, Nebraska, 1900-01; Associate Professor of Physics and Irrigation Engineering in charge of Department of Physics, Colorado Agricultural College, 1902-04; Instructor in Descriptive Geometry, Mechanics of Engineering, Geodesy and Astronomy, Cornell University, 1904-08; Graduate Student in Mathematics and Geodesy, Cornell University, 1904-08; Assistant Surveyor on the Alaskan Boundary Survey, Summers, 1905-1909 inclusive; Assistant Professor of Topographic and Geodetic Engineering, Cornell University, 1908-1912; Associate Professor of Astronomy and Mathematics, University of Washington, 1912-.

**BURT PEBBONS KIRKLAND, A. B., Associate Professor of Forestry.**  
A. B., Cornell University, 1905; Student, Yale University Forest School, 1905-1906; Forest Assistant United States Forest Service, 1906-1908; Forest Supervisor, United States Forest Service, 1908-1912; Associate Professor of Forestry, University of Washington, 1912-.

**\*THOMAS KAY SIDEY, PH. D., Assistant Professor of Latin and Greek.**

A. B., Pictoria University (now Toronto), 1891; Ph. D., University of Chicago, 1900; Graduate Specialist in Classic and English, Ontario College of Pedagogy, 1891; Classical Master, Iroquois High School, 1892; Teacher of English and Classics, Ottawa Collegiate Institute, 1892-94; Classical Master, Whitby Collegiate Institute, 1894-96; Graduate Student, University of Chicago, 1896; Fellow in Latin, 1897-99; Associate Professor of Latin, Cornell College, 1899-02; Professor of Latin and German, Central Normal College, Danville, Indiana, 1902-03; Assistant Professor of Latin and Greek, University of Washington, 1903-.

**VANDERVEER CUSTIS, PH. D., Assistant Professor of Economics.**

A. B., Harvard University, 1901; A. M., 1902; Ph. D., 1905; Assistant in Economics, 1902-04; holder of Austin Teaching Fellowship in Economics, 1904-05; Assistant Professor of Economics, University of Washington, 1905-.

**WILLIAM MAURICE DEHN, PH. D., Assistant Professor of Physiological Chemistry and Toxicology.**

A. B., Hope College, 1893; A. M., 1896; Ph. D., University of Illinois, 1903; Graduate School, University of Chicago, 1898-1900, and Summers of 1895-1900; Instructor, Reed City (Mich.) High School, 1893-94; Professor of Science, Wilton College, Iowa, 1894-97; Science and Athletics, Culver Military Academy, Indiana, 1897-98; Graduate Student and Assistant in Chemistry, University of Illinois, 1900-02; Instructor in Chemistry, University of Illinois, 1902-07; Assistant Professor of Physiological Chemistry and Toxicology, University of Washington, 1907-.

**OTTO PATZER, PH. D., Assistant Professor of French.**

B. L., University of Wisconsin, 1898; M. L., 1899; Ph. D., 1907; Student, University of Paris, 1899-1900; Assistant in French, University of Wisconsin, 1900-01; Instructor, 1901-07; Assistant Professor of French, University of Washington, 1907-.

**GEORGE SAMUEL WILSON, B. S., Assistant Professor of Mechanical Engineering.**

B. S., University of Nebraska, 1906; Apprentice, Union Pacific Railway Company, 1898-1902; Machinist, same company, Summers of 1903 and 1904; with Westinghouse Machine Company, Summer of 1905; with Fairbanks, Morse & Company, June to September, 1906; Instructor in Mechanical Engineering, University of Washington, 1906-1909; Assistant Professor, 1909-.

**EDWARD MCMAHON, A. M., Assistant Professor of American History.**

Ph. B., University of Washington, 1898; A. M., University of Wisconsin, 1907; Principal, Van Asselt (Wash.) Schools, 1898-1901; Graduate Student, University of California, 1901-02; Principal Union Grammar School, Seattle, 1902-03; Head of Department of History, Seattle High School, 1903-06; Graduate Student in History, 1906-08; Fellow in History, 1907-08, University of Wisconsin; Instructor in American History, University of Washington, 1907-9; Assistant Professor 1909-.

**EDWIN JAMES SAUNDERS, A. M., Assistant Professor of Geology.**

A. B., University of Toronto, 1896; A. M., Harvard University, 1907; Graduate, Specialist in Science, Ontario Normal College, 1897; Principal Public School, Midland, Ont., 1897-1898; Professor of Geology and Geography, Washington State Normal School, Ellensburg, Wash., 1898-1905 and 1907-1909; Assistant in Physiography and Meteorology, Harvard University and Radcliffe, 1905-1907; Assistant Professor of Geology, University of Washington, 1909-.

**JOSEPH KINMONT HART, PH. D., Assistant Professor of Education.**

A. B., Franklin College, 1900; University of Chicago, 1900-02; Fellow, 1908-09; Ph. D., 1909; Instructor in Mathematics, Ottumwa, Iowa, High School, 1902-04; Instructor in History, Rock Island, Ill., High School, 1904-06; Professor of Philosophy, Baker University, 1909-10; Assistant Professor of Education, University of Washington, 1910-.

**OTTILIE GERTRUDE BOETZKES, A. M., Assistant Professor of German.**

A. B., University of Washington, 1901; A. M., 1902; Student in Paris, Summer of 1903; Assistant in Modern Languages, University of Washington, 1900-01; Instructor, 1901-03; Assistant Professor of German, 1903-1908; Graduate Student, University of Chicago, 1908-09; Assistant Professor of German, University of Washington, 1910-.

**CHARLES W. HARRIS, C. E., Assistant Professor of Civil Engineering.**

B. S., in Civil Engineering, University of Washington, 1903; C. E., Cornell University, 1905; Draftsman and Inspector, U. S. Engineering Department, Fort Casey, Washington, 1903-04; Student Cornell University, 1904-05; Practical Work in Railroad and Hydraulic Engineering, in Pennsylvania, Washington, and Alaska, 1905-06; Instructor in Civil Engineering, University of Washington, 1908-10; Assistant Professor, 1910-.

**GEORGE IRVING GAVETT, B. S. (C. E.), Assistant Professor of Mathematics.**

B. S., (C. E.), University of Michigan, 1893; Graduate Student in Mathematics, Leland Stanford, Jr., University, 1905; Graduate Student in Mathematics and Civil Engineering, Cornell University, 1905-07; Teacher of Mathematics and Science, Spring Arbor Seminary, Spring Arbor, Michigan, 1897-99; Professor of Mathematics, Fairmount College, Wichita, Kansas, 1899-1904; Instructor in Applied Mathematics, Leland Stanford, Jr., University, 1904-05; Instructor in Civil Engineering, Cornell University, 1905-07; Instructor in Mathematics, University of Washington, 1907-11; Assistant Professor, 1911-.

**HANS JACOB HOFF, PH. D., Assistant Professor of German.**

A. B., Bethany College, Lindeborg, Kansas, 1901; Ph. D., University of Illinois, 1908; Graduate Student, Royal University of Berlin, Germany, 1901-03; Graduate Student, University of Kansas, 1904-05; Graduate Student, University of Missouri, 1906-07; University of Illinois, 1907-08; Instructor in German and Norwegian, Y. M. C. A. Evening Schools, Berlin, Germany, 1901-02; Principal of City Schools, Herndon, Kansas, 1905-06; Instructor in German and Latin, Columbia Normal Academy, Columbia, Missouri, 1906-07; Fellow in Germanic Philology, University of Illinois, 1907-08; Instructor in German, University of Washington, 1908-11; Assistant Professor, 1911-.

**ROBERT EVSTAFIEFF ROSE, PH. D., Assistant Professor of Chemistry.**

Ph. D., University of Leipzig, 1903; Assistant in Chemistry, University of St. Andrews, Scotland, 1903-05; Lecturer and Demonstrator in Chemistry, University College, Nottingham, England, 1905-07; Acting Professor of Chemistry, University of Washington, 1907-08; Instructor in Chemistry, University of Washington, 1908-11; Assistant Professor, 1911-.

**ROBERT MAX GARRETT, PH. D., Assistant Professor of English.**

B. A., University of Idaho, 1902; M. A., University of Washington, 1903; Ph. D., University of Munich, 1909; Student Assistant in Latin, Preparatory School, University of Idaho, 1901-02; Assistant in English, University of Washington, 1902-04; Instructor in University of Washington Summer School, 1904; Teacher of English Literature, Seattle High School, 1904-06; Student, University of Leipzig and Munich, 1906-09; Student in British Museum, Summers, 1907, 1908, 1909, 1911; Instructor in English, University of Washington, 1909-11; Assistant Professor, 1911-.

**EDGAR ALLAN LOEW, B. S., E. E., Assistant Professor of Electrical Engineering.**

Student, State Normal School, Oshkosh, Wisconsin, 1897-1901; B. S. E. E., University of Wisconsin, 1906; Instructor in Physics, High School, Two Rivers, Wisconsin, 1901-03; Student, University of Wisconsin, 1903-06; Instructor in Electrical Engineering, University of Wisconsin, 1906-09; eighteen months of practical work during school year and summers with the following: Wisconsin Telephone Co., Chicago Telephone Co., D. C. & Wm. B. Jackson, Consulting Engineers, Boston & Chicago; Electrical Engineer, U. S. Reclamation Service, Madison, Wisconsin; Instructor, University of Washington, 1909-11; Assistant Professor, 1911-.

**ELIAS TREAT CLARK, M. F., Assistant Professor of Forestry.**

Ph. B., Yale University, 1907; M. F., 1908; with U. S. Forest Service, 1908-11; Deputy Forest Supervisor, Snoqualmie National Forest, 1910-11; Superintendent Construction Department, Standard Railway and Timber Co., Spring and Summer, 1911; Assistant Professor of Forestry, University of Washington, 1911-.

**EDWARD GODFREY COX, PH. D., Assistant Professor of English.**

A. B., Wabash College, 1899; A. M., Cornell University, 1901; Ph. D., Cornell University, 1906; Student at the School of Irish Learning, Dublin, Summers of 1906, 1907, 1909; Student at the Celtic Training College, Tourmakeady, Summer of 1907; Instructor in English, Cornell University, 1906-11; Assistant Professor of English, University of Washington, 1911-.

**JOSEPH DANIELS, M. S. S., Assistant Professor of Mining Engineering and Metallurgy.**

S. B., Massachusetts Institute of Technology, 1905; M. S., Lehigh University, 1908; Engineer with Dominion Coal Co., Nova Scotia, 1905-06; Instructor in Mining Engineering, Lehigh University, 1907, Assistant Professor, 1908, Associate Professor, 1911; Assistant Professor of Mining Engineering and Metallurgy, University of Washington, 1911-.

**EDGAR SIMPSON SHERIDAN, A. B., Assistant Professor in charge of the Department of Journalism.**

A. B., De Pauw University, 1885; St. Louis Republic, 1886-87; Indianapolis Journal, 1888; Indianapolis Sentinel, 1889; Chicago Mail, 1890; Chicago Record, 1891-96; Chicago Tribune, 1897-1908; Associated Press, 1909-11; Assistant Professor of Journalism, University of Washington, 1911-.

**STEVENSON SMITH, PH. D., Assistant Professor of Orthogenics.**

A. B., University of Pennsylvania, 1904; Ph. D., 1909; Graduate Student, Heidelberg, 1905; Assistant in Psychology, Columbia University, 1905-06; Professor of Psychology, Hampden-Sidney College, 1906-11; Director Psychological Clinic, Columbia University, Summer Sessions, 1910 and 1911; Professor of Education, Summer Session, 1911; Assistant Professor of Orthogenics, University of Washington, 1911-.

**ELI VICTOR SMITH, PH. D., Assistant Professor of Zoology.**

Ph. B., Illinois Wesleyan University, 1907; A. M., University of Washington, 1909; Ph. D., Northwestern University, 1911; Teaching Fellow in Zoology, Northwestern University, 1909-11; Assistant Professor of Zoology, University of Washington, 1911-.



**GEORGE WALLACE UMPHREY, PH. D., Assistant Professor of Spanish.**

A. B., University of Toronto, 1899; A. M., Harvard, 1901; Ph. D., Harvard, 1905; Teacher, Ontario Normal College, 1899-1900; Graduate School, Harvard, 1900-01; Teacher of French and German, Whitby Collegiate Institute, 1901-03; Fellow of the French Ministry of Public Instruction, Paris, John Harvard Fellow, Study and Travel in Spain, 1903-04; Edward Austin Fellow, Harvard, 1904-05; Instructor and Assistant Professor of Romance Languages, University of Cincinnati, 1905-11; Teacher of French and Spanish in the Summer School of the University of Tennessee, 1907; Assistant Professor of Spanish, University of Washington, 1911.

**HENRY LOUIS BRAKEL, PH. D., Assistant Professor of Physics.**

B. S., Olivet College, 1902; A. M., University of Washington, 1905; Ph. D., Cornell University, 1912; Graduate Student, *ibid.*, 1910-12; Instructor in Physics and Chemistry, High School, St. Johns, Michigan, 1902-03; Assistant in Physics, University of Washington, 1903-05; Instructor in Physics, 1905-12; Assistant Professor, 1912-.

**CHARLES MUNRO STRONG, A. M., Assistant Professor of Spanish.**

A. B., University of Missouri, 1897; A. M., 1900; Fellow in German, University of Missouri, 1899-1900; Professor of German, French and Spanish, St. John's Military Academy, Delafield, Wisconsin, 1900-01; Newspaper work, United States and Cuba, 1902-06; Instructor in Spanish, University of Washington, 1906-February, 1909; Interpreter with Curtis North American Indian History Expedition of the Southwest, February, 1909-February, 1910; Instructor in Spanish, University of Washington, 1910-12; Assistant Professor, 1912-.

**WILLIAM THEODORE DARBY, A. M., Assistant Professor of English.**

A. B., Yale University, 1905; A. M., Columbia University, 1907; Instructor in Williston Seminary, Easthampton, Mass., 1905-06; Instructor in English, University of Washington, 1907-12; Assistant Professor, 1912-.

**HARVEY BRUCE DENSMORE, A. B., Assistant Professor of Greek.**

A. B., University of Oregon, 1903; Fellow in Latin, University of Oregon, 1903-04; Rhodes Scholar at Oxford University, 1904-07; A. B., Oxford University, 1907; Instructor in Greek, University of Washington, 1907-12; Assistant Professor, 1912-.

**CHARLES EDWIN WEAVER, PH. D., Assistant Professor of Geology.**

B. S., University of California, 1904; Ph. D., *ibid.*, 1907; Assistant in Petrology, University of California, 1905-06; Assistant U. S. Geological Survey in Alaska, 1906; Instructor in Geology, University of Washington, 1907-12; Assistant Professor, 1912-.

**ORVILLE PORTER COCKERILL, A. B., LL. B., Assistant Professor of Law.**

A. B., Ohio State University, 1902; LL. B., *ibid.*, 1905; Student, University of Michigan, College of Law, 1903; Instructor in American History and Chemistry, High School, Washington C. H., Ohio, 1902-05; Instructor in Chemistry, East High School, Columbus, Ohio, 1905-09; Admitted to Bar, Supreme Court of Ohio, 1905; Assistant in Moot Court, Ohio State University, College of Law, 1908-09; Attorney-at-Law, Columbus, Ohio, 1906-10; member of firms Cockerill and Ingalls, and Griffith, Bennett, Westfall and Cockerill; Instructor in Law, University of Washington, 1910-12; Assistant Professor, 1912-.

**JACOB NEIBERT BOWMAN, PH. D., Assistant Professor of European History.**

A. B., Heidelberg University (Tiffin, Ohio), 1896; Ph. D., Heidelberg, (Germany), 1900; Studied at Heidelberg, 1896-98; Leipzig, 1898; Berlin, 1898-99; Heidelberg, 1899-1900; Professor of History, State Normal School, Bellingham, Washington, 1901-06; Assistant Professor of Medieval History, University of California, 1906-12; Assistant Professor of European History, University of Washington, 1912-.

**ROE LOOMIS STEVENS, B. S., Acting Assistant Professor of Civil Engineering.**

B. S., Armour Institute of Technology, 1908; Draftsman, 1908-1909; Squad foreman, 1909-1911; Office Engineer, Engineering Department C., M. & St. P. Ry., Chicago, 1911-1912; Acting Assistant Professor of Civil Engineering, University of Washington, 1912-.

**EFFIE ISABEL RAITT, B. S., Director of the Department of Home Economics.**

B. S., Columbia University, 1912; Bachelor's Diploma in Domestic Science, Teachers' College, Columbia University, 1903; Bachelor's Diploma in Household Administration, Teachers' College, Columbia University, 1912; Bachelor's Diploma in Dietetics, Teachers' College, Columbia University, 1912; Dietitian and Steward, Massachusetts State Sanatorium for Tuberculosis, 1903-1904; Dietitian, St. Luke's Hospital, New York City, 1904-1905; House Director of Willard Hall, Northwestern University, 1905-1911; Director of the Department of Home Economics, University of Washington, 1912-.

**FRANK EDWARD JOHNSON, E. E., Instructor in Electrical Engineering.**

E. E., University of Minnesota, 1900; Teacher in Public Schools, Minnesota, 1893-96; Practical work, Fort Wayne Electrical Works Company, Appleton, Minnesota; River Falls, Wisconsin; Caldron, Nebraska, 1900-03; Superintendent for The Douglas Electric Light Co., Douglas, Wyo., 1903-05; Instructor in Electrical Engineering, University of Washington, 1905-.

**SAMUEL THOMAS BEATTIE, Instructor in Woodwork.**

Practical work as Pattern Maker with Warner and Swasey, Cleveland, Ohio; Chicago Ornamental Iron Works, Chicago, Ill., Card Electric Co., Mansfield, Ohio; Grant Machine Tool Works, Cleveland, Ohio; Humphrey Manufacturing Co., Mansfield, Ohio; C. H. Allmond & Co., Seattle, Washington; Instructor in Woodwork, University of Washington, 1906-.

**CLARENCE RAYMOND COREY, E. M., Instructor in Mining and Metallurgy.**

E. M., Montana State School of Mines, 1905; Instructor in Surveying, Montana State School of Mines, Summer School, 1905; Mining Engineering and Metallurgical Practice, Sumpter, Oregon, 1905-06; on Geological Survey in Montana, 1906; U. S. Deputy Mineral Surveyor for Montana; Instructor in Surveying and Metallurgy, Montana State School of Mines, 1906-07; Assayer, U. S. Assay Office, Seattle, Wash., Summers of 1908 and 1909; Instructor in Mining and Metallurgy, University of Washington, 1907-.

**JOEL MARCUS JOHANSON, A. B., Instructor in English.**

A. B., University of Washington, 1904; Rhodes Scholar, Oxford, England, 1904-1907; Instructor in German, University of Washington, 1907-09; Instructor in English, 1910-.

**SANDY MORROW KANE, Instructor in Metalwork.**

Seven years' apprenticeship in iron and brass molding, machine shop, and forging, Kane and Sons, Ireland; Foreman of shop four years, Kane and Sons, Ireland; Practical Machinist, Eagle Iron Works, Des Moines, Iowa, 1881-83; Foreman of machine shops, Des Moines Mfg. and Supply Co., Des Moines, Iowa, 1888-87; Master Mechanic, Golden Reward Gold Milling & Mining Co., Deadwood, S. D., 1897-1903; Moran Bros. Co., Seattle, Wash., 1903-06; Practical Machinist, U. S. Navy Yard, Bremerton, Wash., 1906-07; Instructor in Metalwork, University of Washington, 1907-.

**\*WILLIAM VERNON LOVITT, A. B., PH. M., Instructor in Mathematics.**

A. B., University of Nebraska, 1903; Principal of Schools, Arcadia, Nebraska, 1903-04; Fellow in Mathematics, University of Nebraska, 1904-06; Graduate Student, University of Chicago, 1906-07; Ph. M., University of Chicago, 1907; Instructor in Mathematics, University of Washington, 1907-.

**EARL RICE, A. B., LL. B., Instructor in Law.**

A. B., Syracuse University, 1905; LL. B., Syracuse University, Law School, 1907; Attorney-at-Law, Syracuse, N. Y., 1907-08; Attorney-at-Law, Seattle, Washington, 1908; Instructor in Law, University of Washington, 1908-.

**WALTER BELL WHITTLESEY, A. B., Instructor in French.**

A. B., University of Washington, 1907; Graduate Assistant in French and Spanish, University of Washington, 1907-09; Instructor in French, University of Washington, 1909-.

**FRANK STEVENS HALL, Assistant Curator.**

Student, University of Michigan, 1902-05; Assistant in Museum, University of Michigan, 1905-07; in charge of arrangement of Museum, University of Cincinnati, 1907; Assistant Curator, University Museum, University of Michigan, 1907-09; spring and summer 1908 spent in special study of Museum administration at the Smithsonian Institution and National Museum at Washington, Philadelphia Academy of Natural Sciences, American Museum of Natural History at New York, and at other eastern museums; Assistant Curator, University of Washington, State Museum, 1909-.

**HARRY BURTIS BENNETT, PH. B., Instructor in Economics.**

Ph. B., Cornell College, 1901; Graduate Student, Columbia University, School of Political Science, 1901-04; Student, University of Minnesota, Law School, 1904-05; Instructor in Economics, University of Washington, 1910-.

**ALLEN FULLER CARPENTER, A. M., Instructor in Mathematics.**

A. B., Hastings College, 1901; A. M., University of Nebraska 1909; Instructor in Mathematics, Hastings College, 1901-04; Professor, 1904-09; Instructor in Mathematics, Intercollegiate Summer School, University of Nebraska, 1906-07; Instructor in Mathematics, University of Nebraska, 1908-09; Instructor in Mathematics, University of Washington, 1909-.

**JESSIE BEE MERRICK, B. S., Director of Physical Training for Women.**

Ph. B., University of Wisconsin, 1904; B. S., Columbia University, 1907; Graduate Student, University of Wisconsin, 1905-06; Summer Session, 1905; Scholarship, Teachers' College, Columbia University, 1906-07; Student Assistant in Physical Education, Teachers' College Columbia University, 1906-07; Athletic Director, Girls' Camp, Summer, 1907; Assistant, Physical Training for Women, University of Wisconsin, 1907-08; Instructor, Physical Training for Women, University of Wisconsin, 1908-09; Director, Physical Training for Women, University of Washington, 1909-.

**JOHN WILLIAM MILLER, B. S. (C. E.), Instructor in Civil Engineering.**

B. S., Civil Engineering, University of Nebraska, 1905; three years' engineering experience in Railroad Work in the Middle West with the Chicago, Burlington & Quincy Railroad, and the Chicago & Northwestern Railroad, 1903-07; Testing Engineer, Cushman Motor Co., Lincoln, Nebraska, 1908; Division Engineer, Chicago, Burlington & Quincy Railroad, Jan.-Sept., 1909; Instructor in Civil Engineering, University of Washington, 1909-.

**RAYMOND BURNETTE PEASE, A. M., Instructor in English.**

B. A., University of Wisconsin, 1900; M. A., 1904; A. M., Harvard University, 1905; Graduate Student, University of Wisconsin, 1905-06; Teacher of English and Debating, High School, Eau Claire, Wisconsin, 1900-02; Principal High School, Durand, Wisconsin, 1902-04; Professor of English, University of Puget Sound, 1906-09; Instructor in Rhetoric, University of Washington, 1909-.

**GEORGE BURTON RIGG, A. M., Instructor in Botany.**

B. S., University of Iowa, 1896; B. D., 1899; A. M., University of Washington, 1909; Graduate Student, University of Chicago, summers of 1906, 1907, 1912; Teacher of Science, Woodbine Normal School, Woodbine, Iowa, 1898-1907; Teacher of Botany and Zoology, Lincoln High School, Seattle, 1907-09; Special Agent U. S. Dept. of Agriculture in Kelp Investigation, 1911-1912; Instructor in Botany, University of Washington, 1909-.

**WALTER AUSTIN GLEASON, B. S., Instructor in Civil Engineering.**

B. S., Massachusetts Institute of Technology, 1897; Track Apprentice, Illinois Central Railroad, 1897; on construction of Boston Elevated Railway, 1898-99; Draftsman and Designing Engineer, Boston Bridge Works, Milliken Brothers, Contractors, and the Robbins Conveying Belt Company, New York City, 1900-04; Assistant Engineer in charge of structural details of the B. T. Babbitt Plant, New York City, 1905-06; Superintendent of Construction, Somervell & Cote, Architects, Seattle, 1907-08; General Engineering Practice, Seattle, 1909-10; Instructor in Civil Engineering, University of Washington, 1910-.

**WILLIAM CHARLES MUEHLSTEIN, B. S. (C. E.), Instructor in Civil Engineering.**

B. S., in Civil Engineering, University of Wisconsin, 1909; Assistant in Civil Engineering, University of Wisconsin, 1909-10; Instructor in Civil Engineering Pennsylvania State College, First Semester, 1910-11; Instructor in Civil Engineering, University of Washington, February, 1911-.

**THERESA SCHMID MCMAHON, PH. D., Instructor in Political and Social Science.**

A. B., University of Washington, 1899; A. M., 1901; Ph. D., University of Wisconsin, 1909; Teacher in Public Schools of Washington, 1899-1901; Graduate Student in University of California, 1901-1902; Fellow in Sociology, 1907-1908, University of Wisconsin; Statistician, United Charities, Chicago, 1909-1910; Resident at Hull House, Chicago, summer 1909; Graduate Assistant in Political Science, University of Washington, 1911; Instructor in Political and Social Science, 1911-.

**AGNES FAY MORGAN, S. B., S. M., Instructor in Chemistry.**

S. B., University of Chicago, 1904; S. M., University of Chicago, 1905; Graduate Student and Assistant, University of Chicago, summers 1906 and 1907; Professor of Chemistry, Hardin College, Mexico, Missouri, 1905-1907; Assistant in Chemistry, University of Montana, 1907-08; Registered Pharmacist, Seattle, 1909-10; Graduate Assistant in Chemistry, University of Washington, 1910-11; Instructor, 1911.

**NEWELL WHEELER SAWYER, A. M., Instructor in English.**

Ph. B., Dickinson College, 1908; M. A., University of Pennsylvania, 1909; Graduate Assistant in English, University of Washington, 1910-11; Instructor, 1911.

**VICTOR LOVITT OAKES CHITTICK, A. M., Instructor in English.**

A. B., Acadia University, 1905; A. M., 1906; A. M., Harvard University, 1908; Graduate Student on part time, Columbia University, 1908-10; English Fellow, Columbia University, 1910-11; English Master, King's Collegiate School, Windsor, N. S., 1905-07; Teacher, Ethical Culture School, New York City, 1908-10; Instructor in English, University of Washington, 1911.

**ERNEST OTTO ECKELMAN, PH. D., Instructor in German.**

A. B., Northwestern University (Watertown, Wis.), 1897; B. L., University of Wisconsin, 1908; Ph. D., University of Heidelberg, 1906; Teacher of German and Greek, Carroll College, 1898-1900; Scholar in German Philology, University of Wisconsin, 1900-01; Fellow, 1901-02; Ottendorfer Memorial Fellow, New York University, 1902-03; Winter Semester, University of Munich; Summer Semester, University of Prague; Instructor in German, Smith College, 1903-05; Instructor in German, Dartmouth College, 1906-08; Instructor in German, University of Illinois, 1908-09; Student, University of Chicago, Summer Quarters, 1908 and 1909; Student, Cambridge, Mass., 1909-11; Instructor in German, University of Washington, 1911.

**CHARLES LOUIS HELMLINGE, B. PH., Instructor in French.**

B. Ph., German Wallace College (Berea), 1911; Teacher, Cincinnati School of Languages, 1898-1902; Teacher, Woodward High School, Cincinnati, 1902-03; Teacher, Cincinnati University School, 1903-09, 1910-11; Student, University of Madrid, 1909-10; Instructor in French, University of Washington, 1911.

**JOHN WILLIAM HOTSON, A. M., Instructor in Botany.**

A. B., McMaster University, 1901; A. M., 1902; Graduate Student, University of Chicago, 1902 (summer nad fall), Carroll University, 1903 (winter), Teachers' College, Columbia University, 1903 (spring), Clark University, 1903 (summer); Lecturer in Botany, Ontario Agricultural College, Guelph, 1903-04; Principal, Macdonald Consolidated Schools, Guelph, 1904-06; Graduate Student, University of Chicago, 1906-07; Fellow in Botany, Harvard University, 1907-08; Assistant Professor of Botany, Pomona College, 1908-10; Graduate Student, Harvard University, 1910-11; Instructor in Botany, University of Washington, 1911.

**RALPH HASWELL LUTZ, PH. D., Instructor in History.**

A. B., Leland Stanford, J., University, 1906; LL. B., University of Washington, 1907; Ph. D., University of Heidelberg, 1910; Graduate Student, University of California, Summer Semester, 1906; Student, University of Bonn and University of Heidelberg, 1907-10; Instructor in History, University of Washington, 1911-.

**LEWIS IRVING NEIKIRK, PH. D., Instructor in Mathematics.**

B. S., University of Colorado, 1898; M. S., 1901; Ph. D., University of Pennsylvania, 1903; Fellow in Mathematics, University of Pennsylvania, 1901-03; Research Fellow in Mathematics, 1903-05; Instructor in Mathematics, University of Illinois, 1905-11; Instructor in Mathematics, University of Washington, 1911-.

**CHARLES EDWARD NEWTON, E. M., Instructor in Civil Engineering.**

B. S., Michigan College of Mines, 1906; E. M., 1907; Instructor in Mining Engineering, Michigan College of Mines, 1907-08; Practical Work in Mining Engineering in Colorado, Arizona and Mexico, 1908-11; Instructor in Civil Engineering, University of Washington, 1911-.

**HJALMAR LAURITS OSTERUD, A. M., Instructor in Zoology.**

A. B., University of Washington, 1909; A. M., 1910; Graduate Student, Columbia University, 1910-11; Instructor in Zoology, University of Washington, 1911-.

**EVAN TAYLOR SAGE, PH. D., Instructor in Latin and Greek.**

A. B., University of Nebraska, 1902; A. M., University of Chicago, 1904; Ph. D., 1908; Graduate Student, University of Chicago, 1903-04; Instructor in Latin, Hillside Home School, Hillside, Wisconsin, 1904-05; Fellow in Latin, University of Chicago, 1905-06; Fellow in Latin on Leave of Absence, University of Chicago, and Member of American School of Classical Studies in Rome, Italy, 1906-07; Instructor in Latin and Greek, University of Idaho, 1907-11; Professor of Latin, Summer Quarter, University of Pittsburg, Summer, 1910; Instructor in Latin and Greek, University of Washington, 1911-.

**ATTILIO FILIPPO SBEDICO, PH. D., Instructor in French and Italian.**

Licenza Liceale, 1903; A. M., University of Pennsylvania, 1907; Ph. D., 1909; Scholar, 1905-09, and Traveling Fellow in French, University of Pennsylvania, 1906-07; Instructor in the University of Pennsylvania, Summer School, 1908-10; Instructor in Romanic Languages, University of Illinois, 1909-11; Instructor in French and Italian, University of Washington, 1911-.

**ABRAM WALTER SMITH, B. S., Instructor in Journalism.**

B. S., University of Pennsylvania, 1908; Assistant Manager, White Mountain Echo, Bethlehem, N. H., summer 1906; Reporter, Philadelphia Press, 1908-09; Reporter, Philadelphia Evening Telegraph, 1909; Reporter and Copy Reader, Philadelphia Public Ledger, 1910; Copy Reader, Seattle Post-Intelligencer, 1910; Reporter and Copy Reader, Seattle Times, 1910-11; with Izzard-Jacobsen Company, Advertising, Seattle, 1912; Instructor in Journalism, University of Washington, 1911.

**\*GEORGE ROBERT STRANDBERG, Instructor in Civil Engineering.**

B. S. (C. E.), University of Washington, 1911; Draftsman, C., M. & P. S. Ry. Terminal Engineer's Office, Summer, 1911; Instructor in Civil Engineering, University of Washington, 1911.

**ERIO THERKELSEN, B. S., Instructor in Mechanical Engineering.**

B. S., University of Washington, 1911; Instructor in Mechanical Engineering, 1911.

**HARLAN LEO TRUMBULL, PH. D., Instructor in Chemistry.**

A. B., University of Washington, 1907; A. M., *ibid.*, 1908; Ph. D., University of Chicago, 1911; Fellow in Chemistry, University of Chicago, 1908-11; Instructor in Chemistry, University of Washington, 1911.

**CHAUNCEY WERNECKE, B. S. (C. E.), Instructor in Civil Engineering.**

B. S. (C. E.), University of Washington, 1910; Engineer on construction of Copper River & Northwestern Ry., 1910-11; Instructor in Civil Engineering, University of Washington, 1911.

**JOHN WHITMORE, PH. D., Instructor in Mathematics.**

A. B., Yale University, 1886; Ph. D., 1892; Superintendent of Schools, Humboldt, Iowa, 1886-87; Instructor in Physics, University of Minnesota, 1887-89; Graduate Student and Sloane Fellow, Yale University, 1889-92; Instructor in Physics, Yale University, 1892-94; Teacher of Physics, Lynn Classical High School, 1894-98; Graduate Student, Yale University, 1898-1901; Teacher of Physics and Chemistry, Stamford (Conn.) High School, 1901-05; Graduate Student, University of Freiburg (Baden), One Semester, 1905; Professor of Physics, Howard University, 1905-06; Assistant Professor of Physics, Colby College, 1906-07; Acting Professor of Physics, Wells College, 1907-08; Instructor in Physics, Wooster University, 1908-11; Instructor in Mathematics, University of Washington, 1911.

**HENRY SLATER WILCOX, A. M., Instructor in Psychology.**

B. S., Trinity College (Hartford), 1908; A. M., Harvard University, 1911; H. E. Russell Traveling Fellow, Trinity College, 1908-10; Fellow by Courtesy and Student, Johns Hopkins University 1908-09; Student, University of Leipzig, 1909-10; Student, University of Berlin, Summer Semester, 1910; Toucey Scholar, Harvard University, 1910-11; Instructor in Psychology, University of Washington, 1911.

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\* Resigned December 1, 1912.



**SAMUEL HERBERT ANDERSON, PH. D., Instructor in Physics.**

A. B., Park College, 1902; A. M., 1908; Ph. D., University of Illinois, 1912; Graduate Student, Park College, 1902-08; University of Chicago, Summer Quarters, 1908, '09, '10; Fellow in Physics, University of Illinois, 1910-12; Instructor, Park College, 1902-08; Salt Lake Collegiate Institute, 1908-05; Professor of Physics and Chemistry, Albany College, 1905-07; Head of Science Department and Instructor in Physics, Occidental Academy, 1907-09; Assistant Professor of Physics, Occidental College, 1909-10; Instructor in Physics, University of Washington, 1912-.

**JOHN MERRILL BRIDGHAM, A. M., Instructor in Greek and Latin.**

A. B., Bowdoin College, 1904; A. M., Dartmouth College, 1905; Graduate Student, University of Chicago, 1907-1909; University of Wisconsin, 1911-1912; Master of Greek and Latin at Groton School, 1905-1907; Instructor in Greek and Latin, Bowdoin College, 1908-1909; Professor of Latin, Ripon College, 1909-1911; Assistant in Latin, University of Wisconsin, 1911-1912; Instructor in Greek and Latin, University of Washington, 1912-.

**GETRUEDE CRUDEN, B. S., Instructor in Domestic Art.**

A. B., Smith College, 1907; B. S., Columbia University, 1912; Diploma Household Arts Education, Teachers' College, Columbia University, 1912; student, Teachers' College, Columbia University, 1908-1909, 1911-1912; Instructor in Domestic Art, University of Washington, 1912-.

**HAROLD EUGENE CULVER, PH. M., Instructor in Geology.**

Graduate State Normal, Stevens Point, Wisconsin, 1908; Teacher in Public Schools, Wisconsin, 1908-1908. Ph. B., University of Wisconsin, 1910; Ph. M., 1911; Fellow in Geology, University of Chicago, 1911-1912; Geologist in Iron Exploration, Vermillion Land Co., 1910; Oliver Iron Mining Co., 1911-1912; Instructor, University of Washington, 1912-.

**LESLIE FORREST CURTIS, B. S., Instructor in Electrical Engineering.**

B. S., Tufts College, 1910; Student Engineer, Testing Department, General Electric Co., 1910-1912; Designing Engineer, Railway Motor Department, General Electric Co., Schenectady, N. Y., 1912; Instructor in Electrical Engineering, University of Washington, 1912-.

**CURT JOHN DUCASSE, PH. D., Instructor in Philosophy.**

A. B., University of Washington, 1908; A. M., 1909; Ph. D., Harvard University, 1912; Undergraduate Assistant, University of Washington, 1907-1908; Graduate Assistant, 1908-1909; Instructor in Philosophy and Psychology, 1909-1910; University Scholar, Harvard University, 1910-1911; Assistant in Philosophy and Psychology, Harvard University, 1911-1912; Instructor in Philosophy, University of Washington, 1912-.

**RUDOLPH HERBERT ERNST, A. M., Instructor in German.**

A. B., Northwestern College (Watertown, Wis.), 1904; A. M., Harvard University, 1911; Student, Theological Seminary (Wauwatosa, Wis.), 1905-1907; Student, University of Rostock, 1908-1909; Student, University of Leipzig, 1909-1910; Student, Harvard University, 1910-1912; Instructor in English and German, Northwestern College, 1904-1905, 1907-1908; Thayer Fellow (Harvard), 1911-1912; Instructor in German, University of Washington, 1912.

**THORNTON SHIRLEY GRAVES, PH. D., Instructor in English.**

A. B., Texas Christian University, 1906; Ph. B., University of Chicago, 1907; Ph. D., *ibid.*, 1912; Graduate Scholar in English, *ibid.*, 1907-1908; Assistant Professor of English, Texas Christian University, 1908-1909; Graduate Student, University of Chicago, 1909-1911; Fellow in English, *ibid.*, 1911-1912; Instructor in English, University of Washington, 1912.

**LEO JONES, A. B., Instructor in Public Speaking and Debate.**

A. B., University of Washington, 1912; Student, Columbia University Law School, 1909-1910; Instructor in English, High School, Palouse, Washington, 1910-1911; Practiced Law, Seattle, 1911-1912; Instructor in Public Speaking and Debate, University of Washington, 1912.

**DONALD KNAPP, M. S., Instructor in Forestry.**

A. B., University of Michigan, 1911; M. S., in Forestry, *ibid.*, 1912; Practical work in logging camp and sawmill, summer of 1909; With U. S. Forest Service, Winter, 1909-1910, and Summers of 1910, 1911, 1912; Assistant in Forest Botany, University of Michigan, 1912; Instructor in Forestry, University of Washington, 1912.

**THOMAS WITHERS, C. E., Instructor in English.**

Graduate of Virginia Military Institute, 1869; C. E., *ibid.*, 1870; Assistant Professor, Virginia Military Institute, 1871; Formerly Engineer in Charge of Sallsbury Railroad, Coal and Iron Mines, Pennsylvania, also of Denver, South Park & Pacific Railroad; Late Chief Assistant Engineer, Kansas Pacific Railroad; Chief of U. S. Mineral Surveys for District of Colorado; Mining Engineer at Leadville, Kokomo and Cripple Creek, Colorado, and Goldfield, Nevada.

**WALTER EDMUND SQUIRE, A. A. G. O., Assistant to the Musical Director.**

Graduate in Music, Northwestern University, 1906; Associate American Guild of Organists, 1907; Student, Victor Heinze and Waldemar Lutschg (Berlin), Alex. Gullmant and Charles M. Wider, (Paris), 1908-1911; Assistant to the Musical Director, University of Washington, 1912.

**WALTER EDWARD ROLOFF, PH. D., Instructor in German.**

A. B., Northwestern University, 1904; A. M., *ibid.*, 1905; Ph. D., University of Wisconsin, 1912; Teaching Fellow in German, Northwestern University, 1904-05; Student, University of Leipzig, 1905-06; Assistant in German, University of Wisconsin, 1906-08; Instructor in German, Northwestern University, 1908-12; Instructor in German, University of Washington, 1912-.

**PARK POWELL, A. B., Instructor in Spanish.**

A. B., and B. S. (Education), University of Missouri, 1908; Instructor, Kemper Military School, 1908-09; Student in France, Spain, Italy in Universities of Sorbonne, Geneva, Grenoble, Barcelona, 1909-10; Instructor in French, University of South Carolina, 1910-11; Instructor in the Shattuck School (Faribault, Minn.), 1911-12; Summers of 1908 and 1911 in Mexico; Instructor in Spanish, University of Washington, 1912-.

**ERIC TEMPLE BELL, PH. D., Instructor in Mathematics.**

A. B., Leleand Stanford, Jr., University, 1904; A. M., University of Washington, 1908; Ph. D., Columbia University, 1912; Graduate Assistant, University of Washington, 1907-08; Teacher of Mathematics and Sciences, Siskiyou County High School, California, 1909-11; Graduate Student, Columbia University, 1911-12; Instructor in Mathematics, 1912-.

**FLOYD THOMAS VORIS, A. M., Instructor in Physics.**

B. S., Highland Park, 1892; M. S., 1895; A. M., Columbia, 1902; Professor of Physics and Chemistry, Buena Vista College, 1898-1904; Graduate Student, Columbia, 1901-02; Instructor, Macalester College and Graduate Student, University of Minnesota, 1904-05; Professor of Physics and Geology, Whitworth College, 1906-11; Research Student, University of Washington, 1911-12; Instructor in Physics, University of Washington, 1912-.

**CHARLES CULBERTSON MAY, B. S. (C. E.), Instructor in Civil Engineering.**

B. S. (C. E.), University of Washington, 1910; Inspector of Paving, Pasadena, California, 1911; Construction Foreman, Barber Asphalt Paving Company, Owensmouth, California, 1912; Construction Foreman, Dome Lake Reservoir Co., Sheridan, Wyoming, Summers 1907-1908; Instructor in Civil Engineering, University of Washington, 1912-.

**\*EDWIN LEONARD STRANDBERG, B. S. (C. E.), Instructor in Civil Engineering.**

B. S. (C. E.), University of Washington, 1912; Draftsman, Bridge and Building Department, C. M. & P. S. Ry., 1910-11; Appraisal Work, Seattle Electric Company, Summer 1911; Draftsman, Engineering Department, C. M. & P. S. Ry., Summer, 1912; Instructor in Civil Engineering, University of Washington, 1912-.

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\* Appointed December 1, 1912.

**JACK BECHDOLT**, Instructor in Journalism.

Reporter Seattle Post-Intelligencer, 1906-1911; Assistant City Editor, *ibid.*, 1911-1912; Sunday Magazine Editor and Dramatic Critic, *ibid.*, 1912-; Contributor to Youth's Companion, Leslie's Weekly, Popular Mechanics, Technical World, Pacific Monthly, Overland Monthly, San Francisco News Letter, Sunset, etc., 1901-1913; Instructor in Journalism, University of Washington, February 1, 1913-.

**HELEN MARIE FITCH**, A. B., Assistant in Physical Training.

**MALCOLM DOUGLAS**, PH B., Assistant in History.

**FRED WASHINGTON KENNEDY**, Director of the Journalism Laboratory.

**ELMER SHERRILL**, Stock Room Keeper in Chemistry.

**BERTHA CHALLIS**, A. M., Assistant in the Museum.

#### PART TIME INSTRUCTORS—FINE ARTS.

**MORITZ ROSEN**, Teacher of Violin.

Graduate, Warsaw Conservatory, Russia.

**ADA DEIGHTON HILLING**, Teacher of Harmony.

Graduate, Trinity College of Music, London, 1883.

**GRACE BLANCHE ZIMMERMAN**, A. B., Teacher of Piano.

Graduate, Elgin College of Music, 1902; A. B., University of Washington, 1909.

**KATHERINE ELEANOR HALL**, Teacher of Vocal Music.

A. B., Drury College, 1898.

**LUCY K. COLE**, Teacher of Public School Music.

Supervisor of Music, City Schools, Seattle.

**ANNE VOLKER**, Assistant in Piano.

Oberlin, Michigan, Pupil of Walter Squire.

**AGNES BIRKMAN**, Teacher of Public School Drawing.

Teacher, City Schools, Seattle.

#### LECTURERS

1912-1913

**CHARLES EVAN FOWLER**, M. Am. Soc. C. E., Lecturer on Engineering Contracts and Specifications.

President and Chief Engineer, International Contract Co., President Seattle Park Commission, 1904.

**HARVEY L. GLENN**, B. S., Lecturer on Bullion Assaying.

Assayer, U. S. Assay Office, Seattle.

- GEORGE NELSON SALISBURY, B. S., Lecturer in Meteorology.**  
United States Weather Bureau Official, since 1883; Washington Section, United States Weather Bureau, since 1894.
- OLIVER P. M. GOSS, C. E., Lecturer in Timber Physics.**  
In charge of U. S. Forest Service Timber Testing Laboratory at University of Washington, 1907.
- ISABELLA AUSTIN, A. B., Lecturer on Education.**  
Dean of Women, University of Washington.
- GEORGE BATES HARRINGTON, B. S., Lecturer on the Economics of Mining.**  
Superintendent of Coal Mining Department, Seattle Electric Co., 1909.
- DAVID C. BOTTING, Lecturer on Mine Regulations.**  
State Coal Mine Inspector of Washington, 1905.
- ROBT. F. MCELVENNY, E. M., Lecturer on Copper Smelting and Refining.**  
Superintendent of Tacoma Smelting Company.
- MAGNUS T. CRAWFORD, E. E., Lecturer on Electric Transmission.**  
Superintendent of Transmission, Puget Sound Electric Traction, Light & Power Co.
- CHARLES M. ALDEN, B. S., A. I. A., Lecturer on Home Architecture.**  
Seattle Architect. Student, University of Minnesota, 1885-87; B. S., Massachusetts Institute of Technology, 1890; Member of the American Institute of Architects, 1906; Lecturer on Home Architecture, University of Washington, 1913.

## GRADUATE ASSISTANTS.

- \*LUNA PEARL ATHEN, A. B., (University of Washington), Graduate Assistant in Mathematics.
- CHESTER EARL GIBLIN, A. B., (University of Colorado), Graduate Assistant in Physics.
- HARRY H. HILL, A. B., (University of Wyoming), Graduate Assistant in Chemistry.
- FRANCES EDITH HINDMAN, PH C., B. S., (University of Washington), Graduate Assistant in Food and Drug Analysis.
- JOSEPHINE MARGARET HOEPPNER, M. A., (Washington State College), Graduate Assistant in German.
- JOSEPHINE JOHNSON, PH. C., B. S., (University of Washington), Graduate Assistant in Pharmacy.

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\*Withdrew February 1, 1913.

- KARBER, SEBASTIAN, A. B., (University of Washington), Graduate Assistant in Physics.
- SETH CHAPIN LANGDON, A. B., (Northwestern University), Graduate Assistant in Chemistry.
- EDWARD MATHIEU, A. B., (Harvard University), Graduate Assistant in French.
- EARL MILLIBON PLATT, PH. C., (University of Washington), Graduate Assistant in Pharmacy.
- \*ANNA M. PELTON, B. L., (University of Wisconsin), Graduate Assistant in German.
- VERA MIRIAM RICHARDS, A. B., (University of Washington), Graduate Assistant in Spanish.
- OLIVER WEESNER, B. S., (Earlham College), Graduate Assistant in Mathematics.
- THOMAS ALEXANDER WILLIAMS, A. B., (Maryville College), Graduate Assistant in Mathematics.

## UNDERGRADUATE ASSISTANTS.

- MILTON VELDEE, Bacteriology.
- SANFORD MYRON ZELLER, Botany.
- JESSIE AYRES, Botany.
- LOLA COX, Botany
- GEORGE STUART, Chemistry (stockroom).
- DAVID LEVIN, Chemistry (stockroom).
- JOHN HERRICK, Chemistry (stockroom).
- EDWARD GOLDSMITH, Chemistry.
- FRED ASHTON, Chemistry.
- IRENE HUNT DAVIS, Chemistry.
- CARL LIVINGSTON, Chemistry and Philosophy.
- HELEN DABNEY, Home Economics,
- MARIAN RADFORD, Home Economics.
- CARL GETZ, Journalism.
- LUCILE THOMPSON, Journalism.
- OLIVER P. SEARING, Mining (stockroom).
- JAS. M. McDONALD, Mining.
- A. R. SHERMAN, Metallurgy.

- LOUIS GILBERTSON, Pharmacy.  
 JAMES SIPPPELL, Physical Training.  
 DOLLY MCLEAN, Public Speaking.  
 BERTRAM K. ELLIOTT, Zoology.  
 SYDNEY E. JOHNSON, Zoology.  
 GORDON H. DICKSON, Military Science and Tactics.  
 TOM S. PATTERSON, Military Science and Tactics.  
 LUKE D. ZECH, Military Science and Tactics.

#### THE EXTENSION DIVISION.

**EDWIN AUGUSTUS START, A. M.**, Director of the University Extension Division.

A. B., Tufts College, 1884; A. M., Harvard University, 1893; Journalism, 1885-92; in charge Department of History, Tufts College, 1892-1900; Graduate Student, Harvard University, 1892-93, 1894-95; Editor Modern European History Section, New International Encyclopaedia, 1900-02; Secretary Massachusetts Forestry Association, 1900-09; Executive Secretary American Forestry Association and Editor American Forestry, 1909-11; Director of University Extension Division, University of Washington, 1912-.

**HERMAN GUSTAV ADOLPH BRAUER, Ph. D.**, Secretary of the Municipal Reference and Legislative Bureau of the Extension Division.

A. B., Colorado College, 1896; A. M., University of Wisconsin, 1898; Ph. D., University of Wisconsin, 1904; A. M. (Hon.) University of Adelaide, South Australia, 1906; Librarian, Colorado College, 1895-08; Instructor in French, University of Wisconsin, 1898-1903; Instructor in Commercial Law, University of Wisconsin, 1903-05; Secretary, Bowron Bros. & Co., Ltd., Christchurch, New Zealand, 1907-11; Bureau of Municipal and Legislative Research, University of Washington, 1912-.

**ALLETTA GILLETTE, A. M.**, Extension Instructor in English.

A. B., Smith College, 1907; A. M., University of Washington, 1911; Instructor in English, Morningside College, 1908-1910, 1911-1912; Extension Instructor in English, University of Washington, 1912-.

**ABRAM ADELBERT KESTER, A. B.**, Extension Instructor in Drawing.

A. B., Olivet College, 1891; Instructor in Secondary Schools, Chicago, 1891-1901; Graduate Student, University of Chicago, 1901-1903; Instructor, School of Education, University of Chicago, 1903-1905; Instructor in Science and Manual Arts, East High School, Des Moines, Iowa, 1908-1910; Instructor, Manual Arts, Everett, 1910-1912; Supervisor Manual Arts, Everett, 1912-; Extension Instructor in Drawing, University of Washington, 1913-.

**CHARLES ALEXANDER GUERARD, B. L.,** Extension Instructor in French.

B. L., University of France, 1876; Student in Languages and Literature at the Sorbonne, 1879; Professor of Classics, University of Paris, 1880-1905; Twenty-five years in public and private instruction; Officier d' Academie, 1900; Officier d' Instruction Publique, 1905, in America since 1908; Graduate Assistant, University of Washington, 1909-1910; Instructor, Stanford University, 1910-11; Extension Instructor, University of Washington, 1912-.

#### LIBRARY STAFF

**WILLIAM ELMER HENRY, A. M.,** Librarian.

A. B., Indiana University, 1891; A. M., 1892; Instructor in English, Indiana University, 1891-93 Graduate Student, Chicago University, 1893-95; Fellow in English, 1894-95; Professor of English, Franklin College, 1895-97; State Librarian of Indiana, 1897-1906; Librarian, University of Washington, 1906-.

**CHARLES WESLEY SMITH, A. B., B. L. S.,** Assistant Librarian, in charge of Reference.

A. B., University of Illinois, 1903; B. L. S., University of Illinois, 1905; University of Washington Library, 1905-.

**EMMA PEARL McDONNELL, A. B.,** in charge of Periodicals and Northwest History.

A. B., University of Washington, 1902; Wisconsin Summer School for Library Training, 1901 and 1902; University of Washington Library, 1901-.

**FLORENCE BAXTER CURRIE, B. L., B. L. S.,** in charge of the catalogue.

B. L., Milwaukee-Downer College, 1904; B. L. S., University of Illinois, 1906; Assistant Cataloguer, Carnegie Library of Pittsburg, 1906-08; University of Washington Library, 1908-.

**ROXANA GALLETTY JOHNSON, A. B., B. L. S.,** in charge of Circulation.

A. B., Indiana State University, 1903; B. L. S., University of Illinois Library School, 1909; Teacher of History and English, Greenwood, Indiana High School, 1903-06; Instructor in Library Science, Winona Technical Institute Library School, Indianapolis, January, 1908-March, 1909; Assistant in Reference and Cataloguing Departments, University of Illinois Library, March to December, 1909; Washington State College Library, 1910-1912; University of Washington Library, 1912-.

**MAUD OSBORNE, A. B., B. L. S.,** Library Assistant.

A. B., Northwestern University, 1909; B. L. S., University of Illinois, 1911; Assistant Reference Librarian, Seattle Public Library, 1911-12; University of Washington Library, 1912-.



## OFFICE ASSISTANTS

LILLIAN BROWN GETTY, President's Office.

MAX HIPKOE, Bursar's Office.

AIMEE WILSON, Bursar's Office.

GRACE HAMILTON, Recorder's Office.

CAROLINE TALBOT, Recorder's Office.

IDA NAOMA YEAGER, Extension Division.

EMILY DODD, Extension Division.

OLGA GRAN, Departmental Stenographer.

OLIVE BARTER, Military Clerk.

HATTIE JOHNSTONE, Mailing Clerk.

## BUILDINGS AND GROUNDS

EVERETT OWEN EASTWOOD, C. E., Consulting Engineer.

SANDY MORROW KANE, Engineer.

EVAN LEWIS, Assistant Engineer.

GEORGE LEWIS MOTTER, Head Gardener.

DAVID McDANIEL, Head Janitor.

OFFICERS OF THE UNIVERSITY OF WASHINGTON STATION  
OF THE UNITED STATES FOREST SERVICE

OLIVER PERRY MORTON Goss, C. E., Engineer in Forest Products,  
in charge.

CONRAD W. ZIMMERMAN, Engineer in Timber Tests.

HALSEY WYCKOFF, Assistant.

CORNELIUS BARRY, Laboratory Assistant.

## STATE FOOD AND DRUG WORK

CHARLES WILLIS JOHNSON, Ph. C., Ph. D., Chemist, State Dairy  
and Food Commission.

HARRY JACOB SIEGEL, Assistant, State Food and Drug Analysis.

## COMMITTEES OF THE FACULTY

The President is *ex-officio* a member of each standing committee.

ACCREDITED SCHOOLS: Dean Bolton, Dean Haggett, Professors  
Meisnest, Lull and Benham.

ADMISSION: Board of Deans (1913-14).

**APPOINTMENTS:** Dean Bolton, Professor Lull and major professor.

**ASSEMBLY:** Professors Richardson, Glen, Bassett and Benson.

**ATHLETICS:** Dean Roberts, Professor Hall, Moritz, Densmore and Dehn.

**GRADUATION:** Professors Byers, Magnusson, Lantz, Hart, and Kirkland.

**HONORS:** Professors Padelford, Byers, Savery, Meisnest, and Dr. McMahon.

**HYGIENE AND SANITATIONS.** Professors Hall, Weinzirl, McCaustland, Stevenson Smith and Miss Raitt.

**LIBRARY:** (To act with Librarian) Professor Padelford, Deans Landes and Smith, Professors Moritz and McCaustland.

**MUSEUM:** (To act with Curator) Dean Landes, Professors Meany, Kincaid and Frye.

**PETITIONS:** Professors Mcritz, Benham, More, Brakel and Dr. Trumbull.

**PRE-LAW COURSE:** Professors Savery, Beach, Cockerill, Bassett and E. Victor Smith.

**PRE-MEDICAL COURSE:** Professors Byers, Hall, Weinzirl, Stevens and Dean Johnson.

**PUBLICATIONS:** (To act with President's Office) Professors McCaustland, Milliman, Umphrey and Saunders.

**SCHEDULE:** Professors Osborn, Farrington, Wilson, Rose and Dr. Sage.

**SECTIONS:** Professor McMahon, Messrs. Carpenter, Johanson, Sage and Neikirk.

**STUDENT AFFAIRS:** Professor Thomson, Dean Austin, Professors Beach, Cockerill and Loew.

**SPECIAL STUDENTS:** (To act with Deans) Professor Morrison.

# **GENERAL INFORMATION**

## **HISTORICAL.**

The foundation for the establishment of the University of Washington was laid in 1854 when Governor Isaac Ingalls Stevens, in his message to the first legislature, recommended that Congress be memorialized to appropriate land for a university. Two townships were subsequently granted, and in January, 1861, the legislature finally located the Territorial University at Seattle.

On February 22nd (Washington's Birthday) the Reverend Daniel Bagley, John Webster, and Edmund Carr, composing the board of University Commissioners, met and organized for work. Ten acres of land were donated by Hon. Arthur A. Denny, Charles C. Terry and Edward Lander from their adjoining farms, and on May 21, 1861, the cornerstone of the main building was laid and the building completed in specified time.

On November 4th following, the University was opened for students.

## **GOVERNMENT**

Under the constitution and laws of the State of Washington, 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 entirely from the state. As yet the property belonging to the institution as an endowment yields little revenue. The income from this property will some day greatly help to support the University. The property of the University includes:

(1) The two townships of land granted by Congress in 1854. There remains of this old grant some three thousand acres.

(2) The old University site, consisting of the tract of 8.32 acres, donated in 1861 by Arthur Denny and wife; and 1.67 acres donated by C. C. Terry and wife and Edward Lander. This "ten-acre tract" is situated in the very heart of Seattle, and is rapidly enhancing in value.

(3) In addition to the above the University was further endowed by the state on March 14, 1893, by the segregation of 100,000 acres of lands.

#### BEQUESTS

In the legislative session of 1897 in the Code of Public Instruction is the following provision for University bequests:

"The Board of Regents is authorized to receive such bequests or gratuities as may be granted to said University, and to invest or expend the same according to the terms of said bequests or gratuities. The said board shall adopt proper rules to govern and protect the receipt and expenditures of the proceeds of all fees, bequests, or gratuities, and shall make full report of the same in the customary biennial report to the governor, or more frequently if required by law."

# **EQUIPMENT**

## **GROUNDS**

The grounds are ample to meet every need of the University. There are three hundred and fifty-five acres, all within the city limits of Seattle, lying between Lakes Union and Washington, with a shore line of over one mile on Lake Washington and about a quarter of a mile on Lake Union.

## **BUILDINGS**

The following is a list of the buildings now in use on the University campus: Administration Building, Auditorium, Astronomical Observatory, Bagley Hall, Denny Hall, two Dormitories (Lewis Hall for men and Clarke Hall for women), Education Building, Engineering Building, Forestry Building, Forge and Foundry Building, Good Roads Building, Gymnasium, Hydraulic Laboratory, Law Building, Library Building, Mining Building, Museum, Music Building, Power Plant, Science Hall, Mines Rescue Training Station, Armory for the Cadet Battalion, Executive residence, Faculty Club House, Student Men's Club, Women's League Building, Engineer's residence, and Electrician's residence.

## **LIBRARY**

There are now 52,003 bound volumes in the library. The library is a designated depository and possesses almost a complete set of United States government publications. The library receives regularly 405 periodicals, including standard magazines and leading technical journals, both American and foreign.

## **MUSEUM**

The nucleus of the University Museum, which is also the State Museum, was formed by the collection of the Young Naturalists' Society of Seattle, which have been augmented by accessions from the World's Fair at Chicago, the Lewis and Clarke Exposition at Portland, and the late Alaska-Yukon-Pacific Exposition at Seattle, and numerous gifts or loans from private individuals. Among the ethnological collections are the famous Emmons collections, illustrative of the life and history of the Tlingit Indians of Southeastern Alaska; the Hachman-Konig and James T. White col-

lections of the Alaskan Eskimo; the R. E. Stewart collection of stone implements from along the Columbia river; and the Partello collection of brasses, hats, carvings, and implements of warfare from the Philippine Islands. The zoological collections are numerous, containing a number of mounted specimens, among which are: The group of mountain sheep, presented by Hon. William E. Humphrey; the mounted specimens of Puget Sound and Japanese Crustacea donated by Professor O. B. Johnson; a collection of mounted Alaska fish, loaned by the United States government, together with a series of 100 mounted American fish presented by E. C. Starks; a nearly complete series of Mollusca indigenous to the Puget Sound region, and a representative series of Mollusca from all over the world, of which the P. B. Randolph collection forms a considerable part; bird collections received from Professor O. B. Johnson, L. M. Turner, H. H. Hindshaw, Dr. Clinton T. Cook, and Mr. George B. Cantwell. The botanical and forestry collections contain the A. H. Fisher collections, consisting of 125 types of Chehalis county flora; the Caroline E. Williams collection of flowers from Arctic Alaska; cases of grains and grasses on the straw, of the state and of Alaska; an exhibit of the fruits of the horticultural section of the state, a comprehensive display of timbers, together with various timber products. The geological and mining collections consist of the John R. Baker collection of minerals from various parts of the world; a representative collection of Washington and Alaska ores arranged by districts; and a collection representing the clay products and marbles of the state.

### LABORATORIES

The University of Washington has the following laboratories equipped for work in the various departments:

#### BOTANY LABORATORIES

The botanical and bacteriological laboratories are on the third floor of Science Hall. They occupy about 5,000 feet of floor space divided as follows: Three large laboratories of about 1,200 square feet each; three small laboratories, one for small classes and advanced work, one for taxonomic and field work, one for a media-room for bacteriology; one dark room; one private laboratory. The laboratories are fitted with the apparatus and conveniences usual for the work.

**CHEMISTRY LABORATORIES**

The chemistry laboratories are housed in a thoroughly modern fireproof building designed after the most approved models, combining the good features of the best chemistry buildings in the country. There are fully equipped separate laboratories devoted to general chemistry, analytical chemistry, food inspection and analysis, organic chemistry, physiological chemistry, industrial chemistry, and pharmaceutical chemistry. All laboratories are equipped with hoods with forced drafts, water, gas, distilled water, air under pressure, and where most needed, with hydrogen sulphide and steam. The industrial or chemical engineering laboratories are equipped with the fundamental types of apparatus used in manufacturing processes, such as filter press, hydraulic press, stills, grinding apparatus, heating furnaces, and vacuo drying oven.

**CIVIL ENGINEERING LABORATORIES**

**HYDRAULIC.** The high pressure equipment consists of small impulse wheels, nozzles and orifices connected to a header under a pressure of two hundred and sixty-five feet. For low head experiments and pump tests there is a set of tanks and measuring weirs. Larger weirs are placed in streams near the campus, making it possible for regular work to be conducted under ordinary field conditions. Current meters and other auxiliary apparatus are available for both field and laboratory work.

**STRUCTURAL MATERIALS.** The structural materials testing laboratory contains five universal testing machines with capacities from thirty thousand to two hundred thousand pounds, two impact machines with various hammers ranging in weight from fifty to fifteen hundred pounds, with the necessary auxiliary apparatus for general work.

**CEMENT.** The equipment for testing hydraulic cement is complete for all the ordinary tests as specified by the American Society of Civil Engineers.

**ROAD.** The road laboratory is equipped for testing materials used in the construction of roads. The machines for the abrasion and toughness tests are of the standard designs adopted by the American Society for Testing Materials; other machines are similar to those used by the U. S. Office of Public Roads.

**SURVEYING.** The equipment consists of an ample supply of all the necessary instruments for plane and topographic surveying.

## ELECTRICAL ENGINEERING LABORATORIES

The dynamo laboratory contains fifteen alternating and thirty direct current generators and motors. The machines are of modern design and have a combined capacity of two hundred and ninety kilowatts in direct current machines and two hundred and ten kilowatts in alternating current machines. Most of the machines are of five or ten-kilowatt capacity. Power from a storage battery of one hundred and thirty cells is available at a separate switchboard in the dynamo laboratory. The University power house, containing two steam driven units of two hundred and one hundred kilowatts, serves as a commercial laboratory for operating and testing purposes.

Nine smaller rooms are devoted to the following: (a) Instrument making and repairing, (b) grinding room and shop, (c) instrument and stock room, (d) telephone laboratory, (e) electrolysis and special thesis problems, (f) storage battery room, (g) three dark rooms for photometry work. The instrument room contains a large collection of standard indicating and recording ammeters, voltmeters and wattmeters, and a three-element G. E. oscillograph. The photometry rooms are equipped with Matthews integrating and bench photometers.

## FORESTRY LABORATORIES

**DENDROLOGY.** Individual lockers, compound microscopes, gas and water. An herbarium of fruits, twigs and trunk sections of trees is well under way. **LUMBERING.** Field work at logging camps and sawmills. A complete equipment for exercises in logging engineering; for demonstration, collections of lumber, showing grades, defects, planing mill products, saws, axes, cables and other apparatus used in logging and milling. There are mills and camps about Seattle. **MENSURATION.** Equipment selected to show all principal types of instruments in use. Those particularly adapted to the northwest provided in quantities sufficient for all practice work by students in cruising, and volume, growth and yield studies. **SILVICULTURE.** Greenhouse space and a forest tree nursery are provided on the campus. The forests about Seattle offer wide opportunities for other practical studies and demonstrations. **TIMBER PHYSICS.** The magnificently equipped Government Timber Testing Laboratory, operated in co-operation with the University, is used. **WOOD TECHNOLOGY.** Same room as Dendrology Laboratory. Individual lockers, gas, water, Leitz compound microscopes, and a complete equipment for micro-



technique and for studies of the various technical qualities of woods. Extensive collections of domestic and foreign commercial timbers and microscopic preparations. WOOD PRESERVATION AND UTILIZATION. A modern open tank preservation plant. Three large commercial treating plants and many plants utilizing secondary forest products are available for study in Seattle. LECTURE ROOM. Supplied with Leitz lantern for episcopic, diasopic, and microscopic projection.

#### GEOLOGY LABORATORIES

The geology laboratories, four in number, are in Science Hall. Two are on the first floor, and consist of large rooms arranged for general geology, physiography, mineralogy, petrography and paleontology. Two laboratories are in the basement, in well-lighted rooms at the southwest end of the building. One of these laboratories is fitted with lathes, diamond saw, and grinding plates run by electric motor for the preparation of rock slides for petrographic study. The other basement laboratory is equipped with large tanks for experimental work in erosion, and with ample facilities for map modeling and the construction of relief maps.

For work in mineralogy and petrography extensive collections of minerals and rocks are supplied; and for paleontological study collections of fossils and casts represent the principal geological formations. In the study of meteorology practical work is done by the use of a complete set of weather bureau instruments. For the study of earthquake phenomena a Bosch-Omori seismograph has been installed for some years.

#### MECHANICAL ENGINEERING LABORATORIES

The steam and experimental laboratory is fully equipped with steam apparatus, including engines aggregating 900 H. P., of simple and compound, high speed and Corliss types; steam turbine; jet and surface condensers; injector; centrifugal pump; steam calorimeters; indicators; calibrating appliances; gas engine; gas producer plant; 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.

There is a thoroughly modern woodworking shop, machine shop, foundry and forge shop. The wood shop is equipped with

benches, lathes, band saws, circular saws, planer, and trimmer. The Forge and Foundry are equipped with down-draft forges, power hammer, punch and shears, cupola, moulding machines, shakers, rattler, riddles, brass furnace, core oven, and traveling crane. Machine shop is equipped with small and large lathes, drill press, milling machine, planer, shaper, metal saw, grinding machine and complete equipment for bench and vise work.

#### MINING AND METALLURGY LABORATORIES

The Mines building contains the stamp milling, concentrating and coal washing plant, the mining laboratory, and the metallurgy laboratories. The United States Mine Rescue Training Station occupies a separate building nearby. The "smokeroom," fitted with track and car, overcast airway, doghole, and smudge floors, is the largest of its kind in the country. Several sets of the Draeger oxygen apparatus and pulmoter are kept on hand for practice as well as for use in mine rescue work, or emergencies such as asphyxiation, drowning, electric shock, and the like.

#### PHARMACY AND MATERIA MEDICA LABORATORIES

The rooms devoted to pharmacy and materia medica are located in Bagley Hall. A room accommodating thirty-two students working at one time is used for manufacturing pharmacy. Work in prescription practice receives special attention in a room constructed as a model prescription pharmacy. The materia medica room contains a drug museum of several hundred samples of official and unofficial crude drugs. This room is fitted with desks suitable for microscopic work. Work in drug assaying and the several courses in chemistry are located in suitable rooms in other parts of the building.

#### PHYSICS

The laboratories set apart for the use of the department consist of: (1) A general laboratory for students in arts and sciences, (2) a general laboratory for students in applied science, (3) an electrical laboratory, (4) a heat laboratory, (5) a sound and light laboratory, (6) a photometry room, (7) a battery room.

The laboratories are supplied with apparatus from the best American and European makers.

The bureau of testing. The bureau is equipping itself as rapidly as possible to meet the demand for a bureau where scientific instruments may be accurately calibrated and tested. The

standards of the bureau will be calibrated by our National Bureau of Standards at Washington, D. C.

The bureau is prepared to calibrate direct and alternating current instruments, to determine candle power of lamps, to measure temperature, both high and low, and to a limited extent to standardize weights. Those desiring to have work done should address the director, Frederick A. Osborn.

#### PSYCHOLOGY LABORATORY

The psychology laboratory occupies four rooms on the fourth floor of Science hall. The equipment of the laboratory includes: Five Koenig forks; an Edelmanns Galton whistle sonometer; two organ pipes; bellows and rubber windbag for actuating pipes; Ellis harmonical, and other minor instruments for acoustical work; colored papers, Hering's color-blindness tester, Hering's binocular color-mixer, Hering's color-mixer and campimeter; six electro-motors, ophthalmoscope, ophthalmotrope, stereoscopes, pseudoscope, a clock-work kymograph, a Zimmerman ergograph, a Lehman plethysmograph; a Hipp chronoscope and accessories; materials for experimentation on the cutaneous sensations and taste and smell.

#### ZOOLOGY LABORATORIES

The laboratory work of the department of zoology is conducted in six rooms located on the second floor of Science hall. Here are adequate facilities for pursuing the following lines of investigation: General zoology, histology, anatomy, physiology, entomology and research.

#### OBSERVATORY

The observatory is housed in a substantial sandstone structure which provides space for the equatorial instrument, the transit, and for computing purposes. The instruments include a six-inch refracting telescope and accessories; a Bamberg transit, Riefler clock, Bond chronometer, Gretner chronograph, a barometer, sextants, etc. The minor equipment is sufficient for performing the usual experiments in laboratory and lecture work in astronomy.

## ASSEMBLY ADDRESSES, 1912-1913

1912

- Sept. 18. President's Address.
- Oct. 2. Dean Isabella Austin (Assembly for Women)
- Oct. 9. Professor Robert Max Garrett—Nuremberg.
- Oct. 16. Mr. Ng Poon Chew—China and the United States.
- Oct. 23. Mr. Asahel Curtis—Mountain Scenery in Washington (Illustrated).
- Nov. 13. Mr. Edward Curtis—Indian Religion.  
Sir Thomas Lipton—Address.
- Nov. 15. Rev. Washington Gladden—Planetary Politics.
- Dec. 6. Miss Tina Lerner—Piano Recital.
- Dec. 11. Rev. E. Tremayne Dunstan—Conditions in Australia.

1913.

- Jan. 15. Mr. Albert Johnson, M. C.—The Country Editor.
- Feb. 12. Right Reverend Edward John O'Dea, Bishop of Seattle,  
The Ideal Citizen.
- Feb. 19. Professor Lee Emerson Bassett—The Music of Poetry.
- Feb. 26. Mr. Harry Frederick Ward—Social Waste.
- Mar. 5. Mr. George F. Cotterill, Mayor of Seattle—Seattle and  
Its Future.
- Mar. 18. Dr. Booker T. Washington—Tuskegee and the Negro  
Problem.
- Mar. 26. Mr. William E. Humphrey, M. C.—International Aspect  
of the Panama Canal.
- Apr. 2. Mr. William H. Crane—Some Developments of the  
American Stage During the Last Fifty Years.

# **ENTRANCE INFORMATION**

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## **LOCATION OF THE UNIVERSITY**

The University campus, comprising 355 acres, lies between Fifteenth Avenue Northeast on the western boundary and Lake Washington on the eastern and Forty-fifth Street on the northern and Lake Union on the southern. The campus is best reached from the railway stations and docks by Revenna or Cowen Park cars. The administration building is reached by leaving the street car at Fortieth Street and Fourteenth Avenue Northeast and walking one block east.

The state legislature in 1895 enacted a law prohibiting the sale of intoxicating liquors within a radius of two miles of the University grounds. This insures a college neighborhood free from the evils of the saloon.

## **INSTRUCTION OFFERED BY THE UNIVERSITY**

The instruction offered by the University may be in a broad way indicated by the names of the colleges and schools as follows: Liberal Arts, Science, Education, Engineering (chemical, civil, electrical, and mechanical), Mines (coal and metal mining), Forestry, Pharmacy, Law, and Graduate. While not organized as colleges, definite four-year courses are offered in home economics, music, and journalism. This work is carried on through the regular academic year, September to June. In the summer, however, a six-weeks session is held in which the work most in demand by teachers of the public schools is given. In addition a large number of courses of instruction are offered through the University Extension Division, the services of which are available at any time.

## **REGISTRATION**

Both old and new students will be registered on the first and second days of the first semester, Monday and Tuesday, September 15 and 16, 1913.

Re-registration for the second semester will take place during the month of January.

Registration, for entering students only, will occur on the first day of the second semester, Monday, February 2, 1914.

**LATE REGISTRATION:** In order to enforce promptness in the matter of taking up University work at the opening of the semester a penalty of \$1.00 is imposed for registration after the regular registration days. The same penalty is imposed for changes in election after the beginning of regular class work, except where such changes are made upon the initiative of the student's instructor or class officer. An excuse for the payment of the penalty must in each case be endorsed by the chairman of the sections committee.

## ADMISSION TO THE UNIVERSITY

### GENERAL STATEMENT

All correspondence regarding the admission of students to the residence courses of the University, as well as the requirements for graduation, should be addressed to the Recorder. Every applicant for admission in September, 1913, is requested to forward his credentials as early in the summer as possible, at the same time indicating the college or school of the University that he intends to enter. Persons interested in the extension courses offered by the University should write to the Director of the Extension Division.

Admission to the residence work of the University is by examination or by certificate, a graduate of an accredited\* four year high school only being admitted without examination upon the recommendation of the principal and the presentation of a satisfactory, official certificate. Since the high school diplomas do not give the necessary information, they cannot be accepted for this purpose. The principals of all accredited high schools in the state are furnished with the official blanks. These may also be obtained at the Recorder's office.

Applicants for advanced standing are required to furnish a complete certified statement of both preparatory and college

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\* For list of accredited high schools see page 56.

credits, together with a letter of honorable dismissal from the institution last attended.

*Credentials for students expecting to enter in September should be received in the Recorder's office before August 20th.*

#### **STUDENT CLASSIFICATION IN THE UNIVERSITY**

Students are admitted to the following classifications: (I) to freshman standing, (II) as unclassified students, (III) as special students, (IV) to advanced undergraduate standing, (V) to graduate standing.

#### **I. ADMISSION TO FRESHMAN STANDING**

##### **(a) ON CERTIFICATE FROM AN ACCREDITED SCHOOL**

A student who has been graduated from an accredited high school, in either the Classical, Scientific, or English Course prescribed by the State Board of Education, will be admitted to freshman standing in the University, but if the student has not included in his high school course any subject prescribed for entrance to the particular college of the University which he elects to enter, he must ultimately make up that subject. College courses taken to satisfy such deficiencies may be counted as college credit toward a degree.

Graduates of the Girls' Manual Arts Course prescribed by the State Board will be admitted to full freshman standing in the Home Economics Course of the University.

##### **(b) ON EXAMINATION**

Applicants for admission by examination are required to pass an examination based on a four-year course amounting in the aggregate to fifteen units. Of these fifteen units, ten and one-half are prescribed; one and one-half or two more are prescribed for entrance to each of the Colleges, except the College of Pharmacy; the rest may be presented in approved optional subjects.

Entrance examinations are held at the University on the Friday and Saturday preceding the opening of each semester. Persons planning to take such examinations should notify the Recorder in advance and obtain a schedule showing the time and place for each examination.

## 1. REQUIREMENTS COMMON TO COLLEGES OF THE UNIVERSITY

One foreign language.....2 units\*

The languages accepted for entrance are:

Latin, 2 to 4 units; Greek, French, German, and Spanish, 1 to 4 units.

A candidate may also present for entrance any modern foreign language in which he has had a course fairly equivalent to a high school course in English *i. e.*, which he has used as a spoken and written language and of which he has studied the grammar and literature.

English ..... 4 units

A student presenting two units of a foreign language may be admitted with three instead of four units of English.

Algebra ..... 1½ units

Plane Geometry .....1 unit

Physics ..... 1 unit

For admission to the College of Liberal Arts, a unit of Chemistry, Botany, or Zoology may be presented in place of Physics.

A history (American History preferred).....1 unit  
or U. S. History and Civics. \_\_\_\_\_

Total ..... 10½ units

## 2. ADDITIONAL REQUIREMENTS OF THE SEVERAL COLLEGES

In addition to the subjects above, other subjects are prescribed for admission to the different colleges of the University, as follows:

## (a) THE COLLEGE OF LIBERAL ARTS.

- Group I. {
1. (Classical) Two additional units of foreign language (making, in all, 4 units of foreign language; of which, at least 2 must be Latin).
  2. (Modern Language-Literature) 2 additional units of foreign language.

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\* To count as a "unit" a subject must be taught five times a week, in forty-five minute periods for a school year of not less than thirty-six weeks.



- Group II {
- 1. (Social Science) 2 additional units of foreign language, or an additional unit of laboratory science and a half unit of solid geometry.
  - 2. (Philosophical)

(b) THE COLLEGE OF SCIENCE, THE COLLEGE OF ENGINEERING, THE COLLEGE OF MINES.

Chemistry ..... 1 unit

For admission to the College of Science, a unit of botany or zoology may be presented in place of chemistry.

Solid geometry .....  $\frac{1}{2}$  unit.

Students who have completed the Girls' Manual Arts Course prescribed by the state board, or who meet the requirements for admission to any group in the College of Liberal Arts or the College of Science, will be admitted to full freshman standing in the four-year course in Home Economics in the College of Science.

(c) THE COLLEGE OF FORESTRY.

Botany ..... 1 unit.

Solid geometry .....  $\frac{1}{2}$  unit.

(d) THE COLLEGE OF PHARMACY.

No additional prescribed subjects.

(e) FINE ARTS (MUSIC)

A total of two years of German and two years of French pursued either in the high school or in the University is required for the degree of Bachelor of Music. If a student has finished this language work in the high school he shall substitute electives in the University. If he presents neither French nor German for admission he must supply the deficiency above the sixteen hours allowed for in the outlined courses, without credit.

If a student has had two years of Latin he may be excused from the second required year of French or German, at the discretion of the head of the department of music.

The requirements for admission to the courses leading to the degree of bachelor of music shall be identical in academic subjects with those admitting to any course in the colleges of Liberal Arts and Science. In addition thereto, there shall be required the equivalent of four years' work in music of the following character:

First year: Rudiments of music. Melody and rhythm. Principles of touch and technique. Major scales. Studies by Gurlitt, Gaynor, Martin, Lambert, etc.

Second year: Continuation of work in melody and technique. All major scales. Begin the study of chords in three tones. Studies by Lynes, Behr, Lambert, Tschalkowski, etc.

Third year: Begin minor scales, essential chords of scales in three positions. Studies by Bertini, Berens, Czerny, Kohler, Clementi, Moszkowski, etc.

Fourth year: Scales, chords of scales in all positions. Studies by Bertini, Czerny, Loeschorn; easier Mozart and Haydn sonatas, Bach (Little Preludes and Fugues), Schumann.

#### EXEMPTIONS ALLOWED FOR CERTAIN ENTRANCE UNITS

In the colleges of Liberal Arts and Science a student may be exempted from taking certain of the studies required for his degree on the following conditions:

a. If he presents for entrance 4 units of ancient language, he will not be held for the 8 credits\* required in ancient language and literature.

b. If he presents for entrance 4 units of modern language, he will not be held for the 8 credits required in modern foreign language.

c. If he presents for entrance  $3\frac{1}{2}$  units of mathematics, namely,  $1\frac{1}{2}$  units of algebra, 1 unit of plane geometry,  $\frac{1}{2}$  unit of solid geometry and  $\frac{1}{2}$  unit of trigonometry, he will not be held for the four credits required in mathematics.

d. If he presents for entrance 3 units of science, namely, one unit physics, one unit chemistry and one unit of any other science, he will not be held for the 8 credits required in physical science.

e. If he presents for entrance 3 units of science, namely, one unit of biological science, one unit of physics and one unit of any other science, he will not be held for the 8 credits required in biological science.

f. If he presents for entrance 3 units of history, he will not be held for the 8 credits required in history.

A student cannot obtain exemption from both *d* and *e*.

#### II. ADMISSION AS AN UNCLASSIFIED STUDENT

A graduate of an accredited high school who presents any sixteen (16) units in the prescribed list of the State Board of Education will be admitted to the University as an unclassified student. Such a student will be allowed to enroll for those courses

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\* A credit is the unit by which work in the University is measured, and represents one recitation per week for one semester.

for which he has had adequate preparation. By virtue of his classification he is not a candidate for a degree. He may ultimately become a candidate for a degree by fulfilling as part of his college prescriptions all the requirements for entrance and graduation.

### III. ADMISSION AS A SPECIAL STUDENT

All courses offered by the University are organized for regular students, that is, students who have had the equivalent of a good high school education and have fully met the entrance requirements. Special students are admitted to such courses as they may be found capable of undertaking. The following are the regulations governing the admission and handling of special students in the various colleges of the University.

1. In all colleges of the University, except the College of Pharmacy, special students must be at least twenty-one years of age. Special students in the college of Pharmacy must be at least twenty years of age.

2. Special students must present (in credits or by examination) full preparation for the particular courses they wish to pursue.

3. Applicants for special standing shall submit in writing a detailed statement of previous educational work and practical experience, together with an outline of the proposed work in the University and the reasons for wishing the special course.

4. Students will not be admitted from an accredited school as special students if they have been in attendance in the high school the previous year.

### IV. ADMISSION TO ADVANCED UNDERGRADUATE STANDING

(a) IN COLLEGES OF LIBERAL ARTS, SCIENCE, ENGINEERING, MINES, FORESTRY, AND PHARMACY. Students from classes above the first year in other colleges or universities of recognized rank may be admitted to the advanced standing for which their training seems to fit them. No advanced credit will be given for work done in institutions whose standing is unknown, except upon examination. Definite advanced standing will not be given until the student has been in residence for at least a semester.

(b) **ADMISSION TO THE SCHOOL OF LAW.** Clear entrance and sixty-eight (68) hours' credit\* in the College of Liberal Arts or the College of Science, including the prescribed freshman and sophomore courses are required for admission to the School of Law. Equivalent credit from other colleges or universities will be accepted.

(c) **ADMISSION TO THE SCHOOL OF EDUCATION.** Clear entrance and sixty-eight (68) hours' credit\* in the College of Liberal Arts or the College of Science, including courses in psychology and zoology, are required for admission to the School of Education. Equivalent credit from other colleges or universities will be accepted.

(d) **ADMISSION OF NORMAL SCHOOL GRADUATES TO ADVANCED STANDING IN THE COLLEGES OF LIBERAL ARTS AND SCIENCE.** Graduates of approved normal schools receive 48 scholastic credits plus 8 in physical training. For graduation they must present the following specific requirements: Ancient foreign language or literature, 8 hours; modern foreign language, 8 hours; physical science, 8 hours; biological science, 8 hours; economics, 8 hours; philosophy, 8 hours; major subject, 24 hours. On all these points, however, (except major), they may have the benefit of the stated exemptions (see page 8) for entrance subjects, and they may also be excused from any prescribed subject for which they have completed a fair equivalent in the normal school, such excuse to be granted by the dean of the respective college upon the recommendation of the major professor.

## V. ADMISSION TO GRADUATE STANDING

A bachelor's degree from a college or university of good standing is required for admission to the Graduate School.

### LIST OF ACCREDITED SCHOOLS

#### 1. PUBLIC HIGH SCHOOLS

|           |                      |                  |
|-----------|----------------------|------------------|
| Aberdeen  | Bellingham (North)   | Buckley          |
| Anacortes | Bellingham (South)   | Burlington Union |
| Arlington | Blaine               | Burton Union     |
| Asotin    | Bremerton-Charleston | Camas            |
| Auburn    | Bothell              | Castle Rock      |

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\* A "credit," or "hour," is the unit by which work in the university is measured, and represents one recitation per week for one semester.

**ENTRANCE INFORMATION**

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|                |               |                 |
|----------------|---------------|-----------------|
| Cashmere       | Kirkland      | Seattle         |
| Centralia      | La Conner     | Ballard         |
| Chehalis       | Latah         | Broadway        |
| Cheney         | Lind          | Franklin        |
| Chewelah       | Lynden        | Lincoln         |
| Clarkston      | Marysville    | Queen Anne      |
| Colfax         | Monroe        | West Seattle    |
| Colville       | Montesano     | Sedro-Woolley   |
| Coupeville     | Mt. Vernon    | Shelton         |
| Creston        | Newport       | Snohomish       |
| Davenport      | North Yakima  | South Bend      |
| Dayton         | Odessa        | Spokane         |
| Edmunds        | Olympia       | Lewis and Clark |
| Ellensburg     | Outlook       | North Central   |
| Elma           | Palouse       | Sprague         |
| Endicott       | Pasco         | Stanwood        |
| Enumclaw       | Pomeroy       | Stevenson       |
| Everett        | Port Angeles  | Sumas           |
| Garfield       | Port Townsend | Sumner          |
| Goldendale     | Prosser       | Sunnyside       |
| Granite Falls  | Pullman       | Tacoma          |
| Grandview      | Puyallup      | Toppenish       |
| Harrington     | Raymond       | Tekoa           |
| Hillyard       | Reardan       | Vancouver       |
| Hoquiam        | Renton        | Waitsburg       |
| Juneau, Alaska | Richland      | Walla Walla     |
| Kalama         | Ritzville     | Waterville      |
| Kelso          | Rosalia       | Wenatchee       |
| Kennewick      | Roslyn        | Wilbur          |
| Kent           |               | Winlock         |

**II. OTHER SECONDARY SCHOOLS**

Adelphia College, Seattle (Academic Department)

Brunot Hall, Spokane

Holy Names Academy, Seattle

Holy Names Academy, Spokane

Seattle Seminary, Seattle

University of Puget Sound, Tacoma (Preparatory Department)

Walla Walla College Academy, Walla Walla.

As a rule, the accredited school list of other state universities will be accepted by the University of Washington. Graduates of accredited schools in other states must present a certified record of work, as in case of local students.

## DEGREES

The courses leading to baccalaureate degrees in the College of Liberal Arts, the College of Science, the College of Engineering, the College of Mines, and the College of Forestry, are arranged to cover a period of four years. The course in the College of Pharmacy covers two years, and an advanced course takes two years longer. To complete the course in the School of Law and the School of Education three and two years respectively are required, based on two years of regular college work. The courses leading to the masters' degree are not less than one year, based on four years of undergraduate work.

In the College of Liberal Arts is given the degree of bachelor of arts (A. B.); in the College of Science, bachelor of science (B. S.); in the College of Engineering, bachelor of science (B. S.); in the College of Mines, bachelor of science (B. S.); in the College of Forestry, bachelor of science in forestry (B. S. F.); in the College of Pharmacy, pharmaceutical chemist (Ph. C.), and bachelor of science (B. S.); and in the School of Law, bachelor of laws (LL. B.); in the School of Education, bachelor of arts, or bachelor of science in education (A. B. E. or B. S. E.). Specific requirements for the different degrees may be found in the statements of the respective colleges.

## GRADUATE DEGREES

Courses adapted to the needs of students who wish to earn the M. A. degree are offered in nearly all departments of the colleges of Liberal Arts and Science. In one department, Chemistry, courses are offered leading to the Ph. D. degree. Courses leading to the degree of M. S. are offered in the College of Engineering, the College of Mines, the College of Forestry and the College of Pharmacy. Graduates from the three year course in the School of Education receive the degree of master of arts in education (M. A. E.). For further information concerning the requirements for graduate degrees, see the special bulletin of the college or school in which the courses are offered.

It is not the policy of the University at the present time to grant honorary degrees.

## DEGREE WITH HONORS

A degree with honors may be conferred upon a student who, upon recommendation of the honors committee and upon vote of the faculty, may be declared worthy of unusual distinction.

Early in May each head of a department shall bring to the attention of the committee on honors such seniors making majors in his department as he thinks may be eligible for honors.

A student is not allowed to take honors in more than one subject.

#### **THE UNIVERSITY NORMAL DIPLOMAS**

The University is authorized by law to issue teachers' diplomas, valid in all public schools of the state. Candidates for these diplomas should register in the Department of Education as early as possible after the beginning of the sophomore year, and should consult with the department from time to time as to their work for the diploma and their preparation for teaching. For more definite information see Bulletin of the University of Washington, School of Education.

### **GENERAL SCHOLASTIC REGULATIONS**

#### **STUDIES**

At the beginning of each semester, the student arranges his schedule of studies with the advice and assistance of his class officer. A regular course consists of sixteen hours of recitations per week.

All women students are required to take three hours of gymnasium work per week throughout the first and second years, eight credits in physical culture being required of women for a degree.

A course of two years in military training is required. All able-bodied male students (except those from foreign countries, not intending to become naturalized) must take the course which by regulation of the University is required during the first and second year.

Neither the requirement of physical culture for women, nor that of military science for men applies to any student entering as a junior or senior. The deans, together with the physical director, or commandant, as the case may be, have authority to allow a student to substitute the proper corresponding amount of scholastic work for gymnasium or military science when it seems advisable. Substitutions to be valid must be signed by the dean concerned and the physical director or commandant, and must be filed in the office of the Recorder.

## REGULATIONS FOR WITHDRAWAL

1. Before October 15 or March 1 of the respective semester, a student may withdraw from a given class with the written consent of his class adviser.

2. Before November 15 or April 1 of the respective semester, a student may withdraw from a given class with the written consent of his class adviser and instructor.

3. After November 15 or April 1 of the respective semester, a student may withdraw from a given class with the written consent of his class adviser and instructor; provided, however, that if his work has not been satisfactory to the instructor, the instructor must give the student an "E" on the semester grade. It is further provided, that if any withdrawal will reduce the student's hours below twelve, such withdrawal cannot be made till the Dean gives his written approval.

4. Any student who registers for a given course must ultimately complete that course, or if that be impossible, must complete the same number of hours in some other approved subject, in addition to the total number of hours otherwise required for graduation. (Students who may be properly withdrawn with the consent of the class adviser alone shall not be affected by this rule, but it shall not exempt any student from the necessity of completing his required courses.)

## SCHOLARSHIP STANDING

(a) Any student who, in any semester, is reported as doing unsatisfactory work in more than one-half of his registered hours will be dropped from the University for the remainder of that semester and for the following semester.

(b) Any student who, in any semester, is reported as doing unsatisfactory work in more than one-quarter of his registered hours will be placed on probation for the remainder of that semester and for the following semester. During the full probationary period the student must pass in twelve hours; or in all his hours, if he is registered for less than twelve.

Monthly reports are made to the Recorder, by all instructors, of students whose work for the preceding four weeks has been unsatisfactory.

## EXAMINATIONS

The regular semester examinations are held twice each year. Examinations for the first semester are held the last week of the



first semester, while those for the second semester are held during the week prior to Commencement week.

In the College of Liberal Arts and the College of Science the examinations held at the end of the first semester are of year courses merely qualifying (except for students of other colleges or schools of the University, who are taking courses in the College of Liberal Arts and the College of Science); *i. e.*, students failing to pass them are not allowed to take the year examinations, which are given in June and cover the work of both semesters.

In addition to the regular year examinations in other subjects, senior students in the College of Liberal Arts and the College of Science are required to take examinations in all the work of their major subject and in all the subjects in their group which they have taken in their junior and senior years.

#### SYSTEM OF GRADES

1. The following is the system of grades\*:

|        |            |                     |
|--------|------------|---------------------|
| A..... | Honor      |                     |
| B..... |            | } .....Intermediate |
| C..... |            |                     |
| D..... |            |                     |
| E..... | Failed     |                     |
| I..... | Incomplete |                     |

(An incomplete is given only for excusable delinquencies.)

2. Candidates for the bachelor's degrees in the colleges of Liberal Arts and Science must receive grades of A, B, or C in three-fourths of the credits required for their respective degrees. This rule becomes operative in June, 1913, and does not apply to grades given before the year 1910-11.

#### FRATERNITY PLEDGING

No fraternity or sorority shall pledge any person for membership who is not regularly registered in this University.

No student shall be initiated into a fraternity or sorority until he or she has earned 12 credits or provisional credits at this University.

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\*These grades correspond approximately to the old marking scheme as follows: A, 100-96; B, 95-86; C, 85-76; D, 75-70; E, 70-0.

**EXPENSES****TUITION**

The tuition is free to all students of the State of Washington in all colleges and schools of the University, except in the School of Law and in the Summer Session. In the School of Law the tuition is \$20.00 a semester, or \$40.00 for the year. In the Summer Session the tuition is \$10.00, as the Summer Session is conducted, to a large extent, independently of state support.

**ASSOCIATED STUDENTS FEE**

The Associated Students Fee of five dollars is paid by every student on entering the University. See page 21.

**LABORATORY DEPOSITS**

The actual amount of material that a student may use during a laboratory course cannot always be stated in advance. The student's deposit therefore, as announced in the catalogue, and made at the Bursar's office, is an amount which is expected to cover the value of the material that will be consumed; this includes the expense involved in the actual repair—not replacement—of the scientific apparatus used by the student. In case these charges overrun this amount it becomes necessary for the student to make a further deposit. At the end of the semester the student receives a rebate order from the department concerned, which informs the Bursar as to the amount consumed and a refund is paid accordingly.

The following are the laboratory deposits for each semester in force in the various laboratory courses, arranged by departments:

**ASTRONOMY**, 1—2—\$1.00.

**BACTERIOLOGY**, 10—\$3.00; 3, 4, 5, 6, 8, 11, 12, 13, 14, 15, 17, 19, —\$5.00.

**BOTANY**, 1, 2, 5, 6, 9, 10, 11, 12, 13, 14, 16, 17, 20, 23, 24, 25, 26, 33, 40, 41, 42, 43,—\$3.00.

**CHEMISTRY**, 1—2, 1a—2a, 1b—2b, 1c—2c, 1d, 3—4, 3c, 5—6, 7—8, 8b, 9, 10—11, 12, 13, 14, 15, 16, 18, 19, 20—21, 20a, 22, 23, 24, 25, 26, 29—30,—\$10.00; (Course 1f, see Pharmacy).

**ENGINEERING**, (C. E.), 17, 18, 19, 20, 22, 23, 24, 25, 26, 27, 28, 31, 32,—\$3.00. (E. E.), 1, 6, 32, 41,—\$1.00; 5, 7, 15, 24,—\$2.00; 3, 22,—\$4.00. (M. E.), 1, 2, 3, 4, 5, 40, 41, 42, 43,—\$2.00.

**FORESTRY**, 1, 3, 4, 19,—\$1.00; 5, 6, 7, 7a, 7b,—\$2.00.

**GEOLOGY**, 1—2, 1a, 1b, 1c, 3, 4, 5, 9,—\$1.00; 13, 16, 17, B,—\$2.00.

**GYMNASIUM**, \$1.00 for the year, locker and apparatus.

**HOME ECONOMICS**, 5, 7—8, 9—10, 11—12, 18, 26, 29,—\$1.00; 19, 20,—\$2.00; 14, 15,—\$3.00; 2, 3, 4,—\$4.00.

**JOURNALISM**, 3—4, 15, 17,—\$2.00.

**MINES, METALLURGY**, 9, 10, 12,—\$3.00; 3, 5, 6,—\$5.00; 2, 7, 8,—\$10.00; 1,—\$15.00; Short Course D—\$5.00; C—\$15.00; **MINING ENGINEERING**, 1, 3,—\$3.00; 2,—\$5.00.

**PHARMACY**, 5—6,—\$5.00; 15, 16, 17, 18,—\$5.00 or \$10.00 (according to hours); 1, 1a, 2a, 2, 9—10, 11—12, 13—14,—\$10.00; Chemistry 1f, 2f,—\$15.00.

**PSYCHOLOGY**, 34, 46,—\$1.00; 31, 33,—\$2.00.

**PHYSICS**, 1, 2, 3, 4, 5, 6, 7, 8, 9, 18, 20, 21,—\$2.50; 1b, 2b, 3a, 4a, 5a, 6a,—\$6.00 for the year.

**ZOOLOGY**, 1—2, 1a, 3—4, 5, 6, 7, 8, 9, 10, 11, 12, 16—17,—\$2.00; 18—19, 20—21, to be arranged.

#### BOARD AND ROOM

(a) In the university dormitories the room rent (\$12.00 a semester) is payable in advance and no rooms will be reserved unless paid for. The price of board is seventeen dollars and a half (\$17.50), payable monthly as the bills are rendered. The rooms are furnished with necessary articles of plain furniture, but the student is expected to supply his own bed linen, bedding, mattress, towels, and rugs.

A deposit of \$17.50 (one month's board bill) is required of all who board at the dining hall. This amount is exclusive of the board bill for the first month, and is applied on the bill for the last month of the college year.

(b) Outside the dormitory, in the past, the expense of board and lodging with private families has ranged from twenty-three to thirty dollars per month.

Since, in the judgment of the University, it is deemed advisable that men and women room in different houses and that women room only in houses which furnish a first floor reception room for the entertainment of men callers, all first-year women are required to communicate with the Dean of Women before securing rooms.

**CADET UNIFORM**

The uniform with which the members of the cadet corps are required to provide themselves costs about fourteen dollars. The amount necessary to cover this cost is deposited with the bursar of the University. The uniform is designed to be worn in place of civilian dress.

**DIPLOMA FEE**

The fee charged to graduates is five dollars for each one receiving a baccalaureate or higher degree, or a diploma in pharmacy, and three dollars for each one receiving a teacher's diploma.

**STUDENT HELP**

Many students who have found it necessary to support themselves while at the University have been enabled to do so by securing occupation of various sorts. There is an employment bureau conducted by the Y. M. C. A. to secure work for men who have to make their own expenses. There is also a faculty committee which lends its assistance in securing aid for such students. The Dean of Women renders a similar service for women. The official records of the recorder's office show that twenty-eight (28%) per cent. of the students enrolled in 1911-12 are entirely self-supporting, while thirty-six (36%) per cent. more are partially dependent upon their own resources. Students obliged to earn a portion of their support are advised not to register for a full schedule of studies.

**DEAN OF WOMEN**

The Dean of Women is always ready to help or advise any woman student who may need assistance. She will supply lists of approved boarding and lodging places, correspond with parents or guardians who desire to make inquiry concerning their daughters or wards, and take an interest in all the women's organizations.

**FELLOWSHIPS AND SCHOLARSHIPS****GRADUATE FELLOWSHIPS**

By the will of Sarah Loretta Denny the sum of \$25,000 was bequeathed to this University for the establishment of University fellowships. The income from this fund is at present \$1,250.00, and affords three graduate fellowships of equal amount, which will be awarded by May 1st of each year by the graduate faculty.

## UNIVERSITY TEACHING FELLOWSHIPS

The University each year provides for about twelve teaching fellowships in nearly as many departments. For a number of years the position has been known as a graduate assistantship, the graduate student dividing his time equally between his studies and assisting in the teaching work of the department in which he is enrolled.

## CHEMISTRY SCHOLARSHIP

A friend of the University has provided a scholarship of one hundred and fifty dollars to be awarded annually to a student of the department of chemistry on the basis of scholarship in the courses taken in the department, of scholarship in other departments, and of personality.

## THE JOHN WALTER ACKERSON SCHOLARSHIP

In memory of the late John Walter Ackerson, a pioneer of Washington, Mrs. S. Louise Ackerson offers a scholarship of one hundred dollars annually to the young woman member of the junior class who may be adjudged most worthy on the basis of scholarship, personal influence and self reliance.

## WOMAN'S LEAGUE SCHOLARSHIP

The Woman's League of the University of Washington offers a scholarship of one hundred dollars annually to a woman member of the junior class adjudged worthy on the basis of scholarship, financial need, and personal influence.

## SENIOR SCHOLARS

In June preceding their senior year, juniors who have eighty-eight or more credits with high grade may be elected senior scholars. A senior scholar may be relieved from attendance at regular lectures or recitations, and may be granted other special privileges in order that he may devote himself to more intensive and more correlated study than the class-room system permits. His work must be in not less than two or more than four allied subjects; and it must be correlated so that it will bear upon some common field.

## PRIZES

## FOR EXCELLENCE IN PUBLIC SPEAKING AND DEBATE

Judge Alfred Battle offers an annual cash prize of seventy-five dollars to the Washington debating team chosen to meet representative debaters from the University of Oregon.

In 1907 Mr. E. F. Blaine, of Seattle, assumed the annual cash prize of \$100.00 formerly offered by the King County Bar Association as an incentive for oratory. This prize is competed for annually by the students of the Universities of Washington, Oregon, and Montana, and is known as the E. F. Blaine prize for oratory.

Mr. L. J. Corkery, of Toledo, Ohio, supplements the Blaine prize for oratory by offering a fifteen-dollar cash prize for second honors in the contest between the universities of Washington, Oregon and Montana.

Each alternate year, beginning with the spring of 1908, the Seattle Bar Association will give the sum of fifty dollars to defray the expenses of a debate between the representatives of the Law Schools of Oregon and Washington.

#### FOR ESSAYS

The Philo Sherman Bennett prize of twenty-four dollars annually is "for the best essay discussing the principles of free government."

Mr. Vivian W. Carkeek of the Law class of 1901 offers an annual cash prize of \$25.00 for the best thesis on Washington law.

The Washington Bankers' Association awards a prize of twenty-five dollars for the best essay on an economic topic to be selected by the executive committee of the association.

#### FOR ELECTRICAL ENGINEERING

Mr. Jacob Furth offers an annual scholarship of one hundred dollars, to be awarded at commencement, to the senior student in electrical engineering who shall have done the best work in physics, mathematics, and electrical engineering during his course.

#### FOR SCHOLARSHIP IN SCANDINAVIAN

The Society for Preservation of Swedish Language and Culture in America offers annually a scholarship of \$25.00, known as the E. P. Strandberg Scholarship, to be awarded to the student earning the highest credits in the Swedish language and literature.

The Norwegian National League offers a scholarship of \$25.00 to be awarded to the student earning the highest credits in Norwegian language and literature.

The Danish Vice-Consul offers a scholarship of \$25.00 known as The Danish-American Scholarship, to any student of the Scan-

dinavian department who writes the best article in the English language on Danish and Icelandic history.

#### FOR SCHOLARSHIP IN ITALIAN

Mr. N. Paoiella, of Seattle, offers a gold medal each year, beginning with 1913, for a period of ten years, to the student doing the best work in Italian.

#### STUDENT LOAN FUNDS

Mr. Samuel H. Hedges, of Seattle, has endowed a student loan fund, known as The David Jackson Hedges Memorial Fund in memory of the donor's son, which affords assistance by way of emergency loans to young men of the University upon applications duly approved by the trustees of the fund.

The Tolo Club, a senior women's honor society, maintains a loan fund for women students.

The Faculty Women's Club, made up of faculty women and wives of the faculty, maintains a loan fund for women students.

#### ASSOCIATIONS AND CLUBS

##### ALUMNI ASSOCIATION

The officers of the Alumni Association for 1912-13 are as follows: President, Mr. Merritt E. Durham; secretary, Miss E. Pearl McDonnell; treasurer, Dr. Ralph Lutz.

##### THE ASSOCIATED STUDENTS

The Associated Students of the University of Washington (incorporated) is an organization of the entire student body. The powers of government are vested by its constitution in an annually elected board of control, upon which three members of the faculty and three alumni also have seats. The board appoints a general manager, who has the financial control of all branches of athletics, musical organizations, and of contests in debate and oratory. The associated student fee of \$5.00 a year entitles the student to a subscription to the University of Washington Daily—the official student paper—free admission to all athletic, debating and oratorical contests given under the auspices of the A. S. U. W., the annual musical concert, the discounts in the co-operative book store, and to all the voting and other privileges of the association.

## CHRISTIAN ASSOCIATIONS

The Young Men's and the Young Women's Christian Associations each have a branch organization among the students. They are active in making the new students feel at home and in assisting them in many ways. Prospective students are invited to address the secretary of the University of Washington Y. M. C. A., Seattle, Washington, regarding rooming needs or employment. The student handbook will be mailed on request.

## DEPARTMENT CLUBS

The following clubs are connected with the work of different University departments: Chemical Club, Classical Club, Deutscher Verein, Forest Club, French Club, Home Economics Club, Mathematical Club, Mozart Club, Political Science Club.

## LITERARY AND DEBATING SOCIETIES

There are four debating and literary societies in the University, viz.: Stevens, Badger, Athena, and Sacajawea. The first two are for men, the last two for women. Membership in the clubs is limited in order that frequent practice may be afforded.

## DEBATES

Several annual debates are held with universities and colleges of the Pacific Coast, representatives of the University being chosen by tryouts held early in the year.

The Pacific Coast Triangular Debating League, consisting of the Universities of Washington, Oregon and Stanford, holds an annual triangular debate on the last Friday evening in March. Each institution is represented by two teams representing the affirmative and negative of the question under discussion. The team remaining at home debates the affirmative side of the question.

The Northwest Triangular Debating League, consists of the University of Washington, Washington State College, and Whitman College. The arrangements are similar to those of the Pacific Coast Triangular League. The debates are held in February.

**LAW SCHOOL DEBATES.** An annual debate is held between representatives of the law schools of the University of Washington and the University of Oregon early in May. Debates are also held between the University of Washington Law School and the Law School of Vancouver, B. C.



**WASHINGTON-WHITMAN WOMEN'S DEBATE.** An annual debate between the women of the University of Washington and Whitman College is held alternately at Seattle and Walla Walla.

**WASHINGTON-OREGON WOMEN'S DEBATE.** An annual debate between the women of the University of Washington and the University of Oregon is held alternately at Seattle, Washington, and Eugene, Oregon.

#### **MUSICAL ORGANIZATIONS**

The musical organizations consist of the University Choral Society, Men's Glee Club, Women's Glee Club, Orchestra and Band.

#### **PHILOLOGICAL ASSOCIATION**

The Philological Association was organized to encourage scientific investigation in language and literature. Membership is open to all members of the University who are interested in philology.

#### **SIGMA XI**

A chapter of the national society of Sigma XI has been established at the University. The purpose of the society is to encourage research work along scientific lines. Its membership is composed of teachers and graduate students.

#### **WASHINGTON UNIVERSITY STATE HISTORICAL SOCIETY**

The Washington University State Historical Society has for its purpose the preserving of the historical documents and records of the Northwest, and of the State of Washington, and to preserve or publish the results of all investigations.

# COLLEGE OF LIBERAL ARTS

## THE FACULTY

- THOMAS FRANKLIN KANE, PH. D., (Johns Hopkins), PRESIDENT.  
ARTHUR SEWALL HAGGETT, PH. D., (Johns Hopkins), Professor of Greek; DEAN.  
EDMOND STEPHEN MEANY, M. L., (Wisconsin), Professor of History.  
J. ALLEN SMITH, PH. D., (University of Michigan), Professor of Political and Social Science.  
CAROLINE HAVEN OBER, Professor of Spanish.  
FREDERICK MORGAN PADEFORD, PH. D., (Yale), Professor of English.  
WILLIAM SAVERY, PH. D., (Harvard), Professor of Philosophy.  
DAVID THOMSON, A. B., (Toronto), Professor of Latin.  
PIERRE JOSEPH FREIN, PH. D., (Johns Hopkins), Professor of French.  
FREDERICK WILLIAM MEISNEST, PH. D., (Wisconsin), Professor of German.  
HERBERT HENRY GOWEN, D. D., F. R. G. S., M. R. S. A., Professorial Lecturer on Oriental History, Literature and Institutions.  
OLIVER HUNTINGTON RICHARDSON, PH. D., (Heidelberg), Professor of European History.  
WALTER GREENWOOD BEACH, A. M., (Harvard), Professor of Social Science.  
VERNON LOUIS PARRINGTON, A. B., (Harvard), Professor of English.  
EDWIN JOHN VICKNEE, PH. D., (University of Minnesota), Professor of the Scandinavian Languages.  
EDWARD EUGENE MCCAMMON, Lieutenant U. S. A., Professor of Military Science and Tactics.  
HERMAN CAMPBELL STEVENS, PH. D., (Cornell), Associate Professor of Psychology.  
ALLEN ROGERS BENHAM, PH. D., (Yale), Associate Professor of English.  
LOREN DOUGLAS MILLIMAN, A. B., (Michigan), Associate Professor of English.

- LEE EMERSON BASSETT, A. B., (Stanford), Associate Professor in charge of the Department of Public Speaking and Debate.
- THOMAS KAY SIDNEY, PH. D., (Chicago), Assistant Professor of Latin and Greek.
- VANDERVEER CUSTIS, PH. D., (Harvard), Assistant Professor of Economics.
- OTTO PATZER, PH. D., (Wisconsin), Assistant Professor of French.
- EDWARD McMAHON, A. M., (Wisconsin,) Assistant Professor of American History.
- OTTILIE GERTRUDE BOETZKES, A. M., (Washington), Assistant Professor of German.
- HANS JACOB HOFF, Ph. D., (Illinois), Assistant Professor of German.
- ROBERT MAX GARRETT, PH. D., (Munich), Assistant Professor of English.
- STEVENSON SMITH, Ph. D., (Pennsylvania), Assistant Professor of Orthogenics.
- EDWARD GODFREY COX, Ph. D., (Cornell), Assistant Professor of English.
- GEORGE WALLACE UMPHREY, Ph. D., (Harvard), Assistant Professor of Spanish.
- EDGAR SIMPSON SHERIDAN, B. S., (De Pauw), Assistant Professor in charge of the Department of Journalism.
- CHARLES MUNRO STRONG, A. M., (Missouri), Assistant Professor of Spanish.
- WILLIAM THEODORE DARBY, A. M., (Columbia), Assistant Professor of English.
- HARVEY BRUCE DENSMORE, A. B., (Oxford), Assistant Professor of Greek.
- JACOB NEIBERT BOWMAN, PH. D., (Heidelberg), Assistant Professor of European History.
- JOEL MARCUS JOHANSON, A. B., (Washington), Instructor in English.
- WALTER BELL WHITTLESEY, A. B., (Washington), Instructor in English.
- HARRY BURTIS BENNETT, PH. B., (Cornell College), Instructor in Economics.
- RAYMOND BURNETTE PEASE, A. M., (Harvard), Instructor in English.
- THERESA SCHMID McMAHON, PH. D., (Wisconsin), Instructor in Political and Social Science.

- CHARLES LOUIS HELMLINGE, PH. B., (German Wallace College),  
Instructor in French.
- RALPH HASWELL LUTZ, PH. D., (Heidelberg), Instructor in History.
- EVAN TAYLOR SAGE, PH. D., (Chicago), Instructor in Latin and  
Greek.
- ATTILIO PHILIPPO SBEDICO, PH. D., (Pennsylvania), Instructor in  
French and Italian.
- ABRAM WALTER SMITH, B. S., (Pennsylvania), Instructor in Jour-  
nalism.
- NEWELL WHEELER SAWYER, A. M., (Pennsylvania), Instructor in  
English.
- VICTOR LOVITT OAKES CHITTICK, A. M., (Harvard), Instructor in  
English.
- ERNEST OTTO ECKELMAN, PH. D., (Heidelberg), Instructor in Ger-  
man.
- HENRY SLATER WILCOX, A. M., (Harvard), Instructor in Psychology.
- RUDOLPH HERBERT ERNST, A. M., (Harvard), Instructor in German.
- CUET JOHN DUCASSE, PH. D., (Harvard), Instructor in Philosophy  
and Psychology.
- WALTER EDWARD ROLOFF, PH. D., (Wisconsin), Instructor in Ger-  
man.
- PARK POWELL, A. B., (Missouri), Instructor in Spanish.
- THORNTON SHIRLEY GRAVES, PH. D., (Chicago), Instructor in Eng-  
lish.
- THOMAS WITHERS, C. E., (Virginia Military Institute), Instructor  
in English.
- LEO JONES, A. B., (Washington), Instructor in Public Speaking  
and Debate.
- WALTER SQUIRE, Assistant to Musical Director.
- FRED WASHINGTON KENNEDY, Laboratory Assistant in Journalism.
- MALCOLM DOUGLAS, PH. B., (Ohio), Assistant in History.
- JOSEPHINE M. HOEPPNER, A. M., (Washington State College),  
Graduate Assistant in German.
- EDWARD MATHIEU, A. B., (Harvard), Graduate Assistant in French.
- \*ANNA M. PELTON, B. L., (Wisconsin), Graduate Assistant in Ger-  
man.
- VERA MIRIAM RICHARDS, A. B., (Washington), Graduate Assistant  
in Spanish.

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\* Withdrew, February 1, 1913.

- TREVOR KINCAID, A. M., (Washington), Professor of Zoology.
- DAVID CONNOLLY HALL, M. S., M. D., (Chicago), Professor of Physical Training.
- IRVING MACKEY GLEN, A. M., (University of Oregon), Professor of Music and Director of Fine Arts.
- HERBERT GALEN LULL, PH. D., (California), Associate Professor of Education.
- FRANK MARION MORRISON, A. B., (Michigan), Associate Professor of Mathematics.
- WILLIAM MAURICE DEHN, PH. D., (Illinois), Assistant Professor of Chemistry.
- EDWIN JAMES SAUNDERS, A. M., (Harvard), Assistant Professor of Geology.
- HENRY LOUIS BRAKEL, PH. D., (Cornell), Assistant Professor of Physics.
- GEORGE BURTON RIGG, A. M., (Washington), Instructor in Botany.
- EFFIE ISABEL RAITT, B. S., (Columbia), Director of the Department of Home Economics.
- GRACE ZIMMERMAN, A. B., (Washington), Teacher of Piano.
- MORITZ ROSEN, (Warsaw Conservatory), Teacher of Violin.
- LUCY K. COLE, Teacher of Public School Music.
- ADA DEIGHTON HILLING, (London Trinity College of Music), Teacher of Harmony.

### ADMISSION TO THE FRESHMAN CLASS

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To be admitted to freshman standing in the College of Liberal Arts a student must either (a) pass an examination based on a four year course amounting in the aggregate to fifteen units, or (b) complete a course of the same length in an accredited school. The required and elective units are as follows:

|   |     |
|---|-----|
| Algebra .....   | 1½  |
| Plane geometry.....   | 1   |
| Science (chemistry, physics, botany, zoology)....                 | 1   |
| History (American preferred) or U. S. History<br>and Civics ..... | 1   |
| English .....   | 4   |
| A foreign language .....  | 2   |
| Total .....   | 10½ |

Additional subjects prescribed for the several groups of the College of Liberal Arts:

|         |   |   |
|---------|---|---|
| Group 1 | { | Sub-group 1. (Classical) 2 additional units of foreign language (making in all, 4 units of foreign language, of which at least 2 must be Latin).<br>Sub-group 2. (Modern Language) 2 additional units of foreign language.                |
| Group 2 | { | Sub-group 1. (History and Political Science) 2 additional units of foreign language, or an additional unit of laboratory science and ½ unit of solid geometry.<br>Sub-group 2. (Philosophical) Same as for History and Political Science. |

More detailed information concerning admission will be furnished those interested in a separate section of the University Bulletin, known as Entrance Information.

CURRICULUM OF THE COLLEGE OF LIBERAL ARTS.

GROUPS

The departments of the College of Liberal Arts are grouped as follows:

Group I. LANGUAGE AND LITERATURE.

Sub-group 1. (Classical) Greek, Latin.

Sub-group 2. (Modern Language) English, French, German, Italian, Public Speaking and Debate, Spanish, Scandinavian.

Group II. PHILOSOPHICAL.

Sub-group 1. (History and Political Science) History, Political Science.

Sub-group 2. (Philosophy) Philosophy.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF ARTS

To secure the degree of Bachelor of Arts the candidate must meet the following requirements:

1. He must be regularly admitted, cf. page 74.
2. He must complete the number of credits specified in each of the following subjects:

|   |                 |
|---|-----------------|
| a. Ancient Language and Literature.....       | 6 or 8 credits  |
| b. Modern foreign Language.....               | †8 credits      |
| c. Rhetoric .....                             | †4 or 8 credits |
| d. Mathematics .....                          | 4 credits       |
| e. Physical science .....                     | 8 credits       |
| f. Biological science .....                   | 8 credits       |
| g. History .....                              | 8 credits       |
| h. Philosophy .....                           | 8 credits       |
| i. Political science .....                    | 6 credits       |
| j. Physical Training or Military Science..... | 8 credits       |
| k. Hygiene .....                              | 1 credit        |
| l. Library and Curriculum Instruction.....    | 1 credit        |

NOTE—Freshmen are required to take one hour a week each semester in hygiene. One credit is allowed for the year's work.

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\* By the term *credit* is meant one recitation a week for a period of one semester.

†A student entering with less than 4 years of foreign language must make a total of 5 years in high school and college combined.

‡A student who completes the first semester of rhetoric with a grade of "A" will not be required to take that subject during the second semester.

Freshmen are required also to take one hour a week the first semester in instruction in the use of the library and the use of books; one hour a week the second semester in instruction on the choice of studies and the choice of a vocation. One credit is allowed for the year's work.

**EXEMPTIONS:** A student may be exempted from certain of the above requirements on the following conditions:

From *a* if he presents for entrance 4 units of ancient language.

From *b* if he presents for entrance 4 units of modern foreign language.

From *d* if he presents for entrance  $3\frac{1}{2}$  units of mathematics; viz.:  $1\frac{1}{2}$  units of algebra, 1 unit of plane geometry,  $\frac{1}{2}$  unit solid geometry, and  $\frac{1}{2}$  unit trigonometry.

From *e* if he presents for entrance 3 units of science; viz.: 1 unit physics, 1 unit chemistry, and 1 unit of any other science.

From *f* if he presents for entrance 3 units of science; viz.: 1 unit of biological science, 1 unit of physics, and 1 unit of any other science.

From *g* if he presents for entrance 3 units of history.

**NOTE:** A student cannot obtain exemption from both *e* and *f*.

**PENALTIES:** Of the above requirements *c* must be completed within the first year, otherwise only  $\frac{1}{2}$  credit will be allowed; *a* or *b*, *d*, *e* or *f*, *g* must be completed within the first two years, otherwise only  $\frac{1}{2}$  credit will be allowed.

3. He must complete the requirements for a major.\*

The department in which the student selects his major will be known as his major department and its head as his major advisor. Not more than forty credits in the major department may be counted toward graduation.

4. He must complete not less than 48 credits in the group in which his major department falls.

5. He must complete a total of 128 credits, but of these not more than 24 may be counted in any department, other than the major department (except that in English 24 may be counted in addition to Freshman Composition).

**GENERAL NOTE:** Each student is to be held either for the admission and graduation requirements of the catalogue under which he enters, or for those of the catalogue under which he graduates.

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\*A major consists of not less than 24 credits in some one department.  
 †If taken later than the time indicated here these subjects will count but half credit.



DISTRIBUTION OF WORK BY YEARS

Of the work in the prescribed subjects (see 2 above), that in English Composition (Rhetoric) must be completed in the Freshman year; that in Mathematics and in Medieval and Modern History (when taken in fulfillment of the History requirement) and also one year of Science and one year of Foreign Language must be completed by the end of the Sophomore year.† The work of the Junior and Senior years consists of those prescribed subjects which the student has not been able to take during the first two years, and of those additional courses which will fulfill the major and elective requirements as specified under 3, 4 and 5 above.

Candidates for the bachelor's degrees in the College of Liberal Arts must receive grades of A, B, or C in at least three-fourths of the credits required for the degree. This rule does not apply to grades given before the year 1910-11.

SCHEME OF ELECTIVES

For purposes of election, outside the major department, the College of Liberal Arts, the College of Science and the School of Education shall be treated as one.

The following courses given outside the College of Liberal Arts may be counted toward a bachelor of arts degree. However, not more than twelve such credits altogether shall be counted toward this degree.

COLLEGE OF PHARMACY

|                |   |                                      |
|----------------|---|--------------------------------------|
| Materia medica | } | Total amount allowed, eight credits. |
| Therapeutics   |   |                                      |
| Toxicology     |   |                                      |

COLLEGE OF ENGINEERING

|                                 |   |  |
|---------------------------------|---|--|
| Mechanical drawing, 4 credits   | } | Total amount allowed,<br>twelve credits. |
| Descriptive geometry, 4 credits |   |  |
| Surveying, 4 credits            |   |  |
| Dynamo machinery, 4 credits     |   |  |
| Alternating currents, 4 credits |   |  |

COLLEGE OF MINES

General metallurgy—four credits.

MUSIC

A total of twelve credits in music may be counted toward the bachelor of arts degree.

## COLLEGE OF FORESTRY

The following courses may be counted toward the bachelor of arts degree: (1) General Forestry (for Arts and Science students), 2 hours; (2) Dendrology, 4 hours; (3) Forest Economics, 2 hours; (4) Silviculture, 8 hours. The maximum number of hours elected from these subjects is twelve.

## SCHOOL OF LAW

Agency, 2 credits                      Equity, 2 credits  
 Constitutional law, 4 credits        Persons, 2 credits  
 Contracts, 6 credits                Property, 4 credits  
 General business law, 2 credits

From the above subjects a total of twelve credits may be counted toward the bachelor of arts degree by a student majoring in the Philosophical Group; a total of six credits may be so counted by a student majoring in any other group.

SUGGESTIVE SCHEDULE BY YEARS OF THE COURSES  
 LEADING TO THE A. B. DEGREE.

| GROUP I.<br>LANGUAGE AND LITERATURE.      |  | GROUP II.<br>PHILOSOPHICAL.                         |
|---|--|---|
| Sub-group I.                              | Sub-group II.                          | Sub-groups I and II.                                |
| <b>ANCIENT LANGUAGE AND LITERATURE.</b>   | <b>MODERN LANGUAGE AND LITERATURE.</b> | <b>HISTORY AND POLITICAL SCIENCE, OR PHILOSOPHY</b> |
| <i>Freshman</i>                           | <i>Freshman</i>                        | <i>Freshman</i>                                     |
| English ..... 8                           | English ..... 8                        | English ..... 8                                     |
| Greek ..... 8                             | Mod. For. Lang. .... 8                 | Foreign Lang. .... 8                                |
| Latin ..... 8                             | History ..... 8                        | History ..... 8                                     |
| Mathematics ..... 4                       | Mathematics ..... 8                    | Mathematics ..... 4                                 |
| Hygiene ..... 1                           | Hygiene ..... 1                        | Hygiene ..... 1                                     |
| Library and Curriculum ..... 1            | Library and Curriculum ..... 1         | Library and Curriculum ..... 1                      |
| Phys. Training ..... 4                    | Phys. Training ..... 4                 | Phys. Training ..... 4                              |
| <i>Sophomore</i>                          | <i>Sophomore</i>                       | <i>Sophomore</i>                                    |
| Latin ..... 3 <sup>1</sup> / <sub>4</sub> | Anc. Language ..... 8                  | For. Language ..... 8                               |
| Greek ..... 8                             | Philosophy ..... 8                     | Philosophy ..... 8                                  |
| History ..... 8                           | Science ..... 8                        | Pol. Science ..... 8                                |
| Phys. Science ..... 8                     | Elective* ..... 8                      | Science ..... 8                                     |
| Phys. Training ..... 4                    | Phys. Training ..... 4                 | Phys. Training ..... 4                              |
| <i>Junior</i>                             | <i>Junior</i>                          | <i>Junior</i>                                       |
| Major ..... 8                             | Major ..... 8                          | Major ..... 8                                       |
| Mod. For. Lang. .... 8                    | Pol. Economy ..... 8                   | Science ..... 8                                     |
| Philosophy ..... 8                        | Science ..... 8                        | Electives ..... 16                                  |
| Biol. Science ..... 8                     | Elective ..... 8                       |   |
| <i>Senior</i>                             | <i>Senior</i>                          | <i>Senior</i>                                       |
| Major ..... 8                             | Major ..... 8                          | Major ..... 8                                       |
| Pol. Science ..... 8                      | Electives ..... 16                     | Electives ..... 8                                   |
| Electives ..... 16                        |  |   |

\*This elective should be applied on the student's proposed major.

SUGGESTED CURRICULUM IN HOME ECONOMICS

Leading to the A. B. Degree.

| FRESHMAN                     |          | SOPHOMORE                                     |          |
|------------------------------|----------|---|----------|
|                              | Credits. |   | Credits. |
| English .....                | 8        | Ancient Language or Literature .....          | 8        |
| Chemistry .....              | 8        | History .....                                 | 8        |
| Modern Language .....        | 8        | Fine Arts .....                               | 2        |
| Mathematics .....            | 4        | Zoology .....                                 | 4        |
| Library and curriculum....   | 1        | Home Economics .....                          | 10       |
| Hygiene .....                | 1        | Physical Training .....                       | 4        |
| Physical Training .....      | 4        |   |          |
|                              | <hr/>    |   | <hr/>    |
|                              | 34       |   | 36       |
| JUNIOR                       |          | SENIOR  |          |
| Political & Social Science.. | 6        | Home Economics .....                          | 8        |
| Philosophy .....             | 8        | Political & Social Science or Fine Arts ..... | 8        |
| Biology .....                | 6        | Elective .....                                | 12       |
| Fine Arts .....              | 4        | Philosophy .....                              | 4        |
| Home Economics .....         | 8        |   |          |
|                              | <hr/>    |   | <hr/>    |
|                              | 32       |   | 32       |

CURRICULUM IN LIBRARY ECONOMY

Leading to the A. B. Degree.

| FRESHMAN YEAR                                 |          |   |          |
|---|----------|---|----------|
|   | Credits. |   | Credits. |
| English 1.....                                | 4        | English 2.....                                | 4        |
| Elementary Botany, Chemistry, or Physics..... | 4        | Elementary Botany, Chemistry, or Physics..... | 4        |
| History 1.....                                | 4        | History 2.....                                | 4        |
| German or French.....                         | 4        | German or French.....                         | 4        |
| Hygiene .....                                 | ½        | Hygiene .....                                 | ½        |
| Physical Training.....                        | 2        | Physical Training.....                        | 2        |
|   | <hr/>    |   | <hr/>    |
|   | 16½+2    |   | 16½+2    |
| SOPHOMORE YEAR                                |          |   |          |
| Geology 1a .....                              | 4        | Zoology 1a.....                               | 4        |
| History 7.....                                | 4        | History 8.....                                | 4        |
| German or French.....                         | 4        | German or French.....                         | 4        |
| Mathematics 1 .....                           | 4        | History, English, or Language .....           | 4        |
| Physical Training.....                        | 2        | Physical Training.....                        | 2        |
|   | <hr/>    |   | <hr/>    |
|   | 16+2     |   | 16+2     |
| JUNIOR YEAR                                   |          |   |          |
| History of Education.....                     | 3        | Elements of Economics 2... 3                  | 3        |
| Philosophy 1.....                             | 4        | English 20.....                               | 3        |
| Elements of Economics 1.....                  | 3        | Zoology 16.....                               | 2        |
| Library Economy 1.....                        | 5        | Library Economy.....                          | 7        |
|   | <hr/>    |   | <hr/>    |
|   | 15       |   | 15       |
| SENIOR YEAR                                   |          |   |          |
| Elements of Sociology 3.....                  | 3        | Elements of Sociology 4.....                  | 3        |
| Philosophy in Literature....                  | 2        | Philosophy in Literature....                  | 2        |
| English 37, Greek 13, or Latin 11.....        | 3        | English 37, or History 22 or 30 .....         | 3        |
| Library Economy 3.....                        | 7        | Library Economy.....                          | 7        |
|   | <hr/>    |   | <hr/>    |
|   | 15       |   | 15       |

## CURRICULUM IN JOURNALISM

Leading to the A. B. Degree.

Students working for an A. B. degree, majoring in the Department of Journalism, will be expected to take the following courses:

## FRESHMAN YEAR

English, 8 credits; modern foreign or ancient language, 8 credits; history, 8 credits; mathematics, 4 credits; hygiene, 1 credit; physical training (women), military drill (men), 4 credits.

## SOPHOMORE YEAR

Modern foreign or ancient language, 8 credits; physical science, 8 credits; political economy, 6 credits; newspaper reporting 6 credits; physical training (women), military drill (men), 4 credits.

## JUNIOR YEAR

Biological science, 8 credits; political science, 6 credits; newspaper editing, 4 credits; newspaper history, 2 credits.

## SENIOR YEAR

Philosophy, 8 credits.

## SUGGESTED ELECTIVES

Freshman year—Elements of newspaper writing, mechanics of printing, library and curriculum.

Sophomore year—Mechanics of printing or advanced printing; advertising.

Junior year—Short story, advertising, news interpretation, editorial writing, (second semester), ethnology, evolution.

Senior year—News interpretation, editorial writing, advertising, short story.

## CURRICULUM PREPARATORY TO LAW

A course designed for students who will begin law after having taken only the two years college work as required for their admission to the Law School.

The student must take either the prescribed courses in the College of Liberal Arts or the course outlined below:

FIRST YEAR

|   |           |
|---|-----------|
| English (1, 2), Freshman composition.....   | 8 credits |
| History, (English or American).....   | 8 credits |
| Chemistry, Zoology or Botany.....   | 8 credits |
| (preferably in the order named)   |           |
| College Mathematics (1b, 2b) or foreign<br>language .....                                   | 8 credits |
| (If the student has taken two years of Latin,<br>it is recommended that he take Roman law). |           |
| Military Drill (men); Physical Training<br>(women) .....                                    | 4 credits |
| Hygiene; Library and Curriculum.....  | 2 credits |

SECOND YEAR

|  |           |
|--|-----------|
| Political and Social Science.....  | 8 credits |
| (Either Principles of Sociology and Element-<br>ary Economics or American Government)  |           |
| Philosophy .....   | 8 credits |
| (Two of the following four subjects: Intro-<br>duction to Philosophy; Ethics; Logic or Psy-<br>chology; or History of Philosophy.  |           |
| Sixteen hours from among the following subjects:<br>Physics; the continuation of a foreign language; Eng-<br>lish Constitutional History; Political and Social<br>Science; Philosophy; English Literature, a year of<br>Science. |           |

For the third and fourth year in the College of Liberal Arts and the College of Science, students must classify themselves under some one of the groups as offered, either a regular course or the combined Arts-Law course.

SIX-YEAR ARTS AND LAW CURRICULUM

This combined course allows the student with a good record to complete the A. B. and LL. B. in six years. It is open only to those students who have maintained a uniformly good record for scholarship during the first three years of collegiate work. At the end of three years after the student has earned 98 credits, including 8 credits in military drill or physical training and including all of the required work, together with a major, he may for the fourth year register in the School of Law for the first year's work in law. He must, however, earn in the College of Liberal Arts additional credits sufficient to make the total credits

amount to 104. Twenty-four credits in the first year law work may apply toward the A. B. degree, thus making 128 credits required for this degree.

The last two years of this combined course are devoted to completing the rest of the required work in the School of Law.

Students are strongly advised to complete their full ninety-six credits in the College of Liberal Arts by the end of the third year so that they can enter the law work clear in the fourth year.

Students from other institutions entering this university with advanced standing may take advantage of this combined course, provided they are registered in the College of Liberal Arts for at least one full year of work, and earn at least thirty credits in this university before entering the School of Law.

This privilege will not be extended to normal graduates attempting to graduate in two years, nor to under-graduates of other colleges who enter this university with the rank of senior.

#### MUSIC CURRICULA

For the curricula in music leading to the degree of Bachelor of Music see special bulletin which will be sent on request.

# COLLEGE OF SCIENCE

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## THE FACULTY

- THOMAS FRANKLIN KANE, PH. D., (Johns Hopkins University),  
PRESIDENT.
- HENRY LANDES, A. M., (Harvard University), Professor of Geology  
and Mineralogy, DEAN.
- ORSON BENNETT JOHNSON, LL. B., (Union College of Law), Pro-  
fessor Emeritus of Zoology.
- HORACE G. BYERS, PH. D., (Johns Hopkins University), Professor  
of Chemistry.
- TREVOR KINCAID, A. M., (University of Washington), Professor of  
Zoology.
- FREDERICK ARTHUR OSBORN, PH. D., (University of Michigan), Pro-  
fessor of Physics and Director of the Physics Laboratories.
- THEODORE CHRISTIAN FRYE, PH. D., (University of Chicago), Pro-  
fessor of Botany.
- ROBERT EDOUARD MORITZ, PH. D., (University of Nebraska), Pro-  
fessor of Mathematics and Astronomy.
- DAVID CONNOLLY HALL, Sc. M., M. D., (University of Chicago),  
Director of Physical Training.
- HENRY KREITZER BENSON, PH. D., (Columbia University), Profess-  
or of Industrial Chemistry.
- JOHN WEINZIRL, PH. D., (University of Wisconsin), Professor of  
Bacteriology.
- HERMAN CAMPBELL STEVENS, PH. D., (Harvard University), As-  
sociate Professor of Psychology.
- FRANK MARION MORRISON, A. B., (University of Michigan), As-  
sociate Professor of Mathematics.
- SAMUEL LATIMER BOOTHROYD, A. M., (Colorado Agricultural Col-  
lege), Associate Professor of Astronomy and Mathematics.
- WILLIAM MAURICE DEHN, PH. D., (University of Illinois), As-  
sistant Professor of Physiological Chemistry and Toxicology.
- EDWIN JAMES SAUNDERS, A. M., (Harvard University), Assistant  
Professor of Geology.

- GEORGE IRVING GAVETT, B. S., (C. E.) (University of Michigan), Assistant Professor of Mathematics.
- ROBERT EVASTAFIEFF ROSE, PH. D., (University of Leipzig), Assistant Professor of Chemistry.
- STEVENSON SMITH, PH. D., (University of Pennsylvania), Assistant Professor of Orthogenics.
- ELI VICTOR SMITH, PH. D., (Northwestern University), Assistant Professor of Zoology.
- HENRY LOUIS BRAKEL, PH. D., (Cornell University), Assistant Professor of Physics.
- CHARLES EDWIN WEAVER, PH. D., (University of California), Assistant Professor of Geology.
- WILLIAM VERNON LOVITT, PH. M., (University of Chicago), Instructor in Mathematics.
- ALLEN FULLER CARPENTER, A. M., (University of Nebraska), Instructor in Mathematics.
- JESSIE B. MERRICK, B. S., (Columbia University), Director of Physical Training for Women.
- GEORGE BURTON RIGG, A. M., (University of Washington), Instructor in Botany.
- AGNES FAY MORGAN, M. S., (University of Chicago), Instructor in Chemistry.
- JOHN WILLIAM HOTSON, A. M., (McMaster University), Instructor in Botany.
- LEWIS IRVING NEIKIRK, PH. D., (University of Pennsylvania), Instructor in Mathematics.
- HJALMAR LAURITS OSTERUD, A. M., (University of Washington), Instructor in Zoology.
- HARLAN LEO TRUMBULL, PH. D., (University of Chicago), Instructor in Chemistry.
- JOHN WHITMORE, PH. D., (Yale University), Instructor in Mathematics.
- HENRY SLATER WILCOX, A. M., (Harvard University), Instructor in Psychology.
- EFFIE ISABEL RAITT, B. S., (Columbia University), Director of the Department of Home Economics.
- CURT JOHN DUCASSE, PH. D., (Harvard University), Instructor in Philosophy and Psychology.
- FLOYD THOMAS VORIS, A. M., (Columbia University), Instructor in Physics.



- SAMUEL HERBERT ANDERSON, PH. D., (University of Illinois), Instructor in Physics.
- HAROLD EUGENE CULVER, PH. M., (University of Wisconsin), Instructor in Geology.
- ERIC TEMPLE BELL, PH. D., (Columbia University), Instructor in Mathematics.
- GERTRUDE CRUDEN, A. B. (Smith College), B. S. (Columbia University), Instructor in Domestic Art.
- GEORGE NELSON SALISBURY, B. S., (University of Minnesota), Lecturer in Meteorology. United States Weather Bureau Official.
- HELEN FITCH, A. B., (University of Wisconsin), Assistant in Physical Training.
- ELMER SHERRILL, Stockroom Assistant in Chemistry.
- \*LUNA PEARL ATHEN, A. B., (University of Washington), Graduate Assistant in Mathematics.
- CHESTER EARL GIBLIN, A. B., (University of Colorado), Graduate Assistant in Physics.
- HARRY H. HILL, A. B., (University of Wyoming), Graduate Assistant in Chemistry.
- SEBASTIN KARREER, A. B., (University of Washington), Graduate Assistant in Physics.
- SETH C. LANGDON, A. B., (Northwestern University), Graduate Assistant in Chemistry.
- OLIVER WEESNER, B. S., (Earlham College), Graduate Assistant in Mathematics.
- THOMAS A. F. WILLIAMS, A. B., (Maryville College), Graduate Assistant in Mathematics.

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- WILLIAM SAVERY, PH. D., (Harvard University), Professor of Philosophy.
- PIERRE JOSEPH FREIN, PH. D., (Johns Hopkins University), Professor of French.
- EDWIN JOHN VIKNER, PH. D., (University of Minnesota), Professor of Scandinavian Language.
- ALLEN ROGERS BENHAM, PH. D., (Yale University), Associate Professor of English.
- THOMAS KAY SIDEX, PH. D., (University of Chicago), Assistant Professor of Latin and Greek.

**JOSEPH KINMONT HART, PH. D.,** (University of Chicago), Assistant Professor of Education.

**GEORGE WALLACE UMPHREY, PH. D.,** (Harvard University), Assistant Professor of Spanish.

**HARVEY BRUCE DENSMORE, A. B.,** (University of Oregon), Assistant Professor of Greek.

**JACOB NEIBERT BOWMAN, PH. D.,** (University of Heidelberg), Assistant Professor of European History.

**THERESA SCHMID McMAHON, PH. D.,** (University of Wisconsin), Instructor in Political and Social Science.

**WALTER EDWARD ROLOFF, PH. D.,** (University of Wisconsin), Instructor in German.

## ADMISSION TO THE FRESHMAN CLASS

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To be admitted to freshman standing in the College of Science, a student must either (a) pass an examination based on a four-year course amounting in the aggregate to fifteen units, or (b) complete a course of the same length in an accredited school. The required and elective units are as follows:

|   |    |
|---|----|
| Algebra .....   | 1½ |
| Plane Geometry .....  | 1  |
| Solid Geometry .....  | ½  |
| Physics .....   | 1  |
| Chemistry or Biology.....   | 1  |
| English .....   | 4  |
| A foreign language .....  | 2  |
| History (American history preferred) or U. S.<br>History and Civics ..... | 1  |
| Elective .....  | 3  |
| Total .....   | 15 |

More detailed information concerning admission will be furnished those interested in a separate section of the University Bulletin, known as Entrance Information.

## CURRICULA OF THE COLLEGE OF SCIENCE

### I. CURRICULA WITH ELECTIVE COURSES.

In this division, in order to receive the degree of bachelor of science, a candidate who has been regularly admitted to the College of Science must fulfill the following requirements.

1. The requirements for a major must be completed, which consist of 24 credits or more in some one department.

The department in which the student selects his major will be known as his major department and its head as his major advisor. Not more than 40 credits in the major department may be counted toward graduation.

2. A total of 128 credits must be secured, but of these not more than 24 may be counted in any department other than the major department. A minimum of 48 credits must be completed in the College of Science. Elections may be made of courses in

the College of Arts and the School of Education in the same manner as in the College of Science.

3. The number of credits specified in each of the following subjects must be earned as a part of the total of 128 credits, subject to the possible exemptions stated below:

- a. Astronomy, Chemistry, or Physics.....8 credits
- b. Botany, Geology, or Zoology.....8 credits
- c. Physical Training or Military Science....8 credits
- d. Mathematics .....4 credits
- e. Ancient language and literature.....6 or 8 credits
- f. Modern foreign language.....8 credits

(A student entering with less than four years of foreign language must make a total of five years in high school and college combined).

- g. Rhetoric .....4 or 8 credits

(A student who completes the first semester of rhetoric with a grade of A will not be required to take that subject during the second semester).

- h. History .....8 credits
- i. Philosophy .....8 credits
- j. Political Science .....6 credits
- k. Hygiene .....1 credit
- l. Library and curriculum instruction.....1 credit

(Freshmen are required to take one hour a week each semester in hygiene, with one credit for the year's work. They are required also to take one hour a week the first semester in instruction in the use of the library and the use of books, and one hour a week the second semester in instruction on the choice of studies and the choice of a vocation. One credit is given for the year's work.)

Possible exemptions from the courses specified above:

A student may be exempted from certain of the above requirements on the following conditions:

From (a) if he presents for entrance 3 units of science, viz.: 1 unit of physics, 1 unit of chemistry, and 1 unit of any other science.

From (b) if he presents for entrance 3 units of science, viz.: 1 unit of biological science, 1 unit of physics, and 1 unit of any other science.

From (*d*) if he presents for entrance  $3\frac{1}{2}$  units of mathematics, viz.:  $1\frac{1}{2}$  units of algebra, 1 unit of plane geometry,  $\frac{1}{2}$  unit of solid geometry, and  $\frac{1}{2}$  unit of trigonometry.

From (*e*) if he presents for entrance 4 units of ancient language.

From (*f*) if he presents for entrance 4 units of modern foreign language.

From (*h*) if he presents for entrance 3 units of history.

NOTE 1. A student cannot obtain exemption from both (*a*) and (*b*).

NOTE 2. Of the above requirements *g* must be completed within the first year, and (*e*) or (*f*), (*d*), (*a*) or (*b*), and (*h*) must be completed within the first two years, otherwise only one-half credit will be allowed.

GENERAL NOTE. A student is to be held either for the admission and graduation requirements of the catalogue under which he enters, or for those of the catalogue under which he graduates.

#### THREE-FOURTHS GRADES ABOVE D

Candidates for the bachelor's degrees in the College of Science must receive grades of A, B, or C in at least three-fourths of the credits required for the degree. This rule does not apply to grades given before the year 1910-11.

#### ELECTIVES IN OTHER COLLEGES.

In addition to the provisions for elections above noted, elective courses may be chosen in the colleges of Engineering, Forestry, Mines and Pharmacy, as follows:

Engineering: Mechanical drawing, descriptive geometry, surveying, dynamo machinery, and alternating currents, each having four credits. The maximum amount allowed is twelve credits.

Forestry: General forestry, 2 credits; dendrology, 4 credits; forest economics, 2 credits; silviculture, 8 credits. The maximum amount allowed is twelve credits.

Mines: General metallurgy, 4 credits.

Pharmacy: Materia medica, therapeutics, and toxicology, not to exceed 8 credits in all.

SUGGESTIVE SCHEDULE BY YEARS FOR THE GENERAL OR ELECTIVE COURSES

| Astronomy<br>Chemistry<br>Mathematics<br>Physics  | Botany<br>Geology<br>Zoology   | Home<br>Economics   | Physical<br>Training   | Psychology   |
|---|--|---|--|--|
| <i>Freshman.</i>  |  |   |  |  |
| Astron. Chem. or<br>Physics ..... 8<br>Mathematics ..... 4<br>English ..... 8<br>Foreign language. 8<br>Hygiene ..... 1<br>Lib. and Curric... 1<br>Physical training. 4 | Botany, Geol. and<br>Zoology ..... 8<br>Mathematics ..... 4<br>English ..... 8<br>Foreign language. 8<br>Hygiene ..... 1<br>Lib. and Curric... 1<br>Physical training. 4 | Home economics.. 4<br>Chemistry ..... 8<br>English ..... 8<br>Foreign language. 8<br>Hygiene ..... 1<br>Library and Cur-<br>riculum ..... 1<br>Physical training. 4 | Mathematics ..... 4<br>Zoology ..... 8<br>English ..... 8<br>Foreign language. 8<br>Hygiene ..... 1<br>Library and Cur-<br>riculum ..... 1<br>Physical training. 4 | Mathematics ..... 4<br>Zoology ..... 8<br>English ..... 8<br>Foreign language. 8<br>Hygiene ..... 1<br>Library and Cur-<br>riculum ..... 1<br>Physical training. 4 |
| <i>Sophomore.</i>   |  |   |  |  |
| Science ..... 8<br>Foreign language. 8<br>History ..... 8<br>Political science.. 6<br>Physical training. 4  | Science ..... 8<br>Foreign language. 8<br>History ..... 8<br>Political science.. 6<br>Physical training. 4   | Home economics.. 4<br>Chemistry ..... 8<br>Mathematics ..... 4<br>Zoology ..... 8<br>Foreign language. 8<br>Physical training. 4                                    | Chemistry ..... 8<br>Zoology ..... 8<br>History ..... 8<br>Foreign language. 8<br>Physical training. 4   | Major ..... 4<br>Mathematics ..... 4<br>Physics ..... 8<br>History ..... 8<br>Foreign language. 8<br>Physical training. 4  |
| <i>Junior.</i>  |  |   |  |  |
| Major ..... 8<br>Philosophy ..... 8<br>Electives ..... 14   | Major ..... 8<br>Philosophy ..... 8<br>Electives ..... 14  | Home economics.. 6<br>Philosophy ..... 8<br>History ..... 8<br>Political science.. 6<br>Elective ..... 2  | Major ..... 12<br>Education ..... 4<br>Philosophy ..... 8<br>Political science.. 6   | Major ..... 8<br>Histology and<br>Neurology ..... 8<br>History of<br>Philosophy .... 8<br>Political science.. 6  |
| <i>Senior.</i>  |  |   |  |  |
| Major ..... 8<br>Electives ..... 22   | Major ..... 8<br>Electives ..... 22  | Home economics.. 10<br>Elective ..... 20  | Major ..... 12<br>Education ..... 8<br>Elective ..... 10   | Major ..... 8<br>Electives ..... 22  |

## II. CURRICULA WITH PRESCRIBED COURSES.

## CURRICULUM PREPARATORY TO MEDICINE

Four years of prescribed work, leading to the B. S. degree, are provided for those students who desire to enter a medical school after graduation from this institution. It is expected that a student after completing this pre-medical course, as outlined below, may be admitted to junior standing in a school of medicine.

| <i>Freshman (a)</i>           |       | <i>Sophomore.</i>              |       |
|-------------------------------|-------|--------------------------------|-------|
|                               | Hours |                                | Hours |
| Botany (b).....               | 4     | Anatomy, comparative.....      | 8     |
| Chemistry (c).....            | 8     | Chemistry, organic.....        | 8     |
| Zoology (d).....              | 4     | Physics (g).....               | 8     |
| Mathematics (e).....          | 4     | French or German.....          | 8     |
| English.....                  | 4     | Military or physical training. | 4     |
| German or French (f).....     | 8     |                                |       |
| Military or physical training | 4     |                                |       |
| <i>Junior.</i>                |       | <i>Senior.</i>                 |       |
|                               | Hours |                                | Hours |
| Chemistry, physiological..... | 4     | Bacteriology 3 and 8.....      | 8     |
| Embryology.....               | 4     | Elective.....                  | 12    |
| Histology.....                | 4     | Pharmacology and               |       |
| Neurology.....                | 4     | Toxicology.....                | 4     |
| Physiology.....               | 8     | Psychology.....                | 8     |
| Elective.....                 | 8     |                                |       |

NOTE: (a) Two years of Latin must be offered for admission.

(b) Botany 2, second semester. If Botany was studied in the high school, then Botany 10 should be elected.

(c) General Chemistry the first semester, qualitative analysis the second semester.

(d) Invertebrate zoology for the first semester.

(e) Trigonometry is required, but solid geometry may be elected if not previously studied in the high school.

(f) A reading knowledge of French or German is required. (Equivalent to two years' work.)

(g) Physics 3a and 4a.

## CURRICULUM IN HOME ECONOMICS

A prescribed curriculum in Home Economics, leading to the degree of Bachelor of Science, is offered as follows:

## FRESHMAN YEAR

| FIRST SEMESTER                              | Credit      | SECOND SEMESTER                              | Credit     |
|---|-------------|--|------------|
| Home Econ. 5 (hand and machine sewing)..... | 2           | Home Econ. 2 (food preparation) .....        | 2          |
| Chemistry 1c. (general) ..                  | 4           | Chemistry 2c. (household... chemistry) ..... | 4          |
| English 1 (composition) ..                  | 2           | English (composition).....                   | 2          |
| German or French.....                       | 4           | German or French.....                        | 4          |
| Botany or Zoology.....                      | 4           | Zoology 10 (physiology)....                  | 4          |
| Physical training 1.....                    | 2           | Physical training.....                       | 2          |
| Personal Hygiene.....                       | ½           |  |            |
|   | <hr/> 16½+2 |  | <hr/> 16+2 |

## SOPHOMORE YEAR

| CREDIT   | CREDIT     |  |            |
|--|------------|--|------------|
| Home Econ. 3 (selection and special methods in food preparation) .....           | 4          | Home Econ. 4 (experimental cookery).....   | 2          |
| Home Economics 7 (clothing)  | 2          | Home Economics 8 (clothing)  | 2          |
| Chemistry 3c. (organic).....   | 4          | Chemistry 20a (physiological) .....  | 4          |
| English (composition).....   | 2          | English (composition).....   | 2          |
| German, French, English Literature, Greek and Roman Literature, or History ..... | 4          | Design .....   | 2          |
| Physical Training.....   | 2          | German, French, English Literature, Greek and Roman Literature, or History ..... | 4          |
|  | <hr/> 16+2 | Physical Training.....   | 2          |
|  |            |  | <hr/> 16+2 |

## JUNIOR YEAR

| CREDIT   | CREDIT   |  |          |
|--|----------|--|----------|
| Home Economics 15 (Dietetics) .....                | 4        | Home Economics 22 (home decoration) .....    | 2        |
| Architecture .....                                 | 3        | Home Economics 26 (textiles) .....           | 3        |
| Bacteriology 3.....                                | 4        | Physics 6a (Physics of the Home) .....       | 4        |
| Political Science 1 (Principles of Economics)..... | 3        | Botany 4b (Sanitation)....                   | 2        |
| Psychology (or elective)....                       | 4        | Political Science (Standards of living)..... | 2        |
|  | <hr/> 18 | Education (or elective).....                 | 4        |
|  |          |  | <hr/> 17 |

## SENIOR YEAR

| CREDIT   | CREDIT   |  |          |
|--|----------|--|----------|
| Home Economics 27 (Teachers' course).....                  | 2        | Home Economics 24 (household management) ..... | 3        |
| Home Economics 19 (Home nursing and invalid cookery) ..... | 2        | Home Economics 28 (Teachers' course) .....     | 2        |
| Pol. Science 3 (Sociology) ..                              | 3        | Pol. Science 4 (Social problems) .....         | 3        |
| Ethics .....   | 4        | Education (or elective)....                    | 4        |
| Education (or elective)....                                | 4        | Elective .....                                 | 2        |
|  | <hr/> 15 |  | <hr/> 14 |



## DEPARTMENTS OF INSTRUCTION

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### COLLEGE OF LIBERAL ARTS AND THE COLLEGE OF SCIENCE.

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The departments of these two colleges are arranged in alphabetical order. Distinct subjects which are not organized as separate departments but are given in connection with the related work of an established department have directory headings in the alphabetical list.

Courses listed as year courses ordinarily carry credit only when pursued for the full time; the instructor's permission must be obtained for credit for only a single semester of such a course.

The credit indicated in connection with each course is the "semester credit," being based on the class periods per week.

#### ASTRONOMY

(See Mathematics and Astronomy)

#### BACTERIOLOGY

(See Botany)

#### BOTANY

(Office, Science Hall)

PROFESSOR FRYE; PROFESSOR WEINZIRL; MR. RIGG, MR. HOTSON; MR. ZELLER, MISS AYRES, MISS COX, MR. VELDEE.

#### I. BOTANY

##### SUGGESTED SELECTIONS

1. For the required science in the colleges of Liberal Arts and Science only courses 1, 2, 9, 10, 5, 6, 43, 44, will be accepted.
2. For a major: courses 9, 10, 5, 6, 43, 44, of which 5 and 6 are required. The total number of credits in the department must be at least 24.
3. For those preparing to teach botany: courses 9, 10, 5, 6, 42, 43, 44.
4. For pharmacy students: courses 13, 14.
5. For forestry students courses 1, 10, 11, 12, 43, 44, 16.

6. For home economics students: courses 1, 2, 23, 24.

7. For students preparing to teach agriculture: courses 9, 10, 5, 6, 42, 43, 44, 25, 26, 41.

8. For those desiring to enter seed laboratories: courses 9, 10, 5, 6, 43, 44, 17.

The laboratory fee for all courses except 39 and 37 is three dollars.

1. **ELEMENTARY BOTANY.** Four credits. First semester.

The structure and functions of roots, stems, leaves and seeds. Only for those who have had no botany in the high school.

2. **ELEMENTARY BOTANY.** Four credits. Second semester. Open to students entering the second semester without any previous botany work.

Types of the great groups of plants from the lowest to the highest. Plant analysis.

13-14. **PHARMACY BOTANY.** Four credits. The year.

Gross structure of vegetative and reproductive parts of seed plants. Brief study of spore plants. Microscopy of powdered drugs.

9. **ECOLOGY.** Four credits. First semester. For students who have received entrance credit for a high school course in botany. Prerequisites: botany 1, except for teachers, seniors, and those having had an acceptable high school course.

The factors causing environmental adaptations in plants. Recitation, field and laboratory work.

10. **TAXONOMY.** Four credits. Second semester. For students who have received entrance credit for a high school course in botany. To be taken in place of botany 2 by those who expect to continue with botany 5 or 11. Prerequisite, botany 1, or an equivalent, except for teachers and seniors.

The science of classification of plants. Analysis of plants. Field trips, laboratory work and lectures.

11. **GENERAL BOTANY.** Four credits. First semester. For forestry students. Prerequisites, botany 1, and 10 or 2.

A study of the types of the lower plants to illustrate the advance in complexity, thus preparing the way for the understanding of spermatophyte structures.

12. **MORPHOLOGY OF SPERMATOPHYTES.** Four credits. Second semester. Prerequisite, botany 11.

Structure, especially of the stem. Lectures on adaptation to environment.

23. **FOODS.** Four credits. First semester. Prerequisite, botany 1 or high school botany.

The origin and structure of food-producing tissues in plants.

24. **FIBRES.** Four credits. Second semester. Prerequisite, botany 1 or high school botany.

The origin and structure of fibre-producing tissue in plants.

#### COURSES OPEN TO GRADUATES

41. **GENERAL FUNGI.** Four credits. First semester. Time to be arranged. Prerequisites, botany 11 or 5 and junior standing. Morphology and classification of fungi; designed as a basis for plant pathology.

42. **PLANT PATHOLOGY.** Four credits. Second semester. Time to be arranged. Prerequisite, botany 41.

The courses, symptoms and treatment of some of the common fungal and bacterial diseases of orchard and garden plants and their fruits.

35. **TEACHERS' COURSE.** Three credits. First semester. Prerequisites, 1 year of botany and junior standing.

The subject matter, aim and manner of presentation of high school botany. Practice teaching.

\*20. **PLANT HISTORY.** Three credits. Second semester. Prerequisite, botany 6.

Preparation of slides for the compound microscope. Study of plant tissues.

33. **RESEARCH.** First or second semesters, or both. Credit and time to be arranged. Open to qualified students, after consultation, either for thesis work or credit only.

37. **JOURNAL CLUB.** No credit. The year. One meeting per week at time to be arranged. Prerequisite, junior standing; two years of botany.

Review of articles in current journals. Suggested for all seniors, graduates and instructors in the department.

5. MORPHOLOGY OF THALLOPHITES. Four credits. First semester. Prerequisites, botany 2 or 10, or zoology 1 and 2.

Study of types of algae and fungi with a view to their evolution, ecology, and physiology as shown by structure.

6. MORPHOLOGY OF BRYOPHYTES AND PTERIDOPHYTES. Four credits. Second semester. Prerequisites, botany 2 or 10, or zoology 1 and 2.

Studies of types of families with a view to relationships. Some classification.

43. PLANT PHYSIOLOGY. Four credits. First semester. Prerequisites, chemistry 1 and 2; botany 1 and 2, or 9 and 10, or 1 and 10.

The physical and chemical processes in plants so far as the latter may be comprehended without organic chemistry.

44. PLANT PHYSIOLOGY. Four credits. Second semester. Prerequisite, botany 43.

The laws underlying growth and movement in plants.

16. FOREST PATHOLOGY. Four credits. Second semester. Prerequisites, botany 5 or 11. For forestry students.

The fungous and bacterial diseases of trees.

25-26. ELEMENTARY AGRICULTURE. Four credits. The year. Prerequisites, botany 1, and 2 or 10; junior standing.

Designed as a preparation for those who expect to teach the subject in high schools.

\*17. SEEDS. Four credits. The year. Prerequisites, one year of botany; junior standing.

Seed structure and physiology. The recognition of plants by their seeds.

## II. BACTERIOLOGY

The courses in bacteriology are essentially all applied and bear primarily upon: (a) medicine, (b) sanitation, and (c) industry.

The laboratory deposit for all courses except 10 is \$5 per semester; the laboratory deposit for course 10 is \$3.00.

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\*Not given in 1913-1914.

## SUGGESTED SELECTIONS

1. For pre-medical students: 3, 8, are required; 11, 12, 13, 14, 15, 16, and 17 may be elected.
2. For home economics students: 3 and 6 are required, 13 is recommended.
3. For chemical engineering students: 3, 4, 11, 13.
4. For other engineering students: 10 only is open.
5. For pharmacists: 5 is required; in junior and senior years, 8, 11, 12, 13, 14, may be elected.
6. For hygienic training: 3, 4, 11, 13, 19, 20.
7. For a major, see BOTANY, botany 1, 2; bacteriology 3, 4 or 8, 11, 12, 13, 14.

For required courses in public hygiene, see Physical Training.

3. GENERAL BACTERIOLOGY. Four credits. First semester. Prerequisite, junior standing; botany or zoology, 1 year; chemistry 1 year. Professor WEINZIRL and Mr. VELDEE.

Methods of growing bacteria and studying their structure, functions and distribution.

4 SANITARY BACTERIOLOGY. Four credits. Second semester. Prerequisite, bacteriology 3. Professor WEINZIRL and Mr. VELDEE.

A brief survey of disease bacteria. Most of the time is given to sanitation. Inspection trips.

6. SANITARY BACTERIOLOGY. Two credits. Second semester. Required of home economics students. Prerequisite, bacteriology 3. Professor WEINZIRL.

3. Professor WEINZIRL.

Sanitation as related to the home and its activities. Lectures only.

8. MEDICAL BACTERIOLOGY. Four credits. Second semester. Prerequisite, bacteriology 3. Required of pre-medical students. Professor WEINZIRL and Mr. VELDEE.

The study of pathogenic bacteria.

\*5. BACTERIOLOGY FOR PHARMACISTS. Four credits. First semester. Prerequisites, sophomore standing, one year of botany, and one year of chemistry. Professor WEINZIRL.

A general survey including technique, biology, diseases, immune sera, vaccines, disinfectants, etc.

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\*Not offered in 1913-1914.

10. **BACTERIOLOGY FOR ENGINEERS.** Two credits. Second semester. Laboratory deposit \$3.00. Professor WEINZIRL.

General course. Application to sewage disposal and water supplies.

11. **BACTERIOLOGICAL ANALYSIS.** Two credits. First semester. Prerequisite, bacteriology 4 or 8. Professor WEINZIRL.

Analysis of water, sewage, milk, meat, etc. Laboratory work only.

12. **LABORATORY DIAGNOSIS.** Two credits. Second semester. Prerequisite, bacteriology 4 or 8. Professor WEINZIRL.

The diagnosis of disease by laboratory methods, mainly bacteriological.

13. **SANITARY PROBLEMS.** Two credits. First semester. Prerequisite, bacteriology 3. Professor WEINZIRL.

The sanitary problems relating to water, sewage, and food. Lectures only.

14. **DIAGNOSTIC METHODS.** Two credits. Second semester. Prerequisite, to be taken with bacteriology 12. Professor WEINZIRL.

The consideration of diagnostic methods and their application. Lectures only.

17. **IMMUNOLOGY.** One or two credits. First semester. Prerequisite, bacteriology 4. Professor WEINZIRL.

Lectures. May be accompanied by laboratory experiments.

19-20. **RESEARCH IN BACTERIOLOGY.** Four or eight credits. The year. Open to qualified students after consultation. Professor WEINZIRL.

## CHEMISTRY

(Bagley Hall)

PROFESSOR BYERS, PROFESSOR BENSON, ASSISTANT PROFESSORS DEHN, AND ROSE, DR. TRUMBULL, MRS. MORGAN, MR. HILL AND MR. LANGDON, DEAN JOHNSON, COLLEGE OF PHARMACY

The instruction in this department is designed to satisfy, as far as possible, the requirements of those students who desire to study chemistry as a means of culture and as a necessary complement of a liberal education. It is also realized that the subject is eminently practical, hence it is the desire of those in charge so to guide the student that he may fit himself for work in those lines in which chemistry has become an applied science.

## REQUIREMENTS OF THE DEPARTMENT

For a major, twenty-four credits selected from the courses outlined and including 1a, 2a, 3, 4, and 9.

The fee for each laboratory course is ten dollars per semester. This deposit covers the materials actually consumed in the laboratory and with care provides a student for a full semester's work; the portion of the deposit not used will be refunded.

**1-2 GENERAL CHEMISTRY.** Four credits. The year. Two lectures and six hours laboratory work per week. Professor BYERS, Instructors and Assistants.

Many students come from accredited schools in which chemistry is not required. To meet the needs of such students, this course is offered. Text-books, Smith's College Chemistry and Laboratory Manual.

**1a-2a. GENERAL CHEMISTRY.** Four credits. The year. Two lectures and six laboratory hours per week. Professor BYERS, Dr. TRUMBULL and Assistants.

Primarily for engineers, but is open to all students who have had a year's work in chemistry in an accredited high school. Text-books, Smith's General Chemistry, Smith's Laboratory Manual, and Byers and Knight's Qualitative Analysis.

**1b. GENERAL CHEMISTRY.** Four credits. Second semester. Assistant Professor ROSE.

For students entering at the beginning of the second semester.

**2b. GENERAL CHEMISTRY.** Four credits. First semester. Continuation of 1b. Assistant Professor ROSE.

**1c-2c. GENERAL CHEMISTRY.** Four credits. The year. Two lectures and six laboratory hours per week. Assistant Professor ROSE.

For students of domestic science and women of the College of Arts and Sciences.

**1d. PROSPECTOR'S COURSE.** Four credits. For miners who enter January 1 and continue to April 1. Professor BENSON.

Does not require previous knowledge of chemistry, and will be merged into a course of qualitative analysis. Brownlee text-book required.

1e. **GENERAL CHEMISTRY.** Four credits. First semester.

A lecture and recitation course designed for students of pharmacy. It must be taken in conjunction with 1f.

1f. **GENERAL CHEMISTRY.** Four credits. First semester.

A laboratory course designed to accompany 1e. A portion of this course and of 2f form a continuous course in qualitative analysis.

2e. **ORGANIC CHEMISTRY.** Four credits. Second semester.

For students in pharmacy. It must be accompanied by chemistry 2f.

2f. **ORGANIC CHEMISTRY.** Four credits. Second semester.

A laboratory course in organic preparations. See also 1f.

3-4. **ORGANIC CHEMISTRY.** Four credits. The year. Assistant Professor DEHN.

Lecture course. Laboratory work on the preparation and testing of representative compounds. Bernthsen-Sudborough's text used in connection with Sudborough-James laboratory manual as laboratory guide.

3c. **ORGANIC CHEMISTRY.** Four credits. First semester. Assistant Professor DEHN.

A lecture and laboratory course for the women of the department of home economics and adapted to the students of the Colleges of Arts and Science who wish to make a more rapid survey of the subject than is furnished by courses 3-4.

5-6. **ADVANCED ORGANIC CHEMISTRY.** Four credits. The year. Assistant Professor ROSE.

Chemistry of volatile oils, dyestuffs, alkaloids and sugars. Special laboratory work can be arranged.

7. **ORGANIC ANALYSIS AND GLASS BLOWING.** Two to four credits. The year. Assistant Professor DEHN.

A laboratory course of either two or four hours. Individual instruction.

8. **ADVANCED QUALITATIVE ANALYSIS.** Four credits. First semester. Two lectures and six laboratory hours per week. Professor BYERS.

Lectures on theory of solution as applied to analytical work. Laboratory work on the analysis of alloys and minerals.



8b. **ELEMENTARY QUALITATIVE ANALYSIS.** Four credits. The year. Mrs. MORGAN.

Chemistry 1-2 is followed by a course in qualitative analysis. Two lectures and six laboratory hours per week. Text-book: Byers and Knight.

9. **QUANTITATIVE ANALYSIS.** Four credits. The year. Twelve laboratory hours and one recitation per week. Professor BENSON.  
Gravimetric and volumetric analysis. Olsen's Quantitative Analysis.

10-11. **FOOD ANALYSIS.** Four credits. The year. Laboratory, three afternoons per week. Professor JOHNSON.

First semester includes the study of the source, preparation, chemical nature and analysis of fats and oils of food, and pharmaceutical use. The second semester includes the analysis of the various food products on the market. Methods of the Association of Official Agricultural Chemists are used.

12. **INDUSTRIAL CHEMISTRY.** Three credits. The year. For civil engineers. Two lectures and one laboratory afternoon. Professor BENSON.

Chemistry of the materials of engineering.

13. **INDUSTRIAL CHEMISTRY.** Three credits. First semester. For mechanical and electrical engineers. Two lectures and one laboratory period. Professor BENSON.

Deals with the chemistry of materials of engineering.

14. **CHEMICAL TECHNOLOGY.** Four credits. Second semester. Two lectures and two laboratory hours per week. Professor BENSON.

Required of chemical engineers and elective for students who have had quantitative chemistry. Detailed study of the industries of the Northwest.

15. **WATER ANALYSIS.** Four credits. First semester. One lecture and twelve laboratory hours per week. Professor BENSON.  
Analysis of water for both industrial and sanitary purposes.

16. **GAS AND FUEL ANALYSIS.** Four credits. Second semester. Two lectures and two laboratory hours per week. Professor BENSON.

Required for chemical engineers and elective for students with prerequisite. The lectures deal with the properties of the natural

fuels and the preparation of artificial fuels. The laboratory work deals with the testing of fuels and a study of fuel specifications and the analysis of flue gases and commercial gases.

17. **SOILS AND FERTILIZERS.** Two credits. Second semester. Professor BENSON.

A lecture course dealing with the soils of Washington and the methods of soil enrichment.

18. **ROAD OILS AND TARS.** Two credits. Second semester. One hour lecture and three hours laboratory tests. Professor BENSON.

A course offered as a civil engineering option for students in highway engineering. A study of the composition and properties of road-binding materials.

19. **URINARY ANALYSIS.** Two credits. Second semester. Laboratory work only. Assistant Professor DEHN.

Practical methods of analysis of normal and pathological urines. Especially for students entering upon the study of medicine.

20-21. **PHYSIOLOGICAL CHEMISTRY.** Four credits. The year. Assistant Professor DEHN.

A course designed for medical, chemical and general science students. Chemical composition of foods, tissues, secretions and excretions, their physiological and pathological changes, with special attention to the composition and chemical analysis of blood, milk and urine.

20a. **PHYSIOLOGICAL CHEMISTRY.** Four credits. Second semester. For students in pharmacy. Assistant Professor DEHN. Essentially the same course as 20.

22. **PHYSICAL CHEMISTRY.** Four credits. First semester. Three lectures and one laboratory period per week. Dr. TRUMBULL.

An elementary lecture course dealing with fundamental theories of chemistry based upon physical measurements.

23. **ELECTRO CHEMISTRY.** Four credits. Second semester. Professor BYERS and Dr. TRUMBULL.

The lecture course deals with the historical development of electro chemistry, the theories of electrolysis, migration of ions, concentration cells, solution pressure, etc. The laboratory work consists of the preparation of compounds by electrolysis and

electro synthesis, electro-plating, etc., and of illustrations of the subject-matter of the lecture work.

24. **INORGANIC PREPARATIONS.** Credits to be arranged. Second semester. Twelve laboratory hours per week. Professor BYERS.

Methods of preparation of important inorganic compounds. Designed to illustrate special chemical principles.

25. **ADVANCED PHYSICAL CHEMISTRY.** Four credits. Second semester. Two lectures and six laboratory hours. Dr. TRUMBULL.

A course in chemical statics and dynamics with physical chemical measurements. Nernst and Ostwald-Luther used as texts.

26. **INVESTIGATION.** The year.

Any student who has completed at least three years' work in chemistry may undertake some original investigation under the direction of one of the instructors. Such work will not be encouraged, however, except when the student is presenting himself for an advanced degree.

27-28. **CHEMICAL THEORY.** Two credits. The year. Professor BYERS.

All graduate students registering in the department of chemistry will be expected to take a two-hour course throughout the year in the historical development of fundamental laws and theories.

29. **ADVANCED ORGANIC PREPARATIONS.** Four credits. The year. Assistant Professor DEHN.

30. **TEXTILE CHEMISTRY.** Two credits. Second semester. For home economics students only. One lecture and three laboratory hours. Assistant Professor ROSE.

A course dealing with the composition of commercial fabrics and the chemical tests dealing with identification and detection of sophistications.

## ENGLISH

(Office, Room 7, Auditorium)

PROFESSORS PADELDFORD, PARRINGTON, ASSOCIATE PROFESSORS BENHAM, MILLIMAN, ASSISTANT PROFESSORS GARRETT, COX, DARBY; MR. PEASE, MR. JOHANSON, MR. SAWYER, MR. CHITTICK, MR. GRAVES AND MR. WITHERS.

## REQUIREMENTS OF THE DEPARTMENT

For a major: either course 7-8 or course 33-34.

For a teacher's certificate: the same as for a major together with course 35-36.

For all students, not majors in the department, who desire the recommendation of the department for positions as teachers of English, either course 7-8 or course 33-34.

## I. COMPOSITION

1-2 FRESHMAN COMPOSITION. Four credits. The year. Thirteen sections. Required of all freshmen in the College of Liberal Arts and in the College of Science. If taken later than the freshman year, only half credit will be given. Associate Professor MILLIMAN in charge.

The principles of composition, with practice in writing. Conferences on theme criticism. Those who receive a grade of A in course 1 are excused from course 2.

2. ENGLISH COMPOSITION. Four credits. First semester. A repetition of 2 above.

1. ENGLISH COMPOSITION. Four credits. Second semester. Two sections.

1a-2a. FRESHMAN COMPOSITION. Two credits. The year. An adaptation of 1-2 for students of engineering. Seven sections.

2a-1a. FRESHMAN COMPOSITION. Two credits. A repetition of 1a-2a above. Associate Professor MILLIMAN in charge.

1b-2b. FRESHMAN COMPOSITION. Two credits. The year. For students in the department of home economics. Four sections. Associate Professor MILLIMAN in charge.

1c. FRESHMAN COMPOSITION. Four credits. First semester. For students in the College of Forestry. Associate Professor MILLIMAN in charge.

9-10. **ENGLISH VERSE.** Two credits. The year. Professor PARRINGTON.

A study of the principles of English versification, with abundant practice in verse-writing, together with some consideration of present day tendencies in poetry.

9a-10a. **RECENT ENGLISH PROSE STYLES.** Two credits. The year. Professor PARRINGTON.

A study of the development of English prose since 1830, with practice in writing.

Courses 9-10, and 9a-10a, are given in alternate years. Course 9a-10a will be given in 1913-1914.

11-12. **ADVANCED PROSE COMPOSITION.** Three credits. The year. Associate Professor MILLIMAN.

Studies in structure and style, with training in self-criticism.

11a-12a. **POLITICAL AND LEGAL WRITING.** One credit. The year. Prerequisite, English 1-2, or an equivalent. Mr. PEASE.

Advanced composition designed for those who are studying social, economic, or legal problems. Conducted chiefly by individual consultations.

## II. INTRODUCTORY COURSES IN ENGLISH LITERATURE

Primarily for freshmen and sophomores.

3-4. **AN INTRODUCTION TO ENGLISH LITERATURE.** Three credits. The year. An historical review from the beginnings. Three sections, two for women, one for men. Assistant Professor DABBY, Assistant Professor COX, Mr. SAWYER.

5-6. **CONTEMPORARY LITERATURE.** Three credits. The year. Mr. CHITTICK.

The reading and discussion of significant works of the last thirty years.

## III. HISTORICAL DEVELOPMENT OF ENGLISH LITERATURE

Primarily for juniors and seniors.

The several courses grouped below are to be considered merely as convenient divisions of the body of English literature. It is strongly urged that the student should conceive of the field as a

whole and plan his elections so as to read through as large a part of the total field as possible.

21. ENGLISH LITERATURE FROM ALFRED TO CHAUCER. Two credits. First semester. Assistant Professor GARRETT.

No knowledge of Old English is necessary, as the older texts are read in translation.

22. ENGLISH LITERATURE FROM CHAUCER TO SHAKESPEARE. Two credits. Second semester. Assistant Professor GARRETT.

A study of the late mediaeval and early renaissance literary production. Emphasis is laid upon the literary rather than the linguistic characteristics of the time.

17-18. SHAKESPEARE. Three credits. The year. Mr. PEASE.

A careful study of five plays, together with some consideration of the total body of Shakespeare's work.

27-28. THE DRAMA IN ENGLAND BEFORE 1642. Three credits. The year. Dr. GRAVES.

A study of the origin and development of the Elizabethan drama. Lectures, reports, and the reading of representative plays.

31-32. ENGLISH LITERATURE IN THE EIGHTEENTH CENTURY. Two credits. The year. Assistant Professor DARBY.

A study in the later development of classicism and the beginnings of the romantic reaction.

13. THE GEORGIAN POETS. Three credits. First semester. Open to women only. Assistant Professor DARBY.

A study of the English romantic movement. Wordsworth, Shelly, Keats and Byron.

14. THE VICTORIAN POETS. Three credits. Second semester. Open to women only. Assistant Professor DARBY.

A study of English poetry since 1830, with special attention to Tennyson and Browning.

19-20. AMERICAN LITERATURE FROM THE BEGINNING TO 1870. Three credits. The year. Professor PARRINGTON.

A study in the development of national ideals. Emphasis will be laid upon the reflection of theological, political, and social movements in the literature.

19a-20a. AMERICAN LITERATURE SINCE 1870. Two credits. The year. Professor PARRINGTON.

An introduction to current literary movements and ideals in America.

Course 19-20 is intended for those who wish to make a serious study of the body of American literature and of the social forces that produced it; it deals with the chief literary figures down to and including the writers of the New England school. Course 19a-20a is designed for those who care mainly for recent and contemporary work, and deals with such men as Mark Twain, Howells, Henry James, Riley, Norris, Herrick, and Moody.

15-16. COMPARATIVE LITERATURE. Three credits. The year. A comparative study of representative European writers, with the aim of cultivating broad literary sympathies and establishing principles of criticism. Two sections: (a) for men, Mr. JOHANSON; (b) for women, Professor PADELFOED.

23-24. SOCIAL IDEALS IN ENGLISH LITERATURE. Three credits. The year. Associate Professor BENHAM.

A study of model commonwealths, and of such other literature as illustrates the growth of English social and economic thought.

23a-24a. SOCIAL IDEALS IN THE SEVENTEENTH CENTURY. Two credits. The year. Associate Professor BENHAM.

A detailed study of the more important documents in the development of social and political ideals from Hooker to Locke.

Course 23a-24a is designed to supplement course 23-24, by an examination of the work of the important period of the seventeenth century. The two courses may be taken concurrently.

25-26. THE NOVEL. Three credits. The year. Associate Professor MILLIMAN.

A study of the movements in English prose fiction, with an analysis of some of the principal works, and a discussion of the problems in ethics and esthetics involved.

29-30. THE FOLK-SONG, BALLAD AND EPIC. Two credits. The year. Assistant Professor COX.

A study of lyrical and narrative forms of poetry, and of the adaptation of folk themes in modern poetry. Illustrated by occasional musical recitals of folk-songs.

35-36. **TEACHER'S COURSE.** Two credits. The year. Required of major students who wish the recommendation of the department for the normal diploma. Assistant Professor GARRETT, Professor PARRINGTON, Associate Professor MILLIMAN, Mr. CHITTICK.

A consideration of methods and problems in the teaching of English in the high school.

#### IV. LANGUAGE

Primarily for juniors and seniors.

7-8. **HISTORICAL ENGLISH GRAMMAR.** Two credits. The year. Assistant Professor COX.

A study of the origin and development of the English language, with special reference to the vocabulary, construction, and pronunciation of modern English.

33-34. **OLD AND MIDDLE ENGLISH.** Three credits. The year. M. W. F. at 9. Assistant Professor GARRETT.

The first semester is devoted to the study of the elements of Old English grammar and to the reading of easy texts; the second semester is given over to a rapid and extensive reading in Middle English.

Either course 7-8 or 33-34 is required of major students and of candidates for a teacher's certificate in English.

#### V. GRADUATE COURSES.

37-37. **HISTORY OF ENGLISH LITERATURE.** Three credits. The year. Monday evening. Associate Professor BENHAM.

A study of the development of English literature with special attention to sources.

39-39. **ARISTOTLE'S POETICS.** Two credits. The year. T., Th., at 2. Assistant Professor COX.

An introduction to literary criticism.

41-41. **ADVANCED OLD ENGLISH.** Two credits. The year. T. evening. Assistant Professor GARRETT.

For the year 1913-1914 the texts studied will be the Old English Bede, parts of the Anglo-Saxon Chronicle, and native English legends. Prerequisites, courses 8, or 34.

38-38. **SEMINAR.** Four credits. The year. Th. evening. Professor PADELDFORD.

For the year 1913-1914 the subject will be Spenser.



FRENCH  
(Denny Hall.)

PROFESSOR FREIN, ASSISTANT PROFESSOR PATZER, MR. WHITTLESEY, MR. HELMLINGE, MR. SBEDICO, ASSISTANTS.

REQUIREMENTS OF THE DEPARTMENT

Courses 5-6 and 7-8 are required of majors and of all who wish to be recommended as teachers.

I. FRENCH.

FOR UNDERGRADUATES

1-2. **ELEMENTARY.** Four credits. The year. Five sections. Students entering for the second semester with one year of preparatory French may take course 2. Assistant Professor PATZER and instructors.

Fraser and Squair's French Grammar, part 1; Halevy, L'Abbe Constantin; Labiche et Martin, LaPoudre aux Yeux; Merimee, Colomba.

Course 1 is repeated the second semester.

2-3. **ADVANCED FIRST YEAR.** Four credits. The year. Two sections. Prerequisite, one semester of French in the University or one year in high school. Those who have had three semesters of French in the high school may enter the class at the beginning of the second semester. Mr. WHITTLESEY, Mr. HELMLINGE.

3-4. **READING AND SYNTAX.** Four credits. The year. Three sections. Prerequisite, 2. Assistant Professor PATZER and instructors.

One section of the class devotes the entire time to reading. Those who intend to major in French should enter one of the sections taking syntax. Fraser and Squair's French Grammar, part II. Texts read 1912-1913: Hugo, Ruy Blas; France, Silvestre Bonnard; Daudet, Tartarin de Tarascon; Rostand, Cyrano de Bergerac; Loti, Pecheur d'Islande.

Course 4 is repeated in the first semester. Open to students who have had two years of French in the high school.

5-6. **CLASSICAL FRENCH.** Three credits. The year. Three sections. Prerequisite, 4. Assistant Professor PATZER and instructors.

Reading of the masterpieces of Cornelle, Mollere, Racine, Boileau, LaFontaine, LaBruyere, La Rochefoucauld.

Course 5 is repeated the second semester for those who finish course 4 in February, and those who enter at that time with three years of French in high school.

7-8. COMPOSITION AND CONVERSATION. Three credits. The year. Assistant Professor PATZER and Mr. HELMLINGE.

FOR UNDERGRADUATES AND GRADUATES

21-22. THE FRENCH NOVEL. First and second semesters. Two credits. Prerequisite, 6. Assistant Professor PATZER.

History of the French novel from the beginning. Some of the most representative novels will be read in class, and others assigned for outside reading.

23-24. LYRIC POETRY. Two credits. The year. Prerequisite, 6. History of lyric poetry. Canfield's French Lyrics.

\*25-26. THE FRENCH DRAMA. Two credits. The year. Prerequisite, 6.

\*27-28. HISTORY OF THE FRENCH LITERATURE OF THE NINETEENTH CENTURY. Two credits. The year. Prerequisite, 6.

\*29-30. HISTORY OF THE FRENCH LITERATURE OF THE EIGHTEENTH CENTURY. Two credits. The year. Prerequisite, 6.

31-32. HISTORY OF THE FRENCH LITERATURE OF THE SEVENTEENTH CENTURY. Two credits. The year. Prerequisite, 6. Assistant Professor PATZER.

Lectures in French; assigned reading.

33-34. TEACHERS' COURSE. Two credits. The year. Prerequisites 6 and 8. Professor FREIN.

Special emphasis on phonetics; both oral and written exercises. Review of grammar.

FOR GRADUATES

51-52. HISTORY OF THE FRENCH LITERATURE OF THE FIFTEENTH AND SIXTEENTH CENTURIES. Two credits. The year. Prerequisite, 6. Professor FREIN.

Lectures in French. Texts of the fifteenth century will be read in class; those of the sixteenth century will be assigned for outside reading.

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\*Given in alternate years; not given in 1913-1914.

53-54. OLD FRENCH READING. Four credits. The year. Professor FREIN.

Elements of Old French grammar, and translation from Old French into modern French of the texts in Bartsch, *Chrestomathie de l'ancien Français*.

55-56. HISTORY OF OLD FRENCH LITERATURE. Two credits. The year. Open only to those who have a reading knowledge of Old French. Those who have had course 53 will ordinarily be prepared to follow the work. Course given in French. Professor FREIN.

57-58. FRENCH HISTORICAL GRAMMAR. Two credits. The year. Professor FREIN.

Lectures in Old French phonology and morphology. Course given in French.

## II. ITALIAN

1-2. ELEMENTARY. Four credits. The year. No student will be allowed to begin Italian and French (or Spanish) the same year. Dr. SBEDICO.

Grammar and reading.

3-4. READING AND SYNTAX. Two credits. The year. Dr. SBEDICO. Classic and modern texts will be read. Constant practice in conversation.

### FOR UNDERGRADUATES AND GRADUATES

5-6. DANTE. Two credits. The year. Dr. SBEDICO. Selected cantos from the *Divina Commedia*.

## GEOLOGY

(Office, Room 11, Science Hall)

PROFESSOR LANDES, ASSISTANT PROFESSORS SAUNDERS AND WEAVER,  
MR. CULVER, MR. SALISBURY

### REQUIREMENTS OF THE DEPARTMENT

(a) For the required 8 credits in biological science in the College of Liberal Arts: Courses 1-2 or 3-4.

(b) For a major: 24 credits in geology with 24 additional credits in the science group. Not more than 40 credits may be counted in the major department.

(c) For a teacher's certificate: The same as for a major.

## COURSES

1-2. **GENERAL GEOLOGY.** Four credits. The year. Three recitations and one laboratory period per week. Three sections. Laboratory deposit, \$1.00 per semester. Assistant Professor SAUNDERS and Mr. CULVER.

1a. **GEOLOGY FOR ENGINEERING AND MINING STUDENTS.** Four credits. First semester. Laboratory deposit \$1.00. Mr. CULVER.

1b. **GEOLOGY FOR ENGINEERING AND MINING STUDENTS.** Four credits. Second semester. Laboratory deposit, \$1.00. Mr. CULVER.

1c. **GEOLOGY FOR FORESTRY STUDENTS.** Four credits. Second semester. Laboratory deposit \$1.00. Mr. CULVER.

3. **CLIMATOLOGY.** Four credits. First semester. Three recitations and one laboratory period per week. Laboratory deposit \$1.00. Assistant Professor SAUNDERS and Mr. SALISBURY.

A general consideration of the climatic elements of the atmosphere.

4. **PHYSIOGRAPHY.** Four credits. Second semester. Three recitations and one laboratory period per week. Laboratory deposit \$1.00. Assistant Professor SAUNDERS.

A study of the surface features of the earth with special reference to their origin, development, classification, and relation to geologic structure.

It is recommended that those preparing to teach physical geography in the high school, or those entering the second semester, should take courses 3-4 instead of 1-2.

5. **COMMON MINERALS AND ROCKS.** Three credits. First semester. Two recitations and one laboratory period. Laboratory deposit \$1.00. Prerequisite, high school or university chemistry. Mr. CULVER.

6. **GLACIAL GEOLOGY.** Two credits. First semester. Two lectures or recitations per week. Prerequisites, geology 2 or 4. Mr. CULVER.

The characteristics of glaciers and the geological work they accomplish.

7. **CONTINENTAL EVOLUTION.** Two credits. Second semester. Two lectures or recitations per week. Prerequisite, geology 2 or 4. Assistant Professor WEAVER.

Studies in the geological history of sedimentation, volcanic activity, the major earth movements, and geographic changes in the development of the North American continent.

8. **PHYSIOGRAPHY OF THE UNITED STATES.** Three credits. First semester. Three lectures or recitations per week. Prerequisite, geology 2 or 4. Assistant Professor SAUNDERS.

The development of the physiographic features of the United States and the influence these features have exerted on the history and commercial growth of the country.

9. **DESCRIPTIVE AND DETERMINATIVE MINERALOGY.** Four credits. Second semester. Two recitations and two laboratory periods per week. For engineering and mining students. Laboratory deposit \$1.00. Prerequisite, one year of chemistry. Mr. CULVER.

10. **ADVANCED GENERAL GEOLOGY.** Three credits. First semester. Three lectures or recitations per week. Prerequisite, geology 2 or 4. Professor LANDES.

The development of geology as a science; its relation to the other sciences; the present lines of growth and research.

11. **GENERAL PALEONTOLOGY.** Two credits. Second semester. Two lectures or recitations per week. Some knowledge of general geology is a prerequisite. Assistant Professor WEAVER.

A brief survey of the former animal and plant life of the earth.

12. **GEOLOGY AND PALAEOLOGY OF THE TERTIARY FORMATIONS.** Two credits. First semester. Two lectures or recitations per week. Prerequisite, geology 2. Assistant Professor WEAVER.

A comparative study of the geological history of the continents and the development of life during the Tertiary in its world wide application.

13. **OPTICAL CRYSTALLOGRAPHY.** Four credits. First semester. Two recitations and two laboratory periods per week. Assistant Professor WEAVER.

14. **GEOLOGY OF WASHINGTON.** Two credits. First semester. Two lectures or recitations per week. Professor LANDES.

15. **ECONOMIC GEOGRAPHY OF WASHINGTON.** Two credits. Second semester. Two lectures or recitations per week. Professor LANDES.

16. **PETROLOGY.** Three credits. First semester. A special course for coal mining men in the College of Mines. Laboratory deposit, \$2.00. Prerequisites, geology 1a and 9. Assistant Professor **WEAVER.**

17. **PETROGRAPHY.** Four credits. Second semester. Two recitations and two laboratory periods per week. Prerequisites geology 9 and 13. Laboratory deposit \$2.00.

A study of the distinguishing characteristics of the different groups and species of rocks with practice in their determination by modern petrographical methods. Assistant Professor **WEAVER.**

18. **ECONOMIC GEOLOGY.** Four credits. Second semester. Four recitations per week. Prerequisites, 1a, 9 and 17. Professor **LANDES.**

19. **PALEONTOLOGY.** Four credits. First semester. Three recitations and one laboratory period per week. Chiefly for students in geology and mining. Prerequisites, geology 2 or 1a. Assistant Professor **WEAVER.**

20-21. **FIELD WORK.** Hours and credits to be arranged. The year. Professors **LANDES, SAUNDERS** and **WEAVER.**

22-23. **ADVANCED PETROGRAPHY.** Hours and credits to be arranged. The year. Assistant Professor **WEAVER.**

24-25. **ADVANCED PALEONTOLOGY.** Hours and credits to be arranged. The year. Assistant Professor **WEAVER.**

26-27. **RESEARCH WORK.** Hours and credits to be arranged. The year. Professors **LANDES, SAUNDERS** and **WEAVER.**

#### **SPECIAL SHORT COURSES**

**A. FORESTRY GEOLOGY.** A course of twenty lectures on general geology given in January, February, and March, to the students in the short course in the College of Forestry. Assistant Professor **SAUNDERS.**

**B. PROSPECTOR'S GEOLOGY AND MINERALOGY.** This course is given in January, February and March to the students in the short course for mining men offered by the College of Mines. Assistant Professor **WEAVER.**

## GERMAN

PROFESSOR MEISNEST, ASSISTANT PROFESSOR BOETZKES, ASSISTANT PROFESSOR HOFF, DR. ECKELMAN, DR. ROLOFF, MR. ERNST

Requirements for a major: 24 to 40 credits, including at least two of the following courses: 25, 26, 27, 28.

## FOR UNDERGRADUATES

1-2. **FIRST YEAR.** Four credits. The year. For beginners. Professor MEISNEST, Dr. ECKELMAN, Dr. HOFF, Mr. ERNST.

Students entering the second semester with one year of German in the high school may take course 2. Two semesters must be completed before credit is allowed.

1a. **FIRST YEAR.** Four credits. Second semester. The same as course 1. For beginners. Dr. ROLOFF.

Two semesters must be completed before credit is allowed.

2a-3a. **ADVANCED FIRST YEAR.** Four credits. The year. Prerequisite, one semester or one year in the high school. Assistant Professor BOETZKES.

Continuation of grammar and reading of simple prose with practice in pronunciation, speaking and writing. Equivalents of 2 and 3.

3-4. **SECOND YEAR.** Four credits. First and second semester. Prerequisite, two years in the high school. Professor BOETZKES, Dr. ROLOFF, Mr. ERNST, Dr. ECKELMAN.

Modern prose, narrative and dramatic, and at least one drama by Schiller or Lessing during the second semester.

3s-4s. **SECOND YEAR.** Four credits. The year. Prerequisite, two years in the high school. Dr. ROLOFF.

Modern prose, review of grammar, composition and conversation. Introduction to scientific German. For students specializing in science and engineering.

4a-5a. **ADVANCED SECOND YEAR.** Four credits. The year. Prerequisite, 3a or three years in the high school. Assistant Professor BOETZKES, Dr. ECKELMAN.

Modern prose and dramas, including Schiller's Jungfrau von Orleans and Scheffel's Trompeter von Sakkingen.

5. **SCHILLER.** Three credits. First semester. Prerequisite, 4, or four years in the high school. Assistant Professor HOFF, Dr. ROLOFF.

Life and works. Wallenstein. Private reading: Wilhelm Tell or Maria Stuart.

6. GOETHE. Three credits. Second semester. Prerequisite, 4, or four years in the high school. Assistant Professor HOFF, Dr. ROLOFF, Mr. ....

Life and works. Goetz von Berlichingen and Iphigenie. Private reading: Dichtung und Wahrheit.

7-8. MODERN WRITERS. Three credits. The year. Prerequisite, 4, or four years in the high school. Preferably for students not majoring in German. Mr. ERNST.

Selected novels and dramas. Keller, Fulda, Hauff, Freytag, Sudermann, Hauptmann, Grillparzer, Hibbel.

11-12. SCIENTIFIC GERMAN. Two credits. The year. Prerequisite 4. Dr. ROLOFF.

Advanced scientific prose, special monographs and technical periodicals.

13-14. CONVERSATION. Two credits. The year. Prerequisite, 4, or four years in the high school. Assistant Professor BOETZKES, Assistant Professor HOFF.

Class work with about half the usual preparation.

15-16. COMPOSITION. Two credits. The year. Assistant Professor HOFF, Dr. ROLOFF.

\*17-18. MODERN NOVELS. The year. Dr. ROLOFF.

Freytag, Scheffel, Hauff, Ludwig and Sudermann.

19-20. MODERN DRAMAS. Two credits. The year. Prerequisite, 4. Dr. ROLOFF.

Rapid reading course. Grillparzer, Hebbel, Sudermann and Hauptmann.

21-22. WAGNER. Two credits. The year. Prerequisite, 4. Mr. ERNST.

Life and writings. Der fliegende Hollander, Tannhauser, Lohengrin, Tristan und Isolde, Meistersinger Ring der Nibelungen and Parsifal.

#### FOR UNDERGRADUATES AND GRADUATES.

25. GERMAN LYRICS AND BALLADS. Three credits. Second semester. Dr. ECKELMAN.

Most characteristic German lyrics and ballads of Goethe,

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\*Not given in 1918-1914.



Schiller, Heine, Uhland, Geibel, and Moriki, Von Klenze's Deutsche Gedichte.

26. HISTORY OF GERMAN LITERATURE. Three credits. Second semester. Dr. ECKELMAN.

A general survey for students specializing in German. Thomas's German Anthology and Priest's History of German Literature.

27. LESSING. Three credits. First Semester. Professor MEISNEST.

Emilia Galotti, Nathan der Weise and Hamburgische Dramaturgie or Laokoon.

28. GOETHE'S FAUST. Three credits. Second semester. Parts one and two. Professor MEISNEST.

29-30. TEACHER'S COURSE. Two credits. The year. Professor MEISNEST.

FOR GRADUATES.

41-42. STORM AND STRESS PERIOD. Two Credits. The year. Professor MEISNEST.

\*43-44. ROMANTIC SCHOOL. Two credits. The year. Professor MEISNEST.

45-46. NINETEENTH CENTURY. Two to four credits. The year. Dr. ECKELMAN.

51-52. HISTORY OF THE GERMAN LANGUAGE. One credit. The year. Assistant Professor HOFF.

\*53-54. MIDDLE HIGH GERMAN. Two credits. The year. Assistant Professor HOFF.

55-56. OLD HIGH GERMAN. Two credits. The year. Assistant Professor HOFF.

\*57-58. GOTHIC. Two credits. The year. Assistant Professor HOFF.

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\*Not offered in 1913-1914.

## GREEK.

(Denny Hall.)

PROFESSOR HAGGETT, ASSISTANT PROFESSORS DENSMORE AND SIDNEY.

## REQUIREMENTS OF THE DEPARTMENT.

For a major, at least 24 credits chosen from courses 3 to 12. The following courses may be counted toward the requirement of one year of ancient language and literature. (See p. 10.)

- (a) Greek, 1-2 or 3-4.
- (b) Latin, A-B or 1-2.
- (c) Greek civilization and Greek literature. (Greek 13-14.)
- (d) Greek civilization and Roman civilization. (Greek 13 and Latin 12.)
- (e) Greek literature and Roman literature. (Greek 14 and Latin 14.)
- (f) Roman civilization and Roman literature. (Latin 11 and 14.)
- (g) Oriental literature—Persian and Indian. (See department of Oriental literature, page 69.)

## COURSES.

1-2. **ELEMENTARY GREEK.** Four credits. The year. Assistant Professor DENSMORE.

3-4. **HOMER-PLATO.** Three credits. The year. Selections from the *Odyssey*; Plato's *Apology*, *Crito*, and parts of the *Phaedo*. Professor HAGGETT.

5-6. **DRAMATIC POETRY.** Two credits. The year. Selected plays from Euripides, Sophocles, and Aristophanes. Assistant Professor DENSMORE.

\*7-8. **LYRIC POETRY-ORATORY.** Two credits. The year. Selections from the elegaic, imabic, and melic poets; selections from Lysias and Demosthenes. Assistant Professor DENSMORE.

\*9-10. **EPIC POETRY—HISTORICAL PROSE.** Two credits. The year. Assistant Professor DENSMORE.

Rapid reading of selections from Homer and Hesiod; selections from Herodotus and Thucydides.

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\*Not given in 1913-1914.

11-12. **ADVANCED READING.** Three credits. The year. Professor HAGGETT.

Rapid reading of the entire work (or a considerable portion) of some one author, or extensive work in some one department of Greek literature.

13. **GREEK CIVILIZATION.** Three credits. Either semester. Primarily for freshmen and sophomores. A knowledge of the Greek language is not required. Section A, to be followed by Greek 14; section B, to be followed by Latin 12. Assistant Professor DENSMORE.

Part of the time will be devoted to the history of the Greek peoples, the remainder to their life and art, under such topics as (a) mythology and religion, (b) public and private life, (c) art and archaeology. Lectures (illustrated by photographs and slides) and collateral reading.

14. **HISTORY OF GREEK LITERATURE.** Three credits. Either semester. Assistant Professors SIDEY and DENSMORE.

Text-book, lectures, and readings from English translations, with assignments of selected work for special study and periodic written tests. Primarily for upperclassmen, but open to freshmen who have had Greek 13 or who have had at least two years of ancient language. A knowledge of the Greek language is not required. This course is intended to be followed by Latin 14.

15. **GREEK ARCHAEOLOGY AND ART.** Two credits. First semester. Knowledge of the Greek language is not required. For upperclassmen. Professor HAGGETT.

After a brief survey of the results of archaeological discoveries up to the present time, the main work of the course will be devoted to a discussion of some of the best examples of Greek architecture, sculpture and vase painting. The discussions will be illustrated by photographs and lantern slides.

16. **GREEK POETRY IN ENGLISH TRANSLATION.** Two credits. Second semester. For upperclassmen. Knowledge of the Greek language is not required. Professor HAGGETT.

Lectures, assigned readings and discussions.

17. **GREEK ANTIQUITIES.** Two credits. First semester. For classical majors. To be followed by Latin 24. Assistant Professor SIDEY.

19. GREEK HISTORY. Three credits. First semester. See History 3, page 46. Assistant Professor DENSMORE.

### HISTORY.

(Office, Room 11, Denny Hall.)

PROFESSORS MEANY, RICHARDSON; ASSISTANT PROFESSORS MC MAHON, BOWMAN, DR. LUTZ, MR. DOUGLAS

#### REQUIREMENTS OF THE DEPARTMENT.

THE EIGHT HOUR REQUIREMENT IN HISTORY may be satisfied by one of the following courses: MEDIAEVAL AND MODERN EUROPEAN HISTORY (1-2). It is desirable that this course be selected in fulfillment of the history requirement and that it be taken in the freshman year. Students who enter the university in the second semester may enter this course, with the understanding that they will take the first semester's work in the following year. Juniors and seniors will receive only half credit.

HISTORY OF THE UNITED STATES (7-8). Primarily for sophomores; not open to freshmen except in the case of students in the Law School, or students who are taking work in the College of Liberal Arts to satisfy requirements for entrance to the Law School.

ENGLISH POLITICAL HISTORY (5-6). Primarily for sophomores and juniors; not open to freshmen except those specified in (b) below. To this course, however, course 1-2 is a prerequisite except in the case of (a) students admitted to advanced standing from other colleges and universities; (b) students in the Law School or students who are taking work in the College of Arts and sciences to satisfy requirements for entrance to the Law School; (c) majors in English literature and in political science; (d) students who receive the special permission of the instructor in charge of the course. (In 1913-1914 the prerequisite is medieval history only.)

*For a major* at least eight credits shall be obtained in the most advanced undergraduate courses. Course 1-2 is required of all history majors. Course 42 does not count toward a major.

It is recommended that all history majors shall take, in excess of the 24 history credits and of the credits formally required in various other departments for graduation, additional work in History, Political and Social Science, Philosophy, Modern Languages, and English Literature.

Courses 3 and 4 are open to all, without prerequisite; courses 7-8, 9-10 and 42 are open, without prerequisite, to sophomores, juniors and seniors. Courses 11-34 inclusive, also course 43-44, are open to juniors, seniors and graduate students; but for prerequisites to some of these, see statement of the course. Courses 35-38 inclusive, are open to sophomores, juniors, seniors and graduate students, without prerequisites. Seniors are admitted, by permission, to courses 45-54 inclusive.

1-2. **MEDIEVAL AND MODERN EUROPEAN HISTORY.** Four credits. The year. Assistant Professor BOWMAN, DR. LUTZ, MR DOUGLAS.

A general survey of the political, economic and social development of the principal European peoples from the fourth century to the present time.

3. **HISTORY OF GREECE.** Three credits. First semester. A general survey of Greek history from the earliest times to the Roman conquest, including some account of the eastern sources of the civilization and of the spread of Hellenism. Assistant Professor DENSMORE.

4. **HISTORY OF ROME.** Three credits. Second semester. A survey of Roman history to the fall of the Western Empire. Attention is given to the development of Roman institutions and law. Assistant Professor DENSMORE.

5-6. **ENGLISH POLITICAL HISTORY.** Four credits. The year. Open to sophomores, juniors, seniors, and certain classes of freshmen. See requirements. Professor RICHARDSON.

A study of the political, social and intellectual development of the English people from the Saxon conquest to the end of the nineteenth century. Economic developments also receive attention.

7-8. **HISTORY OF THE UNITED STATES.** Four credits. The year. Open to sophomores, juniors, seniors, and certain classes of freshmen. See requirements. Assistant Professor McMAHON.

A general survey with emphasis upon political history. Lectures, text-book, collateral reading and topics.

9-10. **MAKERS OF THE NATION.** Two credits. The year. Professor MEANY.

Lectures on the lives of leading Americans with relation to the historic development of their times.

## ADVANCED COURSES.

## FOR JUNIORS AND SENIORS.

Students must have had at least one year of history to elect any course in this group except course 42, which is open to sophomores, juniors and seniors without prerequisite, but which does not count for a major.

11-12. **ENGLISH CONSTITUTIONAL HISTORY.** Two credits. The year. Open to juniors and seniors who have taken or are taking 5-6, and to law students with consent of the instructor. Professor RICHARDSON.

The development of the legal and governmental institutions of the English people to the present time.

13. **THE EARLY GERMANS.** Two credits. First semester. Prerequisite, 1-2. Assistant Professor BOWMAN.

The history of the Germans through the period of the Wandering of the Nations and the State Formation.

14. **MEDIEVAL CIVILIZATION.** Two credits. Second semester. Prerequisite, 1-2.

A study of the medieval civilization and culture down to the thirteenth century. Assistant Professor BOWMAN.

15-16. **THE RENAISSANCE AND REFORMATION.** Three credits. The year. Prerequisite, 1-2. Assistant Professor BOWMAN.

A study of the origin and development of the Renaissance and Reformation, and of the spread among the European nations.

17-18. **PRUSSIA AND NORTHERN EUROPE.** Two credits. The year. Prerequisite, 2. Professor RICHARDSON.

This course deals with Sweden as a great power, its rise, progress, and decline; the rise of Russia and Prussia; the partition of Poland; and the beginnings of the Eastern Question. Special attention is paid to the economic, political and military development of the Prussian state from its foundation to the acquisition of world-power by Frederick the Great.

\*19-20. **HISTORY OF FRANCE FROM THE REFORMATION TO THE FRENCH REVOLUTION.**

21. **THE FRENCH REVOLUTION AND NAPOLEONIC ERA.** Three credits. First semester. Prerequisite, 2. Professor RICHARDSON.

Among the principal topics considered are the following: the material conditions out of which, in France, the Revolution emerged, and the nature of the ideals which inspired it; contemporary conditions in the European states system which facilitated the extension of the Revolution over Europe; the epoch of International Wars, with especial reference to the territorial redistribution of Europe, the beginnings of modern liberalism, and the career of Napoleon.

22. EUROPE SINCE 1814. Three credits. Second semester. Prerequisite, 2. Professor RICHARDSON.

Mainly political, introductory to European politics of the present time. The course deals with the fundamental principles and policies of the Era of Reaction under Metternich and the subsequent triumph of liberalism. The chief emphasis is laid upon the establishment of constitutional government and national unity in Germany, Italy and the other states of Western Europe, and upon the careers of great leaders, notably Bismarck and Cavour.

23-24. EUROPE SINCE 1870, AND CONTEMPORARY EUROPE. Two credits. The year. Prerequisite, 2, and a reading knowledge of French and German. Dr. LUTZ.

The first part of the course, based upon the study of contemporary histories, is introductory to the latter part, which is based upon the use of current periodicals, newspapers and other publications, in English, French and German. Scientific methods of research are applied to the study of current historical events.

25. HISTORY OF THE UNITED STATES, 1787-1828. Three credits. First semester. Assistant Professor McMAHON.

A study of the organization of the government of the United States and the leading forces shaping its development down to the presidency of Jackson.

26. HISTORY OF THE UNITED STATES, 1828-1860. Three credits. Second semester. Assistant Professor McMAHON.

A continuation of course 25, bringing the study down to the outbreak of the Civil war. In this and the preceding course constitutional history will be studied as the outgrowth of economic and social conditions in the physiographic sections.

27. CIVIL WAR AND RECONSTRUCTION. Three credits. First semester. Assistant Professor McMAHON.

A general study of the Civil war and the period of reconstruction.

28. **THE HISTORY OF NATIONAL DEVELOPMENT.** Three credits. Second semester. Assistant Professor McMAHON.

A continuation of course 27, in which the development of the American nation will be traced from the close of the reconstruction period to the present time.

29. **SPAIN IN AMERICA.** Three credits. First semester. Professor MEANY.

A study of the rise and fall of Spanish power in the new world, and an outline of the history of the Spanish-American republics.

30. **DEVELOPMENT OF THE PACIFIC.** Three credits. Second semester. Professor MEANY.

History of the countries bordering upon the Pacific ocean, with special reference to the changes now in progress of development.

31-32. **HISTORY OF AMERICAN DIPLOMACY.** Two credits. The year. Professor MEANY.

A study of the treaties and foreign policy of the United States. Open to those who have taken a narrative course in American history.

33-34. **NORTHWESTERN HISTORY.** Two credits. The year. Professor MEANY.

From the earliest voyages to the settlement and organization of the territories.

35. **THE EVOLUTION OF CHINA—BEFORE THE MANCHU CONQUEST.** Two credits. First semester. Professor GOWEN.

36. **THE EVOLUTION OF CHINA—MODERN ERA.** Two credits. Second semester. Professor GOWEN.

37. **THE EVOLUTION OF JAPAN—FEUDAL ERA.** One credit. Second semester. Professor GOWEN.

38. **THE EVOLUTION OF JAPAN—MODERN ERA.** One credit. Second semester. Professor GOWEN.

39-40. **METHODS OF TEACHING HISTORY.** One credit. The year. Required of advanced students who expect to teach history. Assistant Professor McMAHON.

Text-books, assigned readings, courses of study and the best method of presentation will be considered.



42. HISTORY OF CURRENT EVENTS. One credit. Second semester. Assistant Professor BOWMAN, and other members of the history and other departments.

A lecture course dealing with various historical questions of the world of the present and immediate past.

\*43-44. ECONOMIC AND SOCIAL HISTORY OF THE AMERICAN COLONIES. Assistant Professor McMAHON.

#### GRADUATE COURSES.

45-46. HISTORIOGRAPHY. One credit. The year. Open to graduate students and to seniors by permission. Assistant Professor BOWMAN.

A study of the general history of the writing of history.

\*47-48. METHODS OF HISTORICAL RESEARCH AND CRITICISM. Professor RICHARDSON.

49-50. ENGLAND UNDER THE TUDORS AND STUARTS. Two to four credits. The year. Open to graduates and a few seniors by permission. Professor RICHARDSON.

A graduate course which lays more stress upon the constitutional than upon the political side of the subject. Special attention is paid to constitutional developments under Henry VIII and Elizabeth, and to the antecedents of the Puritan Revolution.

51-52. SEMINAR IN AMERICAN HISTORY. Two credits. The year. One evening a week. Assistant Professor McMAHON.

This course is primarily for graduates or other advanced students who may be admitted by permission.

53-54. JOINT SEMINAR. Two credits. The year. Open to graduate students and to a limited number of seniors on recommendation of their major professors. Professors MEANY, SMITH and CONDON.

Designed for study and reports upon the problems in the historical, political, and legal developments of the State of Washington and the Pacific Northwest.

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\*Not offered in 1913-1914.

## HOME ECONOMICS.

(Office, Home Economics Building)

MISS RAITT and MISS CRUDEN.

Courses pertaining to the home are offered as part of a liberal education, as vocational training, and for the purpose of preparing teachers of home economics for high schools and colleges.

Students who major in other departments of the University may elect a maximum of 24 credits in the department of home economics.

Students in the College of Science may major in the department of home economics and will receive the degree of bachelor of science.

Students in the College of Liberal Arts may major in the department of home economics and will receive the degree of bachelor of arts.

Students who expect to teach should follow the prescribed course which leads to the degree of bachelor of science in home economics. Graduates of the girls manual arts course prescribed by the state board of education are admitted to this course without condition.

2. PRINCIPLES AND PRACTICE OF FOOD PREPARATION. Two credits. Second semester. Prerequisites or parallel, chemistry 1c. Laboratory deposit four dollars.

Nature and use of food. Changes produced by heat, cold and fermentation upon typical food materials. Practice in fundamental cooking processes. Two laboratory periods per week. Course 2 in 1913-1914 will also be given in the first semester.

3. SELECTION AND PREPARATION OF FOOD. Four credits. First semester. Prerequisite, home economics 2, or 2 years high school domestic science; chemistry 1c; prerequisite or parallel, chemistry 2c. Two lectures, two laboratory periods per week. Laboratory deposit four dollars.

Continuation of course 2. Economic aspect of selection and preparation of food. Production and manufacture of food; its function in nutrition. Course 3 in 1913-1914 will be repeated in the second semester.

4. EXPERIMENTAL COOKERY. Two credits. Second semester. Prerequisite, home economics 3. Laboratory deposit four dollars. Two laboratory periods per week.

Comparative study of fuels, food materials, recipes with

further investigations of principles involved in processes. Course 4 in 1913-1914 will also be given in the first semester.

5. **PRINCIPLES OF HAND AND MACHINE SEWING.** Two credits. First semester. Laboratory deposit one dollar. Miss CRUDEN.

Use and care of machines. Garment making. Use and adaptation of commercial patterns. Two laboratory periods per week.

7-8. **CLOTHING.** Two credits. The year. Prerequisites, home economics 5, or two years high school domestic art. Laboratory deposit one dollar. Miss CRUDEN.

Adaptation of patterns, practice in taking of measurements, drafting of tight-fitted waist and simple skirts, making of simple waists and skirts. Crinolin modeling.

9-10. **DRESSMAKING.** Three credits. The year. Prerequisite, home economics 7-8. Laboratory deposit one dollar.

Use of fashion plates in developing more elaborate dresses on simple foundation. Development of original designs, lined dresses. Consult instructor before electing.

11-12. **NEEDLEWORK.** Two credits. The year. Prerequisite, home economics 7-8. Laboratory deposit one dollar. Miss CRUDEN.

Marking of household linen. French embroidery for lingerie, decorative stitches, patching, darning, fine mending. Consult instructor before electing.

14. **ELEMENTARY FOOD ECONOMICS.** Four credits. Second semester. Prerequisite or parallel, chemistry 1c, 2c; home economics 2. Laboratory deposit three dollars. Miss RAITT.

Food principles, composition of food materials. Fate of food-stuffs in the body. Calorific value of food. Dietary standards.

15. **DIETETICS.** Four credits. First semester. Prerequisites, home economics 3; chemistry 20a. Laboratory deposit three dollars. Two lectures, two laboratory periods per week. Miss RAITT.

Principles of human nutrition. Application to needs of individuals and groups under varying conditions. Dietary standards. Methods of computing dietaries.

16. **FOOD AND NUTRITION.** Two credits. Second semester. Prerequisite, Home Economics 15. Two lectures per week. Miss RAITT.

Continuation of course 15. Opportunity is given for work in individual problems.

18. **MILLINERY.** Two credits. Second semester. Prerequisite, home economics 5. Laboratory deposit one dollar. Also given in the first semester in 1913-1914.

Making of frames and trimmings. Suitability of materials, colors and designs. Care and renovation.

19. **HOME NURSING AND INVALID COOKERY.** Two credits. First semester. Prerequisite, home economics 2 and 14 or 15. Laboratory deposit two dollars.

Emergencies, first aid and simple procedure in home care of the sick. Planning and serving of meals adapted to needs of sick and convalescent. Care of children.

20. **LAUNDERING AND DYEING.** Two credits. Second semester. Prerequisite, chemistry 1c-2c. Laboratory deposit two dollars.

Principles and processes of laundering and dyeing.

21. **HOME ARCHITECTURE AND SANITATION.** Two credits, First semester. Two recitations per week. Miss RAITT.

Evolution of the home, historic forms of architecture. The modern house, site, principles of planning and construction; drainage, ventilation, lighting, heating, practice in drawing house plans.

22. **HOME DECORATION.** Two credits. Second semester. Prerequisite or parallel, course in design.

Study of color, space and line, and their application to problems of house decoration. Economic problems of furnishing.

24. **HOUSEHOLD MANAGEMENT.** Three credits. Second semester. Prerequisites, home economics 14 or 15, and political science 26. Three lectures per week.

Organization of the household. The budget and its apportionment, housewifery. Application of principles of scientific management to the household.

26. **TEXTILES.** Three credits. Second semester. Prerequisite, chemistry 1c-2c. Two lectures; one laboratory period per week. Also given in the first semester in 1913-1914.

Evolution of textile industries. Microscopic study of fibres and fabrics for purposes of identification. Adaptation of fabrics to various purposes; hygienic aspect of clothing. Study of chemical treatment, adulteration, value of fabrics, shrinkage.

27-28. **TEACHERS' COURSE.** Two credits. The year. Prerequisite, home economics 3, 8, 15, 21, 22, 24, and education 1. Two hours' lecture. Miss RAITT, Miss \_\_\_\_\_

Lesson plans and organization of courses of study in foods, nutrition, textiles, clothing and the home. Adaptation to different grades and types of schools. Equipment.

29. **SPECIAL FOOD PROBLEMS.** Three credits. First semester. Prerequisite, home economics 14 or 15. Three hours' lecture. Miss RAITT.

Marketing, cold storage, dietaries, adulterations, preservatives. A consideration of food habits. Open to seniors only.

31. **GENERAL SURVEY.** Two credits. First semester. Miss RAITT.

Modern movements that affect the home. History of home economics. Place of home economics in modern education.

32. **ECONOMICS OF CLOTHING.** Three credits. Second semester. Three lectures. Elective.

Fabrics from the artistic, hygienic and economic standpoint. Design and its application to dress. Clothing budgets for various classes and incomes. Household tests for textiles. Comparison of ready made, modistes, and home made clothing.

33. **HISTORY OF COSTUMES.** Two credits. First semester. Two lectures.

A survey of ancient Egyptian, Grecian, early and modern French costumes.

35. **COSTUME DESIGN.** Two credits. First semester. Four laboratory periods. Prerequisite design.

Principles of design and color harmony applied to dress.

#### HYGIENE.

(See Physical Training)

#### ITALIAN.

(See French)

#### JOURNALISM.

(Education Building.)

ASSISTANT PROFESSOR SHERIDAN, MR. SMITH, MR. KENNEDY.

Men and women planning to go into newspaper work as a profession are provided with a course especially designed to

help in qualifying them for journalism. The value of such preliminary training obtainable in college has become recognized generally. Practical journalism is studied, following as closely as feasible the work in a newspaper office. To aid in this purpose a well-equipped printing office has been established as a laboratory adjunct to the department.

The department is fortunate in having the aid and encouragement of newspapers of Seattle, and of the state at large. Through the courtesy of the Seattle Times the department has regular access to one page of the Sunday edition, and many editors and writers of the state have favored the department with lectures and assistance in other ways.

Allied courses are prescribed such as are most profitable in developing that broad scholarship which, in addition to his technical newspaper training will help the graduate to meet the requirements of modern newspaper work. These seek especially to familiarize the student with social, political and industrial conditions.

Those who prefer a more elaborate course in journalism than is provided within the limitations of the bachelor of arts degree may elect further courses either by adding them to the required courses or by becoming a candidate for a degree other than the bachelor of arts.

#### REQUIREMENTS FOR A MAJOR.

While the major in journalism is restricted to twenty-four hours, the student is given opportunity to elect among the various courses. Those courses which are required for a major are reporting, editing, and history, twelve credits in all. For the other twelve credits required for his major the student may choose among the several other courses which are provided.

The list of strictly journalism courses follows:

1. ELEMENTS OF NEWSPAPER WRITING AND METHODS. One credit. First semester. Assistant Professor SHERIDAN.

Course 1 is repeated in the second semester.

3-4. REPORTING. Three credits. The year. Laboratory deposit two dollars.

Practical reporting and correspondence. The news story. The human interest story and its kinship to the short story. The feature. Gathering campus news.

5-6. EDITING. Two credits. The year. Assistant Professor SHERIDAN.

Practical work in preparing and editing matter for dailies, weeklies and class periodicals.

7. NEWSPAPER HISTORY. Two credits. First semester. Assistant Professor SHERIDAN.

A history of the progress of the American press from colonial times, and a study of the lives and methods of famous journalists.

10. NEWS INTERPRETATION. Two credits. Second semester.

A study of leading newspapers and magazines and their methods of handling the important topics of the day; in politics, science and discovery, literature and art. Object of the course is to train the student to seize upon the essential of daily events and comment upon them intelligibly. Student will prepare weekly dummy of world's news, resembling that given in the *Literary Digest*.

11-12. EDITORIAL WRITING. Two credits. The year. Assistant Professor SHERIDAN.

Practice in the writing of editorials.

13-14. SHORT STORY. Three credits. The year.

Constant writing, commencing with the simplest and most ancient forms of the tale and leading through the sketch and fable to the highly complicated short story of the moment. Historical evolution from the tale of Ruth and earlier narratives down to O. Henry and the contemporary magazine and newspaper. Copious reading of examples of masterpieces in illustration of the history and in guidance of the writing.

15. THE MECHANICS OF PRINTING. Three credits. First semester. Laboratory deposit two dollars. Mr. KENNEDY.

Two lectures and eight laboratory hours weekly. Students are instructed in faces and value of type by actual work in composing room; taught to set type, make up and lock forms, estimate costs; judge quantities and qualities of paper, inks, read proof, etc. This class works on the mechanical end of the University of Washington daily, The Alumnus, The Washingtonian, and other publications from the press of the department of journalism.

17. **THE ART OF PRINTING.** Two credits. First semester. Two lectures and five hours laboratory. Laboratory deposit two dollars. Mr. KENNEDY.

Lectures on history and development of printing, with practical work in designing advertisements, title pages, etc., etc., and study of color schemes.

Course 17 is repeated the second semester.

The above courses in printing are designed: First, to give student working knowledge of mechanical department of a newspaper that he may be better fitted for editorial supervision. Second, to equip those students who plan to own country papers. Third, to reinforce rhetorical principles of mass, proportion, accuracy, emphasis, contrast, harmony, unity and variety, by practical work with type faces.

19-20. **PRACTICE OF ADVERTISING.** Two credits. The year. Mr. SMITH.

Study of essential advertising methods, with lectures by advertising experts.

For set course in journalism see p. 80.

The scientific bases of advertising are psychology and economics. A course in the psychology of advertising has been arranged for in the department of philosophy (philosophy 41). These cover the theory of a rapidly advancing profession, a mastery of which is indispensable in the conduct of newspapers and other publications.

The practice of advertising with the psychology course, is designed to comprehend the present stage of the profession. In this course advertising matter is prepared and campaigns planned under conditions approximating as closely as possible those in newspaper and magazine offices, advertising agencies, and the advertising departments of business houses.

### LATIN.

(Office Room, Denny Hall.)

PROFESSOR THOMSON, ASSISTANT PROFESSOR SIDEX, DR. SAGE

#### REQUIREMENTS FOR A MAJOR

1. Four years of preparatory Latin.
2. One year of Greek. Students are strongly urged to present at least two.
3. Courses 1, 2, 3, 4, 25, 26, and others to the amount of at least eight credits.



For the normal diploma with Latin as a major, courses 1, 2, 3, 4, 9, 10, must be taken.

The requirement of one year's work in ancient language and literature may be satisfied by:

- a. Greek civilization and Roman civilization (Gr. 13, Lat. 12).
- b. Greek civilization and Greek literature (Gr. 13 and 14).
- c. Greek literature and Roman literature (Gr. 14 and Lat. 14).
- d. Roman civilization and Roman literature (Lat. 11 and 14).
- e. Courses A-B, C-D, or 1-2.
- f. Greek 1-2 or 3-4.
- g. Oriental literature—Persian and Indian.

Courses A-B, and C-D do not count toward the major of 24 hours. If taken to satisfy entrance requirements they count each as one unit.

\*A. CICERO. Orations. Four credits. First semester. Dr. SAGE.

\*B. CICERO. Orations. Four credits. Second semester. Dr. SAGE.

C. VERGIL. Aeneid. I-III. Four credits. First semester. Dr. SAGE.

D. VERGIL. Aeneid. IV-VI. Four credits. Second semester.

1. CICERO. De Senectute and letters. Four credits. First semester. Primarily for freshmen. Professor THOMSON and Dr. SAGE.

2. LIVY. Book I and selections from others of the early books. Four credits. Second semester. Professor THOMSON and Dr. SAGE. Prerequisite for 1 and 2: four years preparatory Latin.

3. CATULLUS, TIBULLUS AND HORACE. Three credits. First semester. Primarily for sophomores. Prerequisite, 1-2. Assistant Professor SIDEX.

4. PLAUTUS, Captivi and Menaechmi. TERENCE, Phormio and Adelphi. Three credits. Second semester. Prerequisite, 1-2. Assistant Professor SIDEX.

#### FOR JUNIORS, SENIORS AND GRADUATES

\*5. HORACE, Satires and Epistles. JUVENAL, Satires. Two credits. First semester. Prerequisite, 3-4. Professor THOMSON.

\*6. **TACITUS.** Selected books of *The Annals*. Two credits. Second semester. Prerequisite, 3-4. Professor THOMSON.

7. **CICERO.** Letters. (*Abbott's Selections*). Two credits. First semester. Prerequisite, 3-4. Professor THOMSON.

8. **PLINY.** Letters. (*Westcott's Selection*). Two credits. Second semester. Prerequisite, 3-4. Professor THOMSON.

9-10. **TEACHERS' COURSE.** Three credits. The year. Prerequisite, 5-6 or 7-8; or may be taken along with either of these. Assistant Professor SIDEY.

Selected portions of *Caesar*. *Bell. Gall. V-VII* and *Bell. Civile*; *Suetonius, Julius Caesar*; *Sallust, Catiline*; *Vergil, Bucolics* and *Georgics*; *Ancient Lives of Vergil*. Review of the *Caesar*, *Cicero* and *Vergil* usually read in high schools. Methods of teaching Latin and discussion of the problems likely to arise in the classroom. Teaching by members of the class, under the supervision of the instructor. Visits to schools where Latin is taught and reports on the teaching observed.

24. **ROMAN ANTIQUITIES.** Two credits. Second semester. For classical majors. To follow Greek 17. Assistant Professor SIDEY.

#### FOR GRADUATES.

18. **LUCRETIUS.** Two credits. First semester. Books I and III; **CICERO**, *Tusculan Disputations I and IV*. Professor THOMSON.

19. **CICERO.** *De Officiis*. **SENECA**, *Moralia*. Two credits. Second semester. Professor THOMSON.

20. **QUINTILIAN.** X, XII. Two credits. First semester. Professor THOMSON.

21. **TACITUS.** *Histories I, II*. Two credits. Second semester. Professor THOMSON.

22. **STATIUS.** *Silvae*; **MARTIAL**, *Epigrams*. Two credits. First semester. Professor THOMSON.

23. **TACITUS**, *Dialogus*. **QUINTILIAN I**. Two credits. Second semester. Professor THOMSON.

#### OPEN TO ALL STUDENTS.

11. **ROMAN CIVILIZATION.** Three credits. First semester. Dr. SAGE.

This course is designed to give a clear notion of the part played in history by the Romans and to set forth their contributions to civilization in general. A general survey of Roman history will serve as a basis for the discussion of the religious, political and legal systems of the Romans, their literature and art, and their family life. Lectures (illustrated, when possible, by slides) and collateral reading.

12. ROMAN CIVILIZATION. Course 11 repeated. Three credits. Second semester. Dr. SAGE.

13. HISTORY OF ROMAN LITERATURE. Three credits. First semester. Prerequisite, two years of Latin. Assistant Professor SIDEX, Dr. SAGE.

MacKail's Latin Literature, supplemented by lectures and collateral reading. Illustrative selections from English versions of the more important authors.

Course 13 is repeated in the second semester.

15. ROMAN HISTORY. See history 4. Assistant Professor DENSMORE.

16-17. ROMAN LAW. Four credits. The year. (Law Latin and selections from Roman Law). Primarily for prospective law students. Prerequisite, two years of preparatory Latin.

25-26. LATIN PROSE COMPOSITION. Two credits. The year. Required of Latin majors and those who intend to teach Latin. Prerequisite, four years of preparatory Latin. Dr. SAGE.

### LIBRARY ECONOMY.

(Office, The Library.)

TEACHING STAFF: WILLIAM E. HENBY, A. M.; CHARLES W. SMITH, A. B., B. L. S.; ROXANA G. JOHNSON, A. B., B. L. S.; MAUD OSBORNE, A. B., B. L. S.

The department of library economy seeks to give such instruction and practice in all essential lines of library activity as will enable a capable student to enter as an assistant in any large library or as librarian of a small library.

In this curriculum librarianship is the central idea and such lines of academic scholarship are made preparatory and collateral to it as will give at once a liberal education and the best undergraduate preparation for library service.

The library courses extend through the junior and senior years and consist of five recitations per week through the four semesters and six laboratory hours per week through the last three semesters. The completion of this curriculum gives the degree of bachelor of arts and a certificate indicating the amount of instruction in library economy.

Students taking the library curriculum must offer for entrance the requirements for admission to any group of the College of Liberal Arts or the College of Science and must have completed the first two years of the curriculum before being admitted to any course in library economy.

The curriculum for the freshman and sophomore years includes all the prescriptions for the bachelor of arts degree, within those years, so that if at the end of the sophomore year a student wishes to major in some other subject the change can be made without loss. Also by this arrangement a student who has not elected the library economy curriculum until the beginning of the junior year may make the election then if desired.

A student offering for entrance one or more years of high school credit in any of the sciences offered in the freshman year will be expected to pursue one of the other two sciences for the year.

No student will be admitted to the junior year of this curriculum who has not completed the equivalent of at least sixteen college credits in German and eight college credits in French. The curriculum is open only to students majoring in library economy. For definite outline see page 79.

## MATHEMATICS AND ASTRONOMY.

### I. MATHEMATICS

(Office, Science Hall.)

PROFESSOR MORITZ, ASSOCIATE PROFESSORS MORRISON, BOOTHROYD,  
ASSISTANT PROFESSOR GAVETT, MR. LOVITT, MR. CARPENTER,  
DR. NEIKIRK, DR. WHITMORE, DR. BELL, MR. WILLIAMS,  
MR. WEESNER

#### SUGGESTIONS AS TO CHOICE OF COURSES.

Mathematics may be studied for several distinct purposes; the courses should be selected with reference to the purpose in view. Under each of the four headings below the courses best adapted to certain ends are enumerated in the order in which they should be taken.

1. Mathematics as a science for its own sake. Courses 1, 2, A, B, 3, 4, 5, 6, 7, 8, and as many of the following courses as are desired.

2. Mathematics as an instrument for use in other arts and sciences. Courses 1a, 2a, A, B, 3a, 4a, 5a, 7, 8, 9, 10, 11, 12, 13, 14.

3. Mathematics for high school teachers. Courses 1, 2, A, B, 3, 4, 5, 6, 13, 14, 17, 18, 19, 20, 29, 30.

4. Mathematics as a source of culture to students in literature, history and philosophy, who can devote but one year to the study. Courses 1b, 2b.

#### REQUIREMENTS OF THE DEPARTMENT

1. For all students in college of Liberal Arts and Science, courses 1b, 2b, or 1, 2, except when trigonometry has been offered for admission, in which case course 2 may be offered in the place of course 1.

2. For students who select mathematics as their major study, 24 credits, not including courses 29, 30. It is expected that students who make mathematics their major take at least two years' work in physics.

3. For a teacher's certificate, courses 29, 30, in addition to the other requirements.

Students conditioned in the mathematics requirements for admission may remove the condition with the assistance of a tutor, regularly authorized by the department, and paid by the student.

#### COURSES.

**A-B. SOLID GEOMETRY.** Two credits. The year. Three sections. Prerequisite, plane geometry.

Required during the freshman year of all students in the colleges of engineering, forestry and mines who do not offer solid geometry for admission.

1. **PLANE TRIGONOMETRY.** Two credits. The year. Also four credits, first or second semester.

Prerequisites: One and a half years' entrance algebra, one year entrance geometry.

This course satisfies the mathematics requirement for graduation in all the colleges, except when trigonometry has been offered for admission, in which case Math. 2, or Math. 1b-2b, will be accepted. Juniors or seniors who complete this course will receive only 2 credits for the course.

Sections A and B are honor sections, open only to students

who wish to do strong work in mathematics, or who look forward to making mathematics their major subject. Sections C and D are primarily intended for prospective students in journalism and library science. They are four-hour courses completing the subject in a single semester.

2. COLLEGE ALGEBRA. Two credits. The year. Prerequisites, same as for Math. 1.

Permutations and combinations. Mathematical induction. Determinants. Undetermined coefficients. Partial fractions. Probability. Infinite series and summation of series. Elements of the theory of equations.

1a. TRIGONOMETRY AND ALGEBRA. Four credits. First or second semesters. Eight sections. Prerequisites: Same as for Math. 1.

Primarily for students in the colleges of Engineering, Forestry, and Mines. The elements of plane trigonometry and supplementary work in algebra equivalent to one hour per week.

2a. ANALYTICAL GEOMETRY AND ALGEBRA. Four credits. First or second semester. Prerequisites: Math. 1a.

Primarily for students in the Colleges of Engineering, Forestry, and Mines. The elements of analytical geometry and supplementary work in algebra equivalent to one hour per week.

1b-2b, COLLEGE MATHEMATICS. Four credits. The year. Can not be taken for credit by students taking their major work in mathematics. Prerequisites: Same as for Math. 1. Professor MORITZ.

Primarily for students in history, literature, and philosophy who can devote but one year to the study of mathematics. Elements of trigonometry both plane and spherical, higher algebra, analytical geometry, and the infinitesimal calculus. Satisfies the graduation requirement in mathematics for students in the colleges of arts and science.

3. ANALYTICAL GEOMETRY. Three credits. First semester. Two sections. Prerequisites: Math 1.

An introductory course for students in the College of Science.

4. DIFFERENTIAL CALCULUS. Three credits. Second semester. Two sections. Prerequisite: Math. 3.

An introductory course for students in the College of Science.

3a. **CALCULUS FOR ENGINEERS.** Four credits. First or second semester. Prerequisites: Math. 2a.

4a. **CALCULUS FOR ENGINEERS.** Four credits. First or second semester. Continuation of Math. 3a.

5a. **APPLICATIONS OF THE CALCULUS FOR ENGINEERS.** Two credits. First or second semester. Prerequisite: Math. 4a.

5. **ADVANCED CALCULUS.** Three credits. First semester. Prerequisites: One year's work in calculus. For juniors and seniors. Professor MORITZ.

Functions of the complex variable. Definite integrals. Gamma and beta functions. Mean values and probability. Elliptic integrals. Fourier's series.

6. **HIGHER ALGEBRA.** Three credits. Second semester. Prerequisites: One year's work in calculus. For juniors and seniors. Professor MORITZ.

Permutations, combinations, and probability. Determinates. Introduction to infinite series. Introduction to the theory of equations.

7-8. **ORDINARY AND PARTIAL DIFFERENTIAL EQUATIONS.** Three credits. The year. Prerequisites: Math. 5 or Math. 4a. For seniors and graduates. Dr. NEIKIRK.

Introductory course. Solutions of the equations of the first and second order. Determination of constants of integration from initial conditions. Applications to physics, chemistry and astronomy.

\*9-10. **VECTOR ANALYSIS.** Four credits. The year.

11, 12. **PROJECTIVE GEOMETRY.** Two credits. The year. Prerequisites: Two year's of college mathematics. For juniors, seniors and graduates. Mr. CARPENTER.

Logical development, from a set of undefined elements and relations of the principles of unity, the projectivities of geometric forms in one, two, and three dimensions, projective transformations and kindred subjects.

\*13-14. **DESCRIPTIVE GEOMETRY AND CURVE TRACING.** Four credits. The year. Prerequisites: Math. 5 or Math. 4a. For juniors, seniors and graduates. Mr. CARPENTER.

For students in mathematics and engineering. Theoretical treatment of the principles underlying graphic methods.

15. **MODERN GEOMETRY.** Three credits. First semester. Prerequisites: Math. 5 or Math. 4a. For seniors and graduates. Associate Professor MORRISON.

An introductory course in modern analytical geometry and higher plane curves.

16. **DIFFERENTIAL GEOMETRY.** Three credits. Second semester. Prerequisites: Math. 15. For seniors and graduates. Associate Professor MORRISON.

Applications of the calculus to the metrical properties of twisted curves and surfaces.

17-18. **NON-EUCLIDEAN GEOMETRY.** Two credits. The year. Prerequisites: Two years' of college mathematics. For juniors, seniors and graduates. Assistant Professor GAVETT.

The growth of the science of geometry; the hypotheses on which it is built; the hypothesis on which rests Euclid's theory of parallels; the discussions to which this theory has been subjected; the logical possibility of the different non-euclidean geometries. This is to be followed by a brief survey of the logical foundations of geometry including the spaces of four or more dimensions.

\*19-20. **FOUNDATIONS OF MATHEMATICS.** Two credits. The year. Prerequisites: Math. 6. For seniors and graduates. Dr. NEIKIRK.

An introductory course for teachers, consisting of a historical and critical study of the foundations and concepts of geometry, algebra, and analysis with the view of correcting certain semi-popular misconceptions and half-truths.

\*21-22. **THEORY OF NUMBERS.** Two credits. The year. Prerequisites: Math. 5 or Math. 4a. For juniors, seniors and graduates. Dr. BELL.

An introductory course. Divisibility of numbers; the totient function; congruences; the theorems of Wilson, Fermat and Euler; the theory of quadratic residues.

23-24. **THEORY OF FUNCTIONS OF A COMPLEX VARIABLE.** Two credits. The year. Prerequisites: Math. 5 and Math. 6. For seniors and graduates. Dr. BELL.

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\*Not given in 1913-1914.



An introductory course; principally on the theories of Cauchy and Weierstrass; Riemann surfaces. In the second half of the course the elements of the Weierstrass theory of Elliptic functions will be developed and used to illustrate the general principles. Illustrations from geometry and physics.

\*25-26. THEORY OF EQUATIONS. Three credits. The year. Prerequisites: Math. 5 and Math. 6. For seniors and graduates. Professor MORITZ.

Modern theory of equations including substitution groups and the Galois theory.

27. INVARIANTS AND COVARIANTS. Three credits. First semester. Prerequisites: Math. 5 and Math. 6. For seniors and graduates.

Based on Elliott's Theory of Quantics. Professor MORITZ

28. INFINITE SERIES. Three credits. Second semester. Prerequisites: Math. 5 and Math. 6. For seniors and graduates. Professor MORITZ.

Convergency criteria, Abel's theorem, power series, Hypergeometric series and Fourier's series.

30. TEACHER'S COURSE. Four credits. Second semester. Prerequisites: Math. 5. For juniors and seniors. Required of those who make mathematics their major study and who are applicants for the teacher's certificate. Mr. CARPENTER.

A brief study of the history of elementary mathematics through the calculus, followed by a survey of various methods of teaching the separate branches.

31. MATHEMATICS JOURNAL AND RESEARCH CLUB. Meets on the second Tuesday of each month in Science building, room 2, at 8 p. m. The club consists of advanced students and teachers in the department of mathematics. The purpose of the club is to primarily discuss the research work carried on by members of the club, and secondarily to review important recent mathematical literature.

## II. ASTRONOMY

(Astronomy Building and Observatory.)

PROFESSOR MORITZ, ASSOCIATE PROFESSOR BOOTHROYD.

The work in astronomy is planned for three classes of students: (a) those who desire some knowledge of astronomy as a part of a liberal education; (b) engineers and others who need

some knowledge of astronomy as a part of their technical training; and (c) those who wish to pursue the subject more intensively than either of the other classes.

#### GRADUATION REQUIREMENT.

Courses 1-2 fulfill the 8 credits physical science required for graduation of students in the Colleges of Liberal Arts and Science.

#### REQUIREMENTS FOR A MAJOR IN ASTRONOMY.

24 credits, but 1-2 and 1a-2a cannot both be counted. Reinforcing subjects of not less than 32 credits selected from mathematics, physics, chemistry, and geology, are recommended.

1-2. GENERAL ASTRONOMY. Four credits. The year. Lectures. Laboratory deposit, one dollar. Prerequisites: preceded or accompanied by mathematics 1-2 or mathematics 1a. Associate Professor BOOTHROYD.

The course is designed to give a broad general view of the subject, some acquaintance with the heavens and with methods of observing. The equipment of the observatory will be used for illustration, demonstration and observation.

1a-2a. ELEMENTARY ASTRONOMY. Two credits. The year. For juniors and seniors. Associate Professor BOOTHROYD.

A course in popular astronomy designed to give such general knowledge of the subject as every well-educated person should possess. The 6-inch equatorial telescope and other equipment of the observatory will be used for illustration and demonstration. For those who can possibly take the extra time course 1-2 is recommended in preference to this course.

3. ELEMENTARY ASTRO-PHYSICS. Three credits. First semester. Open to sophomores, juniors and seniors. Prerequisites: astronomy 1-2, physics 1-2, chemistry 1-2. Must be preceded or accompanied by mathematics 3-4 or mathematics 3a-4a. Associate Professor BOOTHROYD.

A broad survey of the field of astro-physics together with a study of spectroscopy and its relations to solar and stellar physics. Laboratory work in spectroscopy and solar physics.

4. COMPUTATION OF ECLIPSES. Three credits. Second semester. Open to sophomores, juniors and seniors. Prerequisites: astronomy 1-2; must be preceded or accompanied by mathematics 3-4 or mathematics 3a-4a. Associate Professor BOOTHROYD.

The subject of spherical astronomy will be first taken up in so far as it is necessary for the subsequent development of the general theory of eclipses, after which the general theory of eclipses and the computation of the elements of lunar and solar eclipses will be considered.

**3a-4a. ELEMENTARY GEODESY AND GEODETIC ASTRONOMY.** Four credits, first semester, 2 credits, second semester. Prerequisites: preceded or accompanied by mathematics 3-4 or by mathematics 3a-4a. Associate Professor BOOTHROYD.

Geodetic surveying methods and elements of geodesy, mapping and map projection, practical astronomy as applied to surveying. During the second semester actual determinations of time, latitude and azimuth with the theodolite, and time, latitude and longitude with the sextant will be made. This course is especially arranged for engineering students.

**5. THEORY OF PROBABILITIES.** Two credits. First semester. Open to juniors, seniors and graduates.

A general treatment of the theory of probabilities leading up to the derivation of the probability function and the general theory of least squares.

**6. LEAST SQUARES.** Two credits. Second semester. Open to juniors, seniors and graduates. Prerequisites: astronomy 5, except for engineering students who must have had astronomy 3-4 instead. Astronomy 5 is considered very desirable. Associate Professor BOOTHROYD.

The best methods for the adjustment of observations. For engineering students the applications to surveying will be especially considered.

**7. ANALYTICAL MECHANICS.** Three credits. First semester. Open to juniors, seniors, graduates. Prerequisites: preceded or accompanied by mathematics 5 or mathematics 4a, physics 1-2. Associate Professor BOOTHROYD.

Mathematical treatment of the laws of force and motion.

**8. CELESTIAL MECHANICS.** Three credits. Second semester. Open to juniors, seniors, graduates. Prerequisite: astronomy 7. Associate Professor BOOTHROYD.

Mechanics applied to the motion of the heavenly bodies.

**9-10. ADVANCED ASTRONOMY.** Four or six credits. The year. Open to seniors, graduates. Prerequisites: 16 credits in astronomy, 16 credits in mathematics. Associate Professor BOOTHROYD.

The subject matter of this course will be arranged to meet the needs of the particular students who elect it. Work will be offered along three lines: (a) theoretical astronomy, (b) practical astronomy, (c) astro-physics.

### MILITARY SCIENCE AND TACTICS

(Office, The Armory.)

EDWARD E. MCCAMMON, FIRST LIEUTENANT THIRD INFANTRY, U. S. A.  
COMMANDANT.

A course of two years in military training is required. All able-bodied male students (except those from foreign countries, not intending to become naturalized) must take the course which by regulation of the University is required during the first and second year. Three hours a week are devoted to military training, for which two credits are given each semester.

### ORIENTAL HISTORY, LITERATURE AND INSTITUTIONS

(Law Building.)

PROFESSOR GOWEN.

The requirement of one year's work in ancient language and literature may be satisfied by courses 5 and 6. Courses 1, 2, 3 and 4 count for credits in the department of history.

1. THE EVOLUTION OF CHINA—BEFORE THE MANCHU CONQUEST. Two credits. First semester.

The same as history 35.

2. THE EVOLUTION OF CHINA—MODERN ERA. Two credits. Second semester.

The same as history 36.

3. THE EVOLUTION OF JAPAN—FEUDAL ERA. One credit. First semester.

The same as history 37.

4. THE EVOLUTION OF JAPAN—MODERN ERA. One credit. Second semester.

The same as history 38.

5. THE LITERATURE OF INDIA. Four credits. First semester.

6. THE LITERATURE OF PERSIA. Four credits. Second semester.

7-8. ELEMENTARY SANSKRIT. Four credits. The year. Time to be arranged.

9-10. **ELEMENTARY HEBREW.** Four credits. The year. Time to be arranged.

### PHILOSOPHY

PROFESSOR SAVERY, ASSOCIATE PROFESSOR STEVENS, ASSISTANT PROFESSOR SMITH, DR. DUCASSE, MR. WILCOX.

Majors in philosophy should take 31 and 2 or 4 in the sophomore year. Students may major in psychology.

The requirements in philosophy may be satisfied by eight hours in the following courses: 1, 2, 3, 4, 9, 10, 31, 33, 34, 35, 36; or by 5-6.

Courses 1, 2, 3 and 31 are adapted to arts-law students.

Course 31 as a prerequisite to the study of education, unless the student has taken elsewhere general psychology.

1. **INTRODUCTION TO PHILOSOPHY.** Four credits. First semester. Professor SAVERY.

An elementary study of the main problems of philosophy.

2. **ELEMENTS OF ETHICS.** Four credits. First or second semester. Professor SAVERY, Dr. DUCASSE.

Study of value, the good, duty, virtue. Application of ethical principles to problems of economic life, government, law, art and religion. Three lectures, one or two discussion hours.

3. **ELEMENTS OF LOGIC.** Four credits. First semester. For arts-law students. Dr. DUCASSE.

The logical structure of an action at law. The ways of logically establishing or invalidating any statement illustrated at length, considerable drill being given in the various processes of proof and disproof. The logic of testimony, circumstantial evidence, pleas of guilty with extenuating circumstances, special pleading, etc. Stress will be laid throughout on the practical rather than on the theoretical side of logic.

4. **ELEMENTS OF LOGIC.** Four credits. Second semester. Dr. DUCASSE.

The nature and tests of clear and valid thinking. Analysis of fallacies, methods of obtaining true propositions and of testing the truth of a proposition.

5-6. **HISTORY OF PHILOSOPHY.** Four credits. First and second semester. Dr. DUCASSE.

Ancient, Mediaeval and Modern. The views of the classical philosophers on the nature of the universe and man, the values

of life, the ideal form of society, the origin and limits of knowledge, the relation of the individual to the world, etc. Portions of the most important works of the greater philosophers will be read. Some of the more recent philosophical movements, such as Pragmatism and Neo-Realism will be very briefly touched upon at the end of the course.

**7-8. PRINCIPLES OF PHILOSOPHY.** Three credits. First and second semester. Professor SAVERY. Prerequisite, 8 credits in philosophy.

A course in systematic philosophy. (1) The meaning and tests of truth, with special reference to Pragmatism. (2) The construction of a theory of the universe, including an account of the nature of the human self, its relation to the body, the nature of matter, the problem of the freedom of the will. Study of Idealism. (3) The foundation of morality, pessimism and optimism, the evolution and destiny of man.

**9-10. PHILOSOPHY OF SCIENCE.** Two credits. First and second semester. Prerequisite, 1 or 5, 6. Professor SAVERY.

An account of scientific method; and of the fundamental laws and concepts of the sciences—mathematical, physical and biological. Interpretation of the scientific view of the world and its place in the human economy. Primarily for majors in science.

**\*11-12. HISTORY OF RELIGION.** Two credits. First and second semester. Mr. DUCASSE.

The nature, origin and early development of religion, and its advanced types in Brahmanism, Buddhism, Confucianism, Zoroastrianism, and Judaism.

**13-14. PHILOSOPHY OF RELIGION.** Two credits. First and second semester. Prerequisite, one course in philosophy. Professor SAVERY.

(1) The religious experience: the origin, nature and types of religion, the sense of sin, conversion, faith, the value of religion, and its effect on individual happiness and morality. The social aspect of religion and the religion of democracy. Study of mystical experiences. (2) The truth of religion: the proofs of the existence of God, the basis of faith, pessimism, optimism and meliorism, immortality. Discussion of agnosticism.

**\*15-16. PHILOSOPHY IN ENGLISH LITERATURE OF THE NINETEENTH CENTURY.** Two credits. First and second semester. Pre-

requisite, one course previous or concurrent. Required for seniors in Library Training Course. Professor SAVERY.

Conceptions of the universe, evolution, the destiny of man, the individual and social ideal in Wordsworth, Shelley, Emerson, Browning, Tennyson, Fitzgerald's Omar Khayyam, James Thomson, Arnold, Swinburne and Whitman. An account of the social ideals of Carlyle, Ruskin, Morris, Shaw, Dickinson, Wells and Chesterton.

17-18. PHILOSOPHY IN THE MODERN DRAMA. Two credits. First and second semester. Prerequisite, one course previous or concurrent. Required for seniors in Library Training Course. Mr. WILCOX.

Philosophical, ethical and social ideals in Ibsen, Strindberg, Hauptmann, Sudermann, Maeterlinck, Bernard Shaw and other recent dramatists. Introductory study of similar ideas in the Greek drama and Shakespeare.

19-20. ESTHETICS. Two credits. First and second semester. Required for seniors in music. Mr. WILCOX.

The origins and motives of art, and the esthetic principles of architecture, sculpture, painting, music, poetry, the drama, and the decorative arts. The nature of beauty, the sublime, the comic, the tragic. Standards of criticism. Social and democratic theories of art.

22. ADVANCED LOGIC. Two credits. Second semester. Prerequisite, 3 or 4. Dr. DUCASSE.

Primarily intended for students interested in logic for its own sake, and for those desirous of attaining to accuracy in thinking of a highly abstract nature. Discussion of the Logical Categories, exposition and illustration of the elements of symbolic logic, consideration of some of the chief types of order, of the logical characteristics of quantitative fields, and of the number concept.

23-24. CONTEMPORARY PHILOSOPHY. Two credits. First and second semester. Prerequisite, 1 or 5, 6.

Present tendencies in philosophy. The Materialism of Haeckel; the Naturalism of Spencer, Mach, and Pearson; the Idealism of Bradley and Royce; the Pragmatism of James; and the New Realism of Bergson and the American Realists.

25-26. SEMINARY. THE PHILOSOPHY OF SCHOPENHAUER AND NIETZSCHE. Two credits. First and second semester. Open to students upon approval of instructor. Dr. DUCASSE.

The philosophy of the Will: the Will to Live and the Will to Power. Contrast of Schopenhauer's pessimism and Nietzsche's affirmation of the value of life, Schopenhauer's doctrine of sympathy and Nietzsche's egoism, democratic and aristocratic codes of morality, the Saint and the Superman.

31. GENERAL PSYCHOLOGY. Four credits. First or second semester. Required for all courses in education. Laboratory deposit \$2.00. Associate Professor STEVENS, Mr. WILCOX.

The facts and laws of consciousness and their connection with the nervous system. Three lectures, one recitation, one laboratory period.

33. PHYSIOLOGICAL PSYCHOLOGY. Four credits. First semester. Prerequisite, 31. One lecture, one recitation, two laboratory periods. Laboratory deposit \$2.00. Associate Professor STEVENS.

The human brain and spinal cord, demonstration of the motor region of the cortex, summation of stimuli, inhibition, rate of transmission of the nerve impulse, Weber's law and space perception.

34. EXPERIMENTAL PSYCHOLOGY. Four credits. Second semester. Prerequisite, 31. One lecture, one recitation and two laboratory periods. Laboratory deposit \$1.00. Mr. WILCOX.

Training in methods of experimentation. Qualitative and quantitative experiments in sensation, perception, attention, association of ideas.

35-36. PRINCIPLES OF PSYCHOLOGY. Three credits. First and second semester. Prerequisite, 31. Associate Professor STEVENS.

A systematic study. Students are urged to proceed this by physiological or experimental psychology.

37. GENETIC PSYCHOLOGY. Three credits. First semester. Prerequisite, 31. Mr. WILCOX.

(1) The evolution of mind in animals. (2) The mental development of the child.

38. EDUCATIONAL PSYCHOLOGY. Three credits. Second semester. Prerequisite, 31. Mr. WILCOX.

The psychological basis of education. Perception, the learn-



ing processes, practice, memory, habit, judgment, attention, and motor functions, with reference to age, sex, race, and individual differences.

40. **ABNORMAL PSYCHOLOGY.** Three credits. Second semester. Prerequisite, 31. Associate Professor STEVENS.

Sleep, dreams, hypnotisms, mediumships, possessions, hallucinations, motor automatisms, double personality and the subconscious.

41. **PSYCHOLOGY OF ADVERTISING.** Two credits. First semester. Mr. WILCOX.

Laws of attention, suggestion, belief, and the emotions, with application to advertising.

42. **PSYCHOLOGY OF TESTIMONY.** Two credits. Second semester. Mr. WILCOX.

Primarily for students of law. Sources of error in testimony. Illusions, delusions, suggestions, fidelity of report.

43-44. **RESEARCH IN PSYCHOLOGY.** Three credits. First and second semester. Prerequisite 33 or 34. Associate Professor STEVENS.

Opportunity for original investigation.

45. **THE PSYCHOLOGY OF EXCEPTIONAL CHILDREN.** Three credits. First semester. Prerequisite, 31. Assistant Professor SMITH.

The nature and cause of mental defects and peculiarities of children, with special reference to methods of diagnosis and to physical pathology. Prerequisite to the course in the Education of Exceptional Children and to Philosophy 46.

46. **METHODS OF MENTAL AND PHYSICAL TESTS AND METHODS OF MEASUREMENT.** Two credits. Second semester. Prerequisite, 45. Laboratory deposit, \$1.00. Assistant Professor SMITH.

Laboratory course with conferences. The student will be given practical training in Clinical Psychology and in Experimental Child Psychology.

**PHYSICAL TRAINING**

(Office, the Gymnasium)

**DIRECTOR HALL, PROFESSOR WEINZIRL, ASSISTANT DIRECTOR MERRICK,  
MISS FITCH, MR. SIPPRELL**

**REQUIREMENTS FOR GRADUATION**

The requirements in physical training for the several schools are as follows:

Colleges of Arts, Science, Engineering, and Forestry: Physical Training 1-4 inclusive.

College of Pharmacy, B. S.: Physical Training 1-4 inclusive.

College of Pharmacy, Ph. C.; Physical Training 1-2 inclusive.

The requirements in physical training for all able bodied men are satisfied by an equal number of credits in the department of military science and tactics.

**REQUIREMENTS FOR A MAJOR.**

The completion of twenty-four hours exclusive of the eight hours of practice required in the sophomore and freshmen years.

**I. HYGIENE.**

All freshmen are required to complete a one hour course in hygiene each semester.

**MEN**

1. **PERSONAL HYGIENE.** One-half credit. First semester. Tu. at 9. Director HALL.

2. **PUBLIC HYGIENE.** One-half credit. Second semester. Mon. at 8. Professor WEINZIRL.

**WOMEN**

2. **PUBLIC HYGIENE.** One-half credit. First semester. Div. A. M. at 8, Div. B. Th. at 11. Professor WEINZIRL.

1. **PERSONAL HYGIENE.** One-half credit. Second semester. Div. A. Tu. at 9; Div. B. Th. at 11. Director HALL and special lecturers.

**II. PHYSICAL TRAINING**

Courses 1 and 3 for both men and women are divided into two periods by the Thanksgiving recess. During the first period the work is carried on out-of-doors and consists of gymnastic games and athletic sports. The second period is devoted to indoor training.

Courses 2 and 4 are similarly divided by March 15th. The second period is devoted to out-of-door work.

Upon approval by the director training on athletic teams may be substituted by a limited number for required courses.

Courses 1, 2, 3, 4, for both men and women must be taken during the freshman and sophomore years unless deferred by the director and dean.

To be eligible to compete in the various athletic contests every student must pass a satisfactory physical examination and have practiced at least thirty days.

A uniform gymnasium suit including shoes are necessary. They may be purchased after entering college.

Courses 9, 11, 13, 14, 15, 16, and 17 may be elected by students in the Colleges of Arts and Science for which credit is given above the required eight hours.

All courses are open to election with credit by students majoring in the departments of education and zoology.

1-2. PHYSICAL TRAINING. Two credits. The year. Introductory course for first year men.

1-2. PHYSICAL TRAINING. Two credits. The year. Introductory course for first year women.

3-4. GYMNASIICS. Two credits. The year. For second year men.

3-4. PHYSICAL TRAINING. Two credits. The year. For second year women.

5-6. PHYSICAL TRAINING. Two credits. The year.

A study of the various methods and systems of physical training; their application and adaptability to different ages and conditions.

7-8. PHYSICAL TRAINING. Two credits. The year.

A continuation of course 5-6.

9. HYGIENE. Two credits. First semester. Director HALL.

A study of the forces that make for or against the perfect health of the individual.

10. PHYSICAL EXAMINATIONS. Two credits. First semester. Director HALL.

11. ANTHROPOMETRY. Two credits. First semester. Miss MERRICK.

12. CORRECTIVE GYMNASICS AND PRESCRIPTION OF EXERCISE. Two credits. Second semester. Director HALL.

13. HISTORY OF PHYSICAL TRAINING. Two credits. Second semester. Miss MERRICK.

14. PUBLIC PARKS AND PLAYGROUNDS. Two credits. First semester. Miss FITCH.

15. HYGIENE: EMERGENCIES. Two credits. Second semester. Director HALL.

Especially accidents that may arise on athletic fields, on public playgrounds or in the gymnasium.

\*16. PHYSIOLOGY OF BODILY EXERCISE. Two credits. First semester. Director HALL.

17-18. PHYSICAL TRAINING. Two credits. The year.

A course designed especially for teachers who may wish to conduct classes in physical training in conjunction with other school courses.

19. ADVANCED GYMNASIAC EXERCISES. No credit. Miss MERRICK.

## PHYSICS

(Office, Basement, Denny Hall)

PROFESSOR OSBORN, ASSISTANT PROFESSOR BRAKEL, DR. ANDERSON AND MR. VORIS, MR. KARRE AND MR. GIBLIN.

### (a) PRIMARILY FOR STUDENTS IN PURE SCIENCE

1-2. GENERAL PHYSICS. Four credits. The year. Three class periods and one laboratory period. Prerequisite, High School Physics. Open to juniors and seniors as a half credit course. Professor OSBORN.

3-4. MECHANICS, SOUND AND MUSIC. Four credits. The year. Prerequisite, High School Physics. Dr. ANDERSON.

A course for the students in the music department only.

\*5. HEAT. Three or four credits. Second semester. Prerequisites, 1 and 2, 8 hours. Mathematics. Three class periods and one laboratory period. May be taken without laboratory work for three credits. Dr. ANDERSON.

An experimental and theoretical treatment of the subject.

\*6. **VIBRATORY PHENOMENA AND SOUND.** Four credits. Second semester. Prerequisite, Physics 1, 2 and Calculus. Professor OSBORN.

The course takes up the development and discussion of the mathematical expressions for wave motions, and various types of vibrations.

7. **LIGHT.** Four credits. First semester. Prerequisite, Physics 1, 2. Math. 8 hours. Professor OSBORN.

This course aims to discuss the more important optical researches and their mathematical theory in elementary form. Their application to practical problems will be given attention.

8. **ELECTRICITY AND MAGNETISM.** Four credits. First semester. Three class periods and one laboratory period. Prerequisites, Physics 1, 2. Math. 4 hours. Professor BRAKEL.

This course is planned with a view to familiarize the student with the more important experimental and theoretical aspects of the subject.

9. **DIRECT AND ALTERNATING CURRENTS.** Four credits. Second semester. Prerequisites, Physics 8 or 5a and Mathematics, 8 hours. Professor BRAKEL.

A study of the fundamental principles of direct and alternating currents and the development of methods for the solution of practical problems. Three class periods and one laboratory period.

10. **THEORETICAL MECHANICS.** Three credits. First semester. Prerequisites, 1 and 2, 8 hours. Mathematics. Dr. ANDERSON.

An elementary mathematical discussion of the subject with special emphasis on the physical interpretation and historical development. Three class periods.

11. **TEACHER'S PHYSICS.** Two credits. The year. Open only to seniors. Prerequisites, Not less than 12 hours of Physics and 24 hours of other science. Professor OSBORN.

12. **HISTORY OF PHYSICS.** One credit. The year. Prerequisite, 16 hours of Physics. Professor OSBORN.

16. **DYNAMICS.** Two credits. The year. Prerequisites, Physics 10, and Differential Equations. Dr. ANDERSON.

A rigorous mathematical treatment of fundamental principles. Two class periods.

17. **THEORETICAL ELECTRICITY AND MAGNETISM.** Two credits. The year. Prerequisites, physics 16 hours. Math 16 hours. Professor BRAKEL.

A rigorous mathematical treatment of the fundamentals.

18. **ADVANCED OPTICS.** Two credits. Second semester. Special problems. Professor OSBORN.

19. **THERMODYNAMICS AND KINETIC THEORY OF GASES.** Two credits. The year. Two class periods. Prerequisites, Physics 5 and 10, and Differential Equations. Dr. ANDERSON.

20. **HIGH TEMPERATURE THERMOMETRY.** One credit. Second semester. Prerequisites, Physics 5. One laboratory period. Dr. ANDERSON.

21. **ELECTRO-CHEMISTRY AND THEORIES OF E. M. F.** Three credits. Second semester. Professor BRAKEL.

22. **ELECTRON THEORY.** Two credits. The year. Prerequisites, 16 hours Physics, and 16 hours Math. or special arrangement. Dr. ANDERSON.

Discussion of recent researches in Conduction of Electricity through Gases, Photoelectric effect and Radioactivity with bearing on the Electron Theory. Two class periods.

24. **COLLOQUIUM.**

Laboratory deposit is \$2.50 per semester for courses 1, 2, 3, 4, 5, 6, 7, 8, 9, 18, 20, 21.

(b) **PRIMARILY FOR STUDENTS IN APPLIED SCIENCE**

1a. **MECHANICS, WAVE MOTION AND LIGHT.** Four credits. The year. Prerequisites, High School Physics and Trigonometry.

2a. **ELECTRICITY AND HEAT.** Four credits. Second and first semesters. Prerequisite 1a.

1b. **PHYSICS MEASUREMENTS.** Two credits. The year. Taking 1a.

2b. **PHYSICS MEASUREMENTS.** One credit. Second and first semesters. Taking 2a.

3a-4a. **GENERAL PHYSICS.** Four credits. The year. Prerequisites, High School Physics and Trigonometry. Mr. VORIS.

This course is an abridgment of 1a and 2a and is open only to students in forestry, pharmacy and medicine. Three class periods and one laboratory period.

5a. **ELECTRICAL MEASUREMENTS.** Four credits. The year. Prerequisite, 2a. Two class periods and two laboratory periods. Professor BRAKEL.

6a. **PHYSICS OF THE HOME.** Four credits. Second semester. Prerequisite, High School Physics. Professor OSBORN.  
A course for students in domestic science.

NOTE.—The laboratory deposit is six dollars per year for courses, 1a, 1b, 2b, 3a-4a, 5a, and 6a.

### POLITICAL AND SOCIAL SCIENCE

(Office, Room 6, Denny Hall)

PROFESSOR SMITH, PROFESSOR BEACH, ASSISTANT PROFESSOR CUSTIS,  
DR. MC MAHON, MR. BENNETT

The general requirement of six credits in Political and Social Science may be satisfied by courses 1-2, 3 and 4, 19 and 20, or 1a, and any other three-hour course in Economics for which 1a is prerequisite.

1-2. **ELEMENTS OF ECONOMICS.** Three credits. The year. Dr. McMAHON.

A study of the principles of economics and of economic problems.

1a. **ELEMENTS OF ECONOMICS.** Three credits. First semester. Course 1a is repeated in the second semester.

3. **ELEMENTS OF SOCIOLOGY.** Three credits. First semester. Professor BEACH.

4. **SOCIAL PROBLEMS.** Three credits. Second semester. Prerequisite, 3.

8. **INDUSTRIAL ORGANIZATION.** Three credits. Second semester. Prerequisite, 1-2 or 1a. Assistant Professor CUSTIS.

A study of modern industry with special reference to trusts and "industrial" monopolies. This course is practically a continuation of Course 11 (Transportation), but may be taken by students who have not taken that course.

10. **PUBLIC FINANCE AND TAXATION.** Three credits. Second semester. Prerequisite, 1-2 or 1a. Assistant Professor CUSTIS.

Special attention will be given to the problems now before the United States and the several states, particularly Washington.

11. **TRANSPORTATION.** Three credits. First semester. Prerequisite, 1-2 or 1a. Assistant Professor CUSTIS.

Primarily a study of railway transportation in the United States.

12. **HISTORY OF COMMERCE AND COMMERCIAL POLICIES.** Three credits. Second semester. Prerequisites, 1-2 or 1a. Mr. BENNETT.

14. **MODERN TARIFF SYSTEMS.** Two credits. Second semester. Prerequisite, 1-2 or 1a. Mr. BENNETT.

15. **MONEY AND BANKING.** Three credits. First semester. Prerequisite, 1-2 or 1a. Assistant Professor CUSTIS.

Deals chiefly with the systems of money and banking prevailing in different countries, especially the United States, and with international exchange.

18. **MUNICIPAL GOVERNMENT.** Two credits. Second semester. Prerequisite, 1-2, 1a, 3, or 19. Professor SMITH.

19. **AMERICAN GOVERNMENT (NATIONAL).** Three credits. First semester. Professor SMITH.

20. **AMERICAN GOVERNMENT (STATE AND LOCAL).** Three credits. Second semester. Professor SMITH.

21-22. **POLITICAL THEORIES.** Two credits. The year. Professor SMITH.

A study of the political ideas that have influenced constitutional development and legislation in England and the United States.

23. **THE GOVERNMENT OF ENGLAND.** Two credits. First semester. Prerequisite or concurrent, course 19. Professor SMITH.

26. **STANDARDS OF LIVING.** Two credits. Second semester. Prerequisite, Economics 1-2 or 1a.

Designed for students in Home Economics, but open to others. A study of the consumption of wealth with reference to the household as an economic unit.

27. **THE DOMESTIC MARKET.** Two credits. First semester. Prerequisite, 1-2 or 1a. Mr. BENNETT.

Organization of business for the marketing of goods.

29. **SOCIAL AMELIORATION.** Three credits. First semester. Prerequisite, 4. Professor BEACH.

A study of the attempt of society under the present industrial



system, to effect improvement in the life of the less fortunate classes.

**30. SOCIAL PSYCHOLOGY.** Three credits. Second semester. Prerequisite, 6 hours in the department. Professor BEACH.

The growth and nature of custom and convention, and the formation of public opinion. It is also desirable that the student should have had philosophy 15.

**31. THE DEVELOPMENT OF INDUSTRIAL SOCIETY.** Three credits. First semester. Prerequisite, or concurrent, 1-2 or 1a. Assistant Professor CUSTIS.

Devoted chiefly to the economic history of England with special reference to the rise of modern industry.

**33-34. JOINT SEMINAR.** Two credits. The year. Professor SMITH, Professor CONDON and Professor MEANY.

Designed for study and reports upon the problems in the historical political, and legal development of the State of Washington and the Pacific Northwest.

**35-36. PRINCIPLES OF ECONOMICS.** Three credits. The year. Prerequisite, 6 hours in Economics. Assistant Professor CUSTIS.

A study of the production, distribution, exchange, and consumption of wealth with special reference to present day problems.

**37. LABOR PROBLEMS.** Three credits. First semester. Prerequisite, 1-2 or 1a. Dr. McMAHON.

This course covers the topics of strikes, trade unions, employers' associations, arbitration, immigration, child labor.

**38. LABOR LEGISLATION.** Three credits. Second semester. Prerequisite, 37. Dr. McMAHON.

American and foreign. A study of wages, hours, accidents, industrial hygiene.

**40. CORPORATION FINANCE.** Three credits. Second semester. Prerequisite, 6 hours in economics. Assistant Professor CUSTIS.

A study of the promotion and capitalization of modern corporations, their financial policies, and the market for their securities.

**44. THE FAMILY.** Three credits. Second semester. Prerequisite, 3. Professor BEACH.

A brief consideration of the origin and early forms of the family, followed by a study of the conditions which have led to

its modification in the past and in recent times, including the problem of eugenics.

45-46. SEMINAR IN POLITICAL AND SOCIAL SCIENCE. Two credits. The year.

Primarily for graduate students majoring in the department.

### PUBLIC SPEAKING AND DEBATE.

(Office, Room 21, Denny Hall)

ASSOCIATE PROFESSOR BASSETT, MR. ———

A major in this department is restricted to 24 hours, 8 hours of which must be taken in freshman composition. Not more than 16 hours in this department may be counted toward the A. B. degree.

1. ORAL EXPRESSION. Three credits. Either semester. Two sections. Associate Professor BASSETT.

A study of the principles of expressive reading.

2. ORAL EXPRESSION. Three credits. Either semester. One section. Associate Professor BASSETT.

A continuation of Course 1.

3. THE ORATION. Two credits. First semester. Two sections. Associate Professor BASSETT.

The study of the oration with attention to the style of spoken discourse.

4. PUBLIC SPEAKING. Two credits. Second semester. Two sections.

Practice in the preparation and delivery of original speeches for special occasions.

5. DRAMATIC READING. Two credits. First semester. Associate Professor BASSETT.

Two or three plays of Shakespeare are studied and scenes are presented by members of the class.

6. DRAMATIC READING. Two credits. Second semester. Associate Professor BASSETT.

Scenes from modern dramas are presented by members of the class.

7. ARGUMENTATION. Three credits. First semester.

Practice in the preparation of arguments and forensics.

8. **ORAL DEBATE.** Two credits. Second semester.  
Practice in the preparation and delivery of oral arguments.

### SCANDINAVIAN

(Room 26, Law Building)

PROFESSOR VICKNER

- 1-2. **SWEDISH LANGUAGE.** Four credits. The year.  
Grammar and reading. Composition and oral exercises.
- 3-4. **NORWEGIAN-DANISH LANGUAGE.** Four credits. The year.  
Grammar and reading. Composition and oral exercises.
- 5-6. **NORWEGIAN-DANISH LITERATURE.** Two credits. The year.  
Representative authors are read in connection with a general survey of the Norwegian-Danish literature.
- 7-8. **SWEDISH LITERATURE.** Two credits. The year.  
Representative authors are read in connection with a general survey of the Swedish Literature.
- 9-10. **OLD ICELANDIC.** Two credits. The year.  
Grammar. Prose selections. Poems from the Edda. Lectures on Scandinavian Mythology and antiquities. Scandinavian philology.
- 11-12. **MODERN SWEDISH LITERATURE.** Two credits. The year.  
Representative writers of the nineteenth and twentieth centuries are read, including Selma Lagerlof, Strindberg, Froding. Study of the culture and history of Sweden.
- 13-14. **MODERN NORWEGIAN-DANSIH LITERATURE.** Two credits. The year.  
Representative writers of the nineteenth and twentieth centuries are read, including Ibsen, Bjornson, Kjelland, Jacobson, Drachmann. Study of the culture and history of Denmark and Norway.
- 15-16. **STUDY OF MODERN SCANDINAVIAN AUTHORS IN ENGLISH TRANSLATION.** Two credits. The year.  
A study of Ibsen and Strindberg the main feature of the course. Brief survey of Scandinavian culture and history.  
Courses 9-10 or 15-16 will be given according to the demand, only one being offered 1913-1914.

**SPANISH**  
(Denny Hall)

**PROFESSOR OBER, ASSISTANT PROFESSORS UMPHREY AND STRONG, MISS RICHARDS**

For a major, 24 to 40 credits, including at least one year course of the second division.

1-2. **ELEMENTARY.** Four credits. The year. Professor OBER and instructors.

Course 1 is repeated in the second semester and followed by Course 2 which is repeated in the first semester. Assistant Professor STRONG and MISS RICHARDS.

3-4. **COMMERCIAL.** Three credits. The year. Prerequisite, 1-2. Professor OBER.

Business correspondence and commercial terms. Readings from Spanish newspapers.

5-6. **LITERARY.** Three credits. The year. Spanish literature of the nineteenth century. Prerequisite, 1-2. Assistant Professor UMPHREY.

7-8. **COMPOSITION AND CONVERSATION.** Two credits. The year. This course should be taken in connection with 3-4 or 5-6. Prerequisite, 1-2. Assistant Professors UMPHREY and STRONG.

**FOR UNDERGRADUATES AND GRADUATES**

11. **TEACHERS' COURSE.** Two credits. First semester. Professor OBER.

13-14. **CERVANTES.** Two credits. The year. Prerequisite, 5-6. Assistant Professor UMPHREY.

Life and writings, with special study of Don Quijote de la Mancha.

15-16. **LOPE DE VEGA AND CALDERON.** Three credits. The year. Prerequisite, 5-6. Professor OBER.

17-18. **THE NOVEL.** Three credits. The year. Prerequisite, 5-6. Assistant Professor STRONG.

The origins of the Spanish novel and its development. Reading of selected texts; collateral reading and reports.

19-20. **THE DRAMA.** Three credits. The year. Prerequisite, 5-6. Assistant Professor UMPHREY.

History of the Spanish drama from the sixteenth century down

to the present time. Reading of plays by the most important dramatists; collateral reading and reports.

\*21. LYRIC POETRY. Two credits. First semester. Prerequisite, 5-6. Assistant Professor UMPHREY.

\*22. THE SPANISH POPULAR BALLAD. Two credits. Second semester. Prerequisite, 5-6. Assistant Professor UMPHREY.

#### FOR GRADUATES

23-24. OLD SPANISH. Two credits. The year. Philology. Assistant Professor UMPHREY.

History of Spanish literature to the sixteenth century. Reading of the Poema del Cid and selections from other early Spanish writings. Reports on special topics.

#### ZOOLOGY

(Science Hall)

PROFESSOR EMERITUS JOHNSON, PROFESSOR KINCAID, ASSISTANT PROFESSOR E. VICTOR SMITH, MR. OSTERUD

A laboratory deposit of two dollars is required for all courses except 13, 15 and 16.

1-2. ELEMENTS OF ZOOLOGY. Four credits. The year. Professor KINCAID and Mr. OSTERUD.

A general review of zoological science.

Course 1 is repeated in the second semester for the benefit of students entering at that time.

3-4. VERTEBRATE ANATOMY. Four credits. The year. Assistant Professor SMITH.

Comparative structure of vertebrates.

5. NORMAL HISTOLOGY. Four credits. First semester. Mr. OSTERUD.

Mammalian histology, especially for pre-medical students.

6. EMBRYOLOGY. Four credits. Second semester. Mr. OSTERUD.

Comparative developmental history of vertebrates.

7. COMPARATIVE HISTOLOGY. Four credits. First semester. Mr. OSTERUD.

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\*Not offered in 1913-1914.

8. **NEUROLOGY.** Four credits. Second semester. Assistant Professor SMITH.

Comparative structure and genesis of sense organs and central nervous system.

10. **ELEMENTARY PHYSIOLOGY.** Four credits. First and second semester. Assistant Professor SMITH.

Especially for students registered in department of home economics, but open to others.

11. **GENERAL PHYSIOLOGY.** Four credits. First semester. Assistant Professor SMITH.

12. **ADVANCED PHYSIOLOGY.** Four credits. Second semester. Assistant Professor SMITH.

14. **FOREST ZOOLOGY.** Two credits. Second semester. Professor KINCAID.

Habits and economic relations of typical forest animals.

13. **FOREST ENTOMOLOGY.** Four credits. First semester. Professor KINCAID.

Relation of insects to the forest.

15. **ETHNOLOGY.** Two credits. First semester. Professor KINCAID.

Origin, migration, distribution and customs of the races of man. Illustrated by lantern slides.

16. **EVOLUTION.** Two credits. Second semester. Professor KINCAID.

Lectures upon important biological problems related to organic evolution, including variation, selection, heredity and eugenics. Illustrated by stereopticon views.

17-18. **GENERAL ENTOMOLOGY.** Four credits. The year. Professor KINCAID.

Introduction to study of insects, their structure, classification, ecology and economic relations.

19-20. **MUSEUM AND FIELD WORK.** Four credits. The year. Professor KINCAID.

Systematic investigation of the local fauna including studies based upon material in the state museum.

21-22. **RESEARCH.** First and second semesters. Students capable of carrying on independent research will be allowed to do so under the direction of the instructors in charge.

**FACULTY OF THE SCHOOL OF EDUCATION**

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- THOMAS FRANKLIN KANE, PH. D.,** (Johns Hopkins University),  
PRESIDENT.
- FREDERICK ELMER BOLTON, PH. D.,** (Clark University) Professor  
of Education and Dean of the School of Education.
- CAROLINE HAVEN OBER,** Professor of Spanish.
- TREVOR KINCAID, A. M.,** (University of Washington), Professor of  
Zoology.
- FREDERICK MORGAN PADELFORD, PH. D.,** (Yale University, Professor  
of English.
- ARTHUR SEWALL HAGGETT, PH. D.,** (Johns Hopkins University),  
Professor of Greek and Dean of the College of Liberal Arts.
- FREDERICK ARTHUR OSBORN, PH. D.,** (University of Michigan), Pro-  
fessor of Physics and Director of the Physics Laboratories.
- WILLIAM SAVERY, PH. D.,** (Harvard University), Professor of  
Philosophy.
- DAVID THOMSON, A. B.,** (University of Toronto), Professor of  
Latin.
- PIERRE JOSEPH FREIN, PH. D.** (Johns Hopkins University), Pro-  
fessor of French.
- THEODORE CHRISTIAN FRYE, PH. D.,** (University of Chicago), Pro-  
fessor of Botany.
- ROBERT EDOUARD MORITZ, PH. D.,** (University of Nebraska), PH. N.  
D., (Strassburg), Professor of Mathematics and Astronomy.
- FREDERICK WILLIAM MEISNEST, PH. D.,** (University of Wisconsin),  
Professor of German.
- DAVID CONNOLLY HALL, Sc. M., M. D.,** (University of Chicago),  
Director of Physical Training.
- WALTER GREENWOOD BEACH, A. M.,** (Harvard University), Pro-  
fessor of Social Science.
- IRVING MACKEY GLEN, A. M.,** (University of Oregon), Professor of  
Music.
- EDWIN JOHN VICKNER, PH. D.,** (University of Minnesota), Profess-  
or of the Scandinavian Languages.
- HERBERT GALEN LULL, PH. D.,** (University of California), Associate  
Professor of Education.
- HERMAN CAMPBELL STEVENS, PH. D.,** (Cornell University), As-  
sociate Professor of Psychology.

- LEE EMERSON BASSETT, A. B., (Stanford University), Associate Professor in charge of the Department of Public Speaking and Debate.
- EDWARD McMAHON, A. M., (University of Wisconsin), Assistant Professor of American History.
- EDWIN JAMES SAUNDERS, A. M., (Harvard University), Assistant Professor of Geology.
- JOSEPH KINMONT HART, PH. D., (University of Chicago), Assistant Professor of Education.
- ROBERT EVSTAFIEFF ROSE, PH. D., (University of Leipzig), Assistant Professor of Chemistry.
- ROBERT MAX GARRETT, PH. D., (University of Munich), Assistant Professor of English.
- STEVENSON SMITH, PH. D., (University of Pennsylvania), Assistant Professor of Orthogenics.
- GEORGE WALLACE UMPHREY, PH. D., (Harvard University), Assistant Professor of Spanish.
- ALLEN FULLER CARPENTER, A. M., (University of Nebraska), Instructor in Mathematics.
- ERNEST OTTO ECKELMAN, PH. D., (University of Heidelberg), Instructor in German.
- HENRY SLATE WILCOX, A. M., (Harvard University), Instructor in Psychology.
- EFFIE ISABEL RAITT, B. S., (Columbia University), Director of the Department of Home Economics.
- JOHN CURT DUCASSE, PH. D., (Harvard University), Instructor in Philosophy and Psychology.
- FLOYD THOMAS VORIS, A. M., (Columbia University), Instructor in Physics.
- GERTRUDE CRUDEN, A. B., (Smith College), B. S., (Columbia University), Instructor in Domestic Art.
- ISABELLA AUSTIN, A. B., (University of Minnesota), Lecturer on Education, Dean of Women.
- LUCY K. COLE, (Supervisor of Public School Music, Seattle), Teacher of Public School Music.
- AGNES BIRKMAN, (Vassar School of Art and Pratt Institute, Instructor in Applied Design, West Seattle High School), Instructor in Drawing.



## SCOPE AND AIMS

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The purpose of the School of Education is to bring together and correlate all of the forces of the University which contribute in a professional way to the preparation of educational leaders. The School provides a curriculum containing a broad range of cultural work, places due emphasis upon a specialized field in which the candidate expects to teach, and gives a proper professional setting through the work in education. By the establishment of this advanced curriculum it is hoped to set a high standard for the training of teachers in the State of Washington and in the Northwest.

The curriculum of the School is based upon the assumption that teachers should have first of all, and fundamental to all other preparation, a broad and liberal education; second, that they should be masters of some special subjects which they expect to teach; and third, that this training should be supplemented by professional education which gives a knowledge of the pupils to be taught, the problems to be met, and new meaning to the subjects of instruction, as well as fundamental methods of teaching.

The School of Education is especially fitted to provide teachers of the following types:

1. High school teachers;
2. High school principals;
3. Superintendents of public schools;
4. Grammar school principals;
5. Supervisors of primary schools;
6. Supervisors and teachers of music, drawing, manual training, home economics, physical training and other special subjects;
7. Normal school and college instructors in education;
8. Specialists in the education of defectives;
9. Playground directors;
10. Y. M. C. A. and Y. W. C. A. workers;
11. Juvenile court workers;
12. High class grade and primary school teachers.

### GENERAL ACADEMIC WORK

Because of the variety of work which every teacher is likely to be required to do upon beginning to teach, and because of the requirements for state certificates, at least elementary college courses should be taken in not less than four subjects which are taught in the high schools.

### SPECIALIZED ACADEMIC WORK

Each teacher should have thorough, extended preparation in one subject and reasonable preparation in at least two additional subjects. Experience has shown that the following combinations are most frequently demanded: Latin, German; English, German; English, History, Civics; English, Latin, History; Mathematics, Physics, Chemistry; Botany, Zoology, Physiology, Physiography. In the larger schools Greek is sometimes given with Latin; and French with German. One teacher is frequently required to teach all of the sciences. Public speaking is desirable as a part of the preparation for teaching English.

### PROFESSIONAL WORK

The requirements for the academic major and minors secure a proper distribution of the academic subjects. The professional work consists (a) of the courses given in the Department of Education, (b) the teachers' courses given in the various academic departments and (c) the courses closely allied to and fundamental to those in Education, viz., those in Zoology, Psychology, Sociology and Ethics.

### SPECIAL TEACHERS' COURSES

Nearly all of the academic departments have teachers' courses for the purpose of studying the problems of teaching those subjects in the high schools. All teaching of special methods relating to particular subjects is in the hands of those dealing most directly with the given subject matter. Foundation principles of general method as based upon the laws of learning and teaching are developed in the work in Education.

### OBSERVATION AND PRACTICE TEACHING

By an arrangement between the University and the schools of Seattle students in the School of Education may observe the regular work in certain schools (at present nine are used) and do cadet work under direction of the regular teachers and the professor in charge of the practice work. In this way students have an opportunity to observe and gain valuable experience under exceptionally favorable conditions. A semester of such experience under guidance and expert criticism is far superior to several years of the trial and error method through which many teachers are obliged to go.

**MATERIAL EQUIPMENT OF DEPARTMENT OF EDUCATION**

The Department of Education occupies a suite of seven rooms on the second floor of the Education Building, comprising three offices, a seminar room, two lecture rooms, and a room used as a department library. The department is equipped with the standard educational works, besides many special books and monographs in English, German, and French. All the American educational journals of importance, and many English, German and French periodicals are on file. In all about fifty journals are received. The equipment is especially good for work in educational psychology, philosophy of education, child study, educational organization and administration, and current school problems.

**BAILEY AND BABETTE GATZERT FOUNDATION**

A thirty thousand dollar foundation, known as the Bailey and Babette Gatzert Foundation of Child Welfare of the University of Washington, has been established by Sigmund Schwabacher and the executors of the will of the late Abraham Schwabacher. The object of the foundation is to furnish relief for defective children. The foundation represents philanthropic work of the most advanced type. The deed conveying the gift makes the following conditions concerning the purposes and management of the Foundation:

"Said sum of money shall be safely invested by the said trustees in interest-bearing securities, and the income thereof shall be used to maintain a bureau of child welfare in the department of Education of the University of Washington, the work of said bureau to consist in the promotion in various ways of education for the better care and treatment of children suffering from defects, either physically or mentally, especially such defective children as can, in spite of their defects, attend school of some sort and benefit by some form of school education and training. Said bureau to be known in perpetuity as the *Bailey and Babette Gatzert Foundation of Child Welfare of the University of Washington*, and to be at all times in charge of a competent expert, and any expense in maintaining the bureau in excess of such income to be provided out of the University or other funds."

With the facilities thus provided very thorough work in the study of defective children is made possible. One assistant professor devotes his entire time to this work. He gives two courses each year in the psychological study of defectives and two courses

of equal length in the department of Education, paying special attention to educational methods of treating defectives. The remainder of his time is devoted to the clinical examination of defective children brought to the University for diagnosis, to studying the defectives in a school for subnormals, and to visiting various public schools in the state and speaking to teachers and others interested in the subject.

Not only are children tested by current standard methods but an attempt is made to do original investigation in studying new problems. Several research students have done special work under the guidance of the Foundation. The Foundation makes possible exceptional facilities for the study of subnormal children. Only one other University in the country offers such extensive opportunities for preparing persons to teach exceptional children or to supervise their education in the public schools or in special institutions.

#### EDUCATIONAL EXHIBITS

Large portions of the educational exhibits in the Educational and California Buildings, and all of the Alaska and Japanese exhibits were turned over to the Museum at the end of the Alaska-Yukon-Pacific Exposition. These exhibits consist of over 6,000 specimens of the work done in the kindergarten and primary grades, in the grammar school and in the high school. It is planned that the Museum shall offer special facilities to the school teachers of the state in showing some of the best examples of school work and what the latest methods in teaching have developed. Included in the specimens from Alaska are many examples of art and industrial work which will be especially valuable illustrations of these up-to-date methods, and are hard to excel anywhere. There are about forty cabinets of the work done by the various grades in all departments of the school curriculum which are on exhibition or easy of access to those especially interested along these lines. The Museum was very fortunate in securing the industrial exhibit made by the Los Angeles Polytechnic High School, which attracted so much attention in the California building during the exposition, and it may be considered as one of the best examples in industrial training for boys. There are also specimens of sewing and needle-work done by pupils from the lower grades through the high school.

ORGANIZATION OF THE WORK IN THE SCHOOL OF  
EDUCATION

Three lines of work are provided in the School of Education; (a) The course leading to the degrees of Bachelor of Arts in Education and Bachelor of Science in Education; (b) The course leading to the degree of Master of Arts in Education and Master of Science in Education; (c) work leading to the Normal Diploma in connection with a degree from the College of Liberal Arts or the College of Science or the School of Education.

The School is organized on the assumption that the professional work of the teacher should begin with the junior year in college. A degree may be obtained at the end of the fourth year, but the standard which the University encourages and hopes to establish for high school teaching is the five-year course, consisting of two years of collegiate work and three years of professional work combined with advanced academic study. Students expecting to teach are encouraged to begin on entering the junior year to plan their courses for the masters' degree in education. While the extended period is preferred it is possible for students with adequate preparation to secure the masters' degrees in a year of graduate work. The masters' degrees in education are specifically intended as teachers' degrees representing mastery of an extensive field of scholarship plus professional training, rather than intensive research in a limited field of investigation.

REQUIREMENTS FOR THE DEGREES OF BACHELOR OF  
ARTS IN EDUCATION AND BACHELOR OF  
SCIENCE IN EDUCATION

**ENTRANCE REQUIREMENTS:** Two years of collegiate work, 68 credits, distributed as follows:

I. For the Degree of Bachelor of Arts in Education, 68 credits from the specific requirements of the College of Liberal Arts which at present are as follows:

- a.* Ancient Language and Literature.....8 credits
- b.* Modern foreign Language .....8 credits
- c.* Rhetoric .....4 or 8 credits
- d.* Mathematics .....4 credits
- e.* Physical science .....8 credits
- f.* Biological science.....8 credits
- g.* History .....8 credits
- h.* Philosophy .....8 credits
- i.* Political science .....6 credits
- j.* Physical training or military science....8 credits
- k.* Hygiene .....1 credit
- l.* Library and Curriculum Instruction.....1 credit

NOTE 1.—It is understood that 16 of these credits may be taken after admission to the School of Education in case the student presents an equivalent number of credits from his major and minor subjects.

## II. For the Degree of Bachelor of Science in Education:

The completion of the first two years of work required in one of the courses in the College of Science, at present, as follows:

| MAJOR<br>Ast., Chem.,<br>Math.,<br>Phys. | MAJOR<br>Bot., Geol.,<br>Zool. | MAJOR<br>Home Ec. | MAJOR<br>Phys. Tr. | MAJOR<br>Psych. |
|--|--------------------------------|-------------------|--------------------|-----------------|
| <i>Fresh.</i>                            | <i>Fresh.</i>                  | <i>Fresh.</i>     | <i>Fresh.</i>      | <i>Fresh.</i>   |
| Cred.                                    | Cred.                          | Cred.             | Cred.              | Cred.           |
| Ast. Chem.<br>or Phys. 8                 | Bot., Geol. . . 8              | Home Ec. . . 4    | Math. .... 4       | Math. .... 4    |
| Math. .... 4                             | Zool. .... 8                   | Chem. .... 8      | Zool. .... 8       | Zool. .... 8    |
| English ... 8                            | Math. .... 4                   | English ... 8     | English ... 8      | English ... 8   |
| For. Lang. 8                             | English ... 8                  | For. Lang. 8      | For. Lang. 8       | For. Lang. 8    |
| Hyg. .... 1                              | For. Lang. 8                   | Hyg. .... 1       | Hyg. .... 1        | Hyg. .... 1     |
| Lib. & Cur. 1                            | Hyg. .... 1                    | Lib. & Cur. 1     | Lib. & Cur. 1      | Lib. & Cur. 1   |
| Phys. Tr. . 4                            | Lib. & Cur. 1                  | Phys. Tr. . 4     | Phys. Tr. . 4      | Phys. Tr. . 4   |
|  | Phys. Tr. . 4                  |                   |                    |                 |
| <i>Soph.</i>                             | <i>Soph.</i>                   | <i>Soph.</i>      | <i>Soph.</i>       | <i>Soph.</i>    |
| Science .. 8                             | Science .. 8                   | Home Ec. . 4      | Chem. .... 8       | Major .... 4    |
| For. Lang. 8                             | For. Lang. 8                   | Chem. .... 8      | Zool. .... 8       | Math. .... 4    |
| Hist. .... 8                             | Hist. .... 8                   | Math. .... 4      | Hist. .... 8       | Phys. .... 8    |
| Pol. Sci. ... 6                          | Pol. Sci. ... 6                | Zool. .... 8      | For. Lang. 8       | Hist. .... 8    |
| Phys. Tr. . 4                            | Phys. Tr. . 4                  | For. Lang. 8      | Phys. Tr. . 4      | For. Lang. 8    |
|  |                                | Phys. Tr. . 4     |                    | Phys. Tr. . 4   |

Freshmen are required to take one hour a week each semester in hygiene. One credit for the year's work.

Freshmen are required also to take one hour a week the first semester in instruction in the use of the library and the use of books; one hour a week the second semester in instruction on the choice of studies and the choice of a vocation. One credit for the year's work.

The exemptions and penalties in force in the College of Liberal Arts and the College of Science apply here. At present they are as follows:

**EXEMPTIONS:** A student may be exempted from certain of the above requirements on the following conditions:

From (a) if he presents for entrance 4 units of ancient language.

From (b) if he presents for entrance 4 units of modern foreign language.

From (d) if he presents for entrance  $3\frac{1}{2}$  units of mathematics; viz.,  $1\frac{1}{2}$  units of algebra, 1 unit plane geometry,  $\frac{1}{2}$  unit of solid geometry and  $\frac{1}{2}$  unit trigonometry.

From (e) if he presents for entrance 3 units of science, viz., 1 unit of physics, 1 unit of chemistry, and 1 unit of any other science.

From (f) if he presents for entrance 3 units of science, viz., 1 unit of biological science, 1 unit of physics, and 1 unit of any other science.

From (g) if he presents for entrance 3 units of history.

NOTE: A student cannot obtain exemption from both e and f.

A student who completes the first semester of rhetoric with a grade of "A" will not be required to take that subject during the second semester.

PENALTIES: Of the above requirements (c) must be completed within the first year, otherwise only  $\frac{1}{2}$  credit will be allowed; (a) or (b), (d), (e), or (f), (g) must be completed within the first two years, otherwise only  $\frac{1}{2}$  credit will be allowed.

GENERAL NOTE.—A student is to be held for the admission and graduation requirements of either the catalogue under which he enters or the one under which he graduates.

**REQUIRED FOR GRADUATION WITH THE DEGREE OF BACHELOR OF ARTS IN EDUCATION OR BACHELOR OF SCIENCE IN EDUCATION**

1. Entrance credits as stated above.
2. One semester in Zoology, Psychology, Sociology, Ethics, (3 or 4 hours, depending upon the length of courses offered).
3. Education 12 hours. (This is the minimum and students may add more as free electives. Students majoring in education must take 24 hours in education).
4. An academic major of 24 hours.
5. Two academic minors of at least 16 hours each.
6. A teachers' course in the academic major; maximum 6 hours.
7. Total 136 hours, including credits for entrance to the School of Education.

NOTE.—Whatever part of the graduation requirements have been included in the entrance requirements need not be repeated. Upon approval of the professor in charge of the major, a part of the work for the major may be taken in allied departments.

**REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN EDUCATION OR MASTER OF SCIENCE IN EDUCATION**

1. Registration in the School of Education at least one year before graduation. (The student may register in the School of



Education as early as the beginning of the junior year and is urged to do so if he plans to prepare for teaching.)

2. A Bachelor's degree from this University or from some other institution of recognized standing.

3. Education, 24 hours.

4. A major academic subject, 24 to 32 hours at the option of the major professor.

5. Two academic minors of at least 16 hours each.

6. A teachers' course in the academic major, maximum 6 hours.

7. Total 158 hours, including credits for entrance to the School of Education.

8. Upon completion of the course for the degree of M. A. in Education or M. S. in Education the candidate shall be examined in the academic major, the two academic minors and in Education under regulations which apply to the examination of candidates for masters' degree in the graduate school.

NOTE 1.—Such of the above requirements as have been included in the work taken for the Bachelor's degree need not, of course, be taken a second time.

NOTE 2.—Upon approval of the professor in charge of the major a part of the work for the major may be taken in allied lines.

#### REQUIREMENTS FOR THE NORMAL DIPLOMA

The University is authorized by law to issue teachers' diplomas, valid in all public schools of the state, as described below. Candidates for these diplomas should register in the department of Education as early as possible after the beginning of the junior year, and should consult with the department from time to time as to their work for the diploma and their preparation for teaching.

The University Five-Year Diploma, valid in all public schools in the state for a period of five years from date of issue, is granted on the following conditions:

1. Attainment of a bachelor's degree equivalent to that from the College of Liberal Arts, the College of Science or the School of Education of the University of Washington, or from an institution with equivalent standards.

2. Registration in the School of Education at least one year before graduation.

3. A teachers' course in the major academic subject, if offered; maximum 6 hours.

4. Completion of at least twelve hours in the Department of Education, including Principles of Education, 3 hours, History of Education, 3 hours, Childhood and Adolescence, or High School, 3 hours, and either Observation and Teaching or Methodology, 3 hours. The department reserves the right to adjust these requirements to the needs of individual cases. Variations will sometimes need to be made in the case of normal school students, persons who have taken education courses in summer sessions, and teachers with considerable experience. No deviations will be permitted except on approval of the head of the Department of Education.

5. Evidence of such general scholarship and personal qualities as give promise of success and credit in the profession of teaching. Legible handwriting, good spelling, and correct English are indispensable. Active interest in the prospective work as a teacher will be considered. Recommendation to teach particular subjects will be granted to those who have made appropriate special preparation.

6. The University Life Diploma is granted to candidates who fulfill the requirements for the University Five-Year Diploma, and also give satisfactory evidence of having taught successfully for at least twenty-four months.

### COURSES IN EDUCATION

(Office, Room 3, Education Building)

PROFESSOR BOLTON, ASSOCIATE PROFESSOR LULL, ASSISTANT PROFESSOR HART, ASSISTANT PROFESSOR SMITH, MISS AUSTIN

Students are not regularly admitted to the department before the junior year.

Elementary psychology is prerequisite to all courses. Some knowledge of ethics, sociology, and zoology is also very desirable, and is required of students doing major work in education.

The courses in principles of education, history of education, childhood and adolescence or the high school, and in observation and teaching or methods of instruction are fundamental and prerequisite to all others in education. They fulfill the requirements in education for the teachers' diplomas. Students should take psychology in the sophomore year, principles of education in the junior year and follow in the same year with childhood and adolescence or the high school. It is desirable to take the observation and teaching in the senior year, but this course or method-

ology may be taken at any time after the work in the principles of education. History of education should come after the principles, but for the present may be taken at any time. Deviations will doubtless sometimes be necessary to arrange schedules, also in the case of normal school students, persons who have taken some work in education during summer sessions, and experienced teachers. Elections and changes from the foregoing may be made only with approval of the head of the department. Students who major in the department should take all of the fundamental courses and then elect enough to total 24 hours in the department. Candidates for the master's degree in the graduate school must take 30 hours in education, approved by the head of the department. At least one third of the work should be in strictly graduate courses. (C).

Elementary psychology is a prerequisite to all courses in education and should be taken in the sophomore year. Until a sufficient number of sections may be maintained to accommodate all to the schedule some exceptions will have to be made as to the time of taking the psychology.

#### A. COURSES FOR UNDERGRADUATES

1-1. PRINCIPLES OF EDUCATION. Three credits. Either semester. Professor BOLTON.

Education considered from the standpoint of (1) biology, (2) neurology, (3) psychology, (4) anthropology, (5) sociology. Representative topics: educational bearings of instinct, heredity, habit, culture epochs, individual differences, imitation, suggestion; training of senses, memory, imagination, emotions, will, motor activities, moral nature; formal discipline, educational aims and values, social education; relation of the foregoing to the school curriculum. Text: Bolton's *Principles of Education*.

3-3. HISTORY OF EDUCATION. Three credits. Either semester. Assistant Professor HART.

A general survey of educational forces, institutions, theories and practices in the development of the past, and their integration in the present.

5-5. METHODS OF INSTRUCTION. Three credits. Either semester. Associate Professor LULL.

Those psychological elements which have direct application to teaching problems. Methods of instruction in secondary and in elementary branches. A study of text-books. A small amount

of observation in the city schools of Seattle will be required in connection with this course.

**7-7. OBSERVATION AND TEACHING.** Three credits. Either semester. Students electing this course should not elect any other afternoon courses. The class will meet the instructor once a week, Wednesday, at 4 o'clock. Associate Professor LULL.

Observation and teaching in the elementary and high schools of Seattle.

**9-9. CHILDHOOD AND ADOLESCENCE.** Three credits. Either semester. Professor BOLTON.

Scope, methods, literature, problems, relation to education; value for parents and teachers. Illustrative special topics; physical, intellectual, emotional, moral and religious growth periods and appropriate education; imitation, play, imagination, language, adolescence, the high school period.

**11-11. THE HIGH SCHOOL.** Three credits. Either semester. Associate Professor LULL.

Development and tendencies of secondary education from 1635 traced to aid in understanding current problems of secondary education. Professed aims and actual practice of secondary education. The early New England college. The Latin Grammar schools. Influence of academies upon the colleges. Aims, psychology and methods of secondary instruction. College admission requirements. Effect of the German scientific movement. Report of the Committee of Ten. Organization of the socialized high school. Lectures, readings, individual problems, discussions.

**13-13. THE PRIMARY SCHOOL.** One credit. Either semester. Dean AUSTIN.

A consideration of the aims, practices, and curriculum of the primary school. Intended for those who may teach in or supervise primary schools. Lectures, readings, discussions and visits to primary schools.

#### B. COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES

At least twelve hours in Education and an elementary course in Psychology are prerequisite to all courses in this group (B) and the following (C).

**15. PROBLEMS IN VOCATIONAL EDUCATION.** Two credits. First semester. Assistant Professor HART.

The vocational movement, its meaning and purpose; relation to liberal education; psychological considerations; social phases; vocational guidance. (Should be followed by Course 16.)

16. EDUCATIONAL PROBLEMS OF THE STATE. Two credits. Second semester. Assistant Professor HART.

A study of the immediate problems that confront educational leaders in the state; general and theoretical, social and practical. (To follow Course 15.)

17. SOCIAL ASPECTS OF EDUCATION. Two credits. First semester. Assistant Professor HART.

The social institutions and conditions which form the background of all the work of the school, reinforcing and limiting that work.

18. SCHOOL GROUNDS, BUILDINGS AND EQUIPMENT. Two credits. Second semester. Assistant Professor HART.

A constructive study of the physical side of the new school plant. (Should follow the course on Vocational Education.) Not given in 1913-14.

19. SCHOOL HYGIENE. Two credits. First or second semester.

Problems of school hygiene, including: heating, lighting, and ventilation; school diseases and medical inspection of schools; hygiene of various school activities. Not given in 1913-14.

23-24. EPOCHS OF EDUCATIONAL HISTORY. Two credits. The year. Assistant Professor HART.

Intensive study of particularly important periods in the development of education.

26. HISTORY OF EDUCATION IN THE UNITED STATES. Three credits. Second semester. Associate Professor LULL.

From 1647 to the present; a study of the growth of elementary, secondary, and, to some extent, higher education. The main emphasis of the course will be laid upon the period from the beginning of the "Common School Revival," 1830, to the present time.

28. SUPERVISION AND MANAGEMENT. Three credits. Second semester. Associate Professor LULL.

For those who are preparing for supervision, principalships or teaching positions. Practical problems of school organization and administration, such as the making and administration of courses of study; functions of school boards, superintendents, and principals; supervision of class work, teachers' meetings, student organizations.

30. **THE EDUCATION OF EXCEPTIONAL CHILDREN.** Three credits. Second semester. Prerequisite, Philosophy 15 and Education 1, 3, and six other hours. Assistant Professor SMITH.

Methods of instruction for backward, feebleminded, and deaf children, and for those suffering from speech defects and physical defects. The course will include motor training, perception training and introduction to reading and number work.

31. **ADOLESCENCE AND THE HIGH SCHOOL.** Two credits. First semester. Professor BOLTON.

A critical consideration of the physical, intellectual, emotional, moral and social characteristics of adolescence and the educative activities suited to the period of secondary instruction. Combined with course 47-48 in 1913-1914.

33-34. **PRINCIPLES OF EDUCATION.** (Advanced Course). Two credits. The year. Professor BOLTON.

A course for mature students who have taught considerably or who have done some previous work in the subject and can therefore progress more rapidly than the beginner. Especially designed for teachers of the Seattle schools. Text: Bolton, *Principles of Education*.

#### C. COURSES FOR GRADUATES ONLY

Concerning Prerequisites see note under "B."

35. **ADMINISTRATION OF EDUCATION IN THE UNITED STATES.** Three credits. First semester. Associate Professor LULL.

The important problems of educational administration in the United States, national, state and local; relation to the other branches of civil administration. The financing of public education. The administration of the different forms of vocational education. Each student will be assisted in giving special attention to his own problems of school administration. Special reference to the educational problems of the Northwest.

37. **STATE SCHOOL SYSTEMS.** Two credits. First semester. Associate Professor LULL.

An intensive study of the organization and administration of public education in various state school systems. Special attention will be given to the county unit and county supervision. (Not given in 1913-1914.)

38. **CITY SCHOOL SYSTEMS.** Two credits. Second semester. Associate Professor LULL.

An intensive study of the organization and administration of education in large and in small cities. (Not given in 1913-1914.)

39-40. FOREIGN EDUCATIONAL SYSTEMS. Two credits. The year. Professor BOLTON.

A critical study of current educational organization and practice in foreign countries, especially in Germany, France, England, Norway, Sweden and Canada. Texts: Bolton, *Secondary School System of Germany*, and Farrington, *Primary and Secondary Education in France*.

Combined with course 47-48 in 1913-1914.

41. LABORATORY COURSE IN THE EDUCATION OF EXCEPTIONAL CHILDREN. Two credits. First semester. Assistant Professor SMITH.

Definite work in the training of typical cases. Four hours of laboratory work each week. The students will be supervised in the instruction of children with various mental peculiarities. The methods considered in Course 30 in Education will be applied.

42. MORAL EDUCATION. Two credits. Second semester. Professor BOLTON.

A study of the meaning of moral education; the degrees of moral development in (a) childhood, and (b) adolescence; native and acquired moral tendencies; various agencies for moral education, such as group activities, the school curriculum, the home, civic and institutional life. Not given in 1913-14.

43-44. ADVANCED EDUCATIONAL PSYCHOLOGY. Two credits. The year. Assistant Professor HART.

A study of special problems in the field of educational psychology; expression and impression, the social nature of perception, the nature and development of ideas, "motive" in educational practice, etc.

45-46. INDIVIDUAL RESEARCH AND THESIS WORK. Three credits. The year.

Intensive study and original investigation of special problems. Results are reported in the Seminar and when especially meritorious may be published. Supervised by all members of the department. Consult head of the department for assignments.

47-48. GRADUATE SEMINAR. Two credits. The year. Professor BOLTON.

For graduate students doing intensive study and research. Critical consideration of technical educational literature and of modern educational problems. Reports on individual problems. Technique of research, interpretation of results and thesis writing.

## TEACHERS' COURSES IN ACADEMIC DEPARTMENTS

Besides the foregoing courses offered in the Department of Education there are teachers' courses in the following academic departments: Botany, English, French, German, History, Home Economics, Latin, Mathematics, Music, Physical Training, Physics, Spanish. Others will doubtless be offered soon. A candidate for the University Normal Diploma must include a teachers' course in his major, if offered.

**BOTANY 35.** Three credits. First semester. Prerequisites, 1 year of Botany and junior standing.

The subject matter, aim and manner of presentation of high school botany. Practice teaching.

**DRAWING 1-2.** Public School Drawing. Two credits. The year. Miss BIRKMAN.

**ENGLISH 35-36.** Two credits. The year. Assistant Professor GARRETT, Professor PARRINGTON, Associate Professor MILLIMAN, Mr. CHITTICK.

Required of students who wish the recommendation of the department for the normal diploma. A consideration of methods and problems in the teaching of English in the high school.

**FRENCH 33-34.** Two credits. The year. Prerequisites, 6 and 8. Professor FREIN.

Special emphasis on phonetics; both oral and written exercises. Review of grammar.

**GERMAN 29-30.** Two credits. The year. Professor MEISNEST.

**HISTORY 39-40.** One credit. The year. Required of advanced students who expect to teach history. Assistant Professor McMAHON.

Text-books, assigned readings, courses of study and the best method of presentation will be considered.

**HOME ECONOMICS 27-28.** Two credits. The year. Prerequisites, 3, 8, 15, 21, 22, 24, and education 1. Miss RAITT, Miss.....

Lesson plans and organization of courses of study in foods, nutrition, textiles, clothing and the home. Adaptation to different grades and types of schools. Equipment.

**LATIN 9-10.** Three credits. The year. Prerequisites, 5-6 or 7-8; or may be taken along with either of these. Assistant Professor SIDEX.

Selected portions of Caesar, Bell.Gall.V-VII and Bell.Civille; Suetonius, Julius Caesar; Sallust, Catiline; Vergil, Bucolics and



Georgics; Ancient Lives of Vergil. Review of the Caesar, Cicero and Vergil usually read in high schools. Methods of teaching Latin and discussion of the problems likely to arise in the classroom. Teaching by members of the class, under the supervision of the instructor. Visits to schools where Latin is taught and reports on the teaching observed.

**MATHEMATICS 30.** Four credits. Second semester. Prerequisites, Math. 5. Required of juniors and seniors who make mathematics their major study and who are applicants for the teachers' certificate. Mr. CARPENTER.

The first semester's work deals largely with the history of mathematics, the second with mathematical pedagogy.

**MUSIC 21-22.** Public School Music. Two credits. The year. Miss COLE.

**PSYCHOLOGY 31.** General psychology. Four credits. Either semester. Required for all courses in education. Laboratory deposit \$2.00. Associate Professor STEVENS, Mr. WILCOX.

The facts and laws of consciousness and their connection with the nervous system. Three lectures, one recitation, one laboratory period.

**PSYCHOLOGY 38.** Three credits. Second semester. Prerequisite, 31. Mr. WILCOX.

The psychological basis of education. Perception, the learning processes, practice, memory, habit, judgment, attention, and motor functions, with reference to age, sex, race, and individual differences.

**PHYSICS 11.** Two credits. The year. Open only to seniors. Prerequisites, not less than 8 hours of Physics and 24 hours of other science. Professor OSBORN.

**SOCIOLOGY 3.** Three credits. First semester. Professor BEACH. This or another approved course is required of all candidates for the degree of Bachelor of Arts in Education or Bachelor of Science in Education and is recommended for all candidates for the normal diploma and the degrees of Master of Arts in Education and Master of Science in Education.

**SPANISH 11.** Two credits. First semester. Professor OBER.  
**ZOOLOGY 1-2.** Four credits. The year. Course 1 is repeated in the second semester. Professor KINCAID and Mr. OSTERUD.

One semester of zoology is required of candidates for the bachelors' degrees in Education and this one is recommended.

## COLLEGE OF ENGINEERING

### FACULTY

**THOMAS FRANKLIN KANE, PH. D.,** Johns Hopkins, **PRESIDENT.**

**\*ALMON HOMER FULLER, M. S., C. E.,** Lafayette, Professor of Civil Engineering, **DEAN.**

**ELMER JAMES MCCAUSTLAND, C. E., M. C. E.,** Cornell, Professor of Municipal Engineering, Acting Dean.

**HOBACE G. BYERS, PH. D.,** Johns Hopkins, Professor of Chemistry.

**MILNOR ROBERTS, A. B.,** Stanford, Professor of Mining Engineering and Metallurgy.

**FREDERICK ARTHUR OSBOEN, PH. D.,** Michigan, Professor of Physics and Director of the Physics Laboratories.

**ROBERT EDOUARD MORITZ, PH. D., PH. N. D.,** Strassburg, Professor of Mathematics and Astronomy.

**CARL EDWARD MAGNUSSON, PH. D., E. E.,** Wisconsin, Professor of Electrical Engineering.

**EVERETT OWEN EASTWOOD, B. S., C. E., M. A.,** Virginia, Professor of Mechanical Engineering.

**CHARLES CHURCH MORE, M. S., C. E.,** Lafayette, Professor of Civil Engineering.

**HENRY KRETTZER BENSON, PH. D.,** Columbia, Professor of Industrial Chemistry.

**GEORGE SAMUEL WILSON, B. S.,** Nebraska, Assistant Professor of Mechanical Engineering.

**CHARLES W. HARRIS, C. E.,** Cornell, Assistant Professor of Civil Engineering.

**EDGAR ALLEN LOEW, B. S., E. E.,** Wisconsin, Assistant Professor of Electrical Engineering.

**ROE L. STEVENS, B. S.,** Armour Inst. of Tech., Acting Assistant Professor of Civil Engineering.

**JOSEPH DANIELS, S. B., M. S.,** Lehigh, Assistant Professor of Mining Engineering and Metallurgy.

**FRANK EDWARD JOHNSON, E. E.,** Minnesota, Instructor in Electrical Engineering.

**SAMUEL THOMAS BEATTIE,** Instructor in Woodwork.

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\*Absent on leave, 1912-13.

- SANDY MORROW KANE, Instructor in Metalwork.
- CLARENCE RAYMOND COREY, E. M., Montana, Instructor in Mining and Metallurgy.
- JOHN WILLIAM MILLER, B. S. (C. E.), Nebraska, Instructor in Civil Engineering.
- WALTER AUSTIN GLEASON, S. B., Massachusetts Institute of Technology, Instructor in Civil Engineering.
- WILLIAM CHARLES MUEHLSTEIN, B. S. (C. E.), Wisconsin, Instructor in Civil Engineering.
- ERIC THERKELSEN, B. S., Washington, Instructor in Mechanical Engineering.
- CHARLES E. NEWTON, E. M., Michigan School of Mines, Instructor in Civil Engineering.
- CHAUNOY WERNECKE, B. S. (C. E.), Washington, Instructor in Civil Engineering.
- GEORGE ROBERT STRANDBERG, B. S. (C. E.), Washington, Instructor in Civil Engineering.
- CHARLES C. MAY, B. S. (C. E.), Washington, Instructor in Civil Engineering.
- LESLIE FORREST CURTIS, B. S., Tufts College, Instructor in Electrical Engineering.
- CHARLES EVAN FOWLER, M. Am. Soc. C. E., Lecturer on Engineering, Contracts and Specifications.
- MAGNUS T. CRAWFORD, E. E., Lecturer on Power Transmission.
- CAESAR RODNEY ROBERTS, Assistant in Surveying.

#### SPECIAL LECTURES

During the past year special lectures have been delivered before the students of the College of Engineering as follows:

- PROFESSOR H. S. JACOBY, Cornell University.  
"Bridge Engineering—An Inspection Trip."
- REGENT A. L. ROGERS, Waterville.  
"The Spirit of the Engineer."
- CAPTAIN A. O. POWELL, Seattle.  
"The Education of the Engineer."
- MAJOR C. W. KUTZ, Corps of Engineers, U. S. Army.  
"Engineering Contracts, with Special Reference to the U. S. Engineer Department."
- MR. JOSEPH JACOBS, Seattle.  
"Water Rights."

- MR. C. E. FOWLER, Seattle.  
"Superintendence of Engineering Work."  
"Bridge Erection."  
"Bridge Architecture."  
"Harbor Improvements."  
"Foundations."
- MR. WM. B. RUGGLES, Seattle.  
"The Panama Canal."
- MR. J. J. FRANKLIN, Seattle.  
"Building Construction."
- MR. F. H. WHITWORTH, Seattle.  
"The Legal Phase of Making and Recording Surveys."
- MR. T. A. NOBLE, North Yakima.  
"The Irrigation Engineer."
- MR. STIRLING B. HILL, U. of W., 1901.  
"Investigation of Water Power."
- MR. M. T. CRAWFORD.  
"High Voltage Transmission."
- MR. JOHN KING.  
"Methods of Computing Light and Power Rates."
- MR. C. F. TERRILL.  
"Distributing System of the Puget Sound Traction, Light & Power Co."
- MR. L. P. CRIM.  
"Commercial Telephone Circuits."
- MR. HALBERT P. GILLETTE, Chicago.  
"The Valuation of Public Service Corporations."
- MR. N. A. CABLE, Seattle.  
"Failures of Dams and the Design of Dams to Prevent Failures."

### CURRICULA

The College of Engineering offers two four-year curricula in each of the departments of chemical, civil, electrical, and mechanical engineering. One of these is essentially the same as has been offered in the past and leads to the degree of bachelor of science in the respective branches of engineering, as B. S. in civil engineering. The other has been added to meet the need, which has been recognized alike by the engineering public, the faculty, and many of the students, for a broader foundation of general training than is possible in the regular four-year curricula. This

curriculum in each department leads to the degree of bachelor of science (B. S.), and is followed by a year of graduate work which, under the University regulations for advanced degrees, leads to the degree of master of science in the respective lines.

Thus in five years it will be possible to cover all of the subjects in a regular engineering curriculum and add nearly a year's work in general training and a certain amount of advanced engineering work. This should insure greater efficiency in all of the work as well as broaden the general education.

The freshman work in the several curricula is identical, thus making it possible for a student to delay the definite choice until the beginning of the sophomore year.

All freshman and all sophomore work will be repeated each semester. Additional courses will be repeated whenever practicable, provided the demand is sufficient to warrant full sections, but not for less than six students. This will make it possible for freshmen to enter in February with the assurance of continuity of work for at least two years. At the end of that time if there is not sufficient demand for a repetition of the course, the student is advised to elect courses in other departments of the University, or spend a half year in practical work. This plan also provides a possibility for taking some desirable elective courses, or to engage in practical work for a semester and a summer consecutively before completing the curriculum.

#### DEGREE WITH HONORS

A degree with honors in engineering may be conferred upon any student of the College of Engineering who upon recommendation of the engineering faculty, of the honors committee and upon vote of the university faculty may be declared worthy of unusual distinction.

#### ADVANCED DEGREES

The degree of master of science in civil engineering (M. S. in C. E.), master of science in electrical engineering (M. S. in E. E.), master of science in mechanical engineering (M. S. in M. E.) and master of science in chemical engineering (M. S. in Ch. E.), respectively, will be conferred upon those who complete the year of graduate work following the respective curriculum leading to the degree of bachelor of science and maintain a grade of A or B in all subjects, pass a formal examination open to all members of the faculty, and submit a satisfactory thesis.

The degree of master of science in the various departments of engineering, as indicated in the preceding paragraph, will be conferred upon graduates of this College, or other engineering colleges of the first class, who complete a year (32 credit hours) of graduate work, including a satisfactory thesis, with the grade of A or B. The candidate must also 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.

The professional degrees, civil engineer (C. E.), electrical engineer (E. E.), and mechanical engineer (M. E.), will be conferred in two years on graduates of this college holding the degree (M. S.) and in three years on those with (B. S.) in their respective lines, if they give evidence of having been engaged continuously in acceptable engineering work and if they present satisfactory theses.

#### ADMISSION

The requirements for admission to the freshman class in the courses leading to the degree of bachelor of science are:

|   |    |
|---|----|
| English .....   | 4  |
| Algebra .....   | 1½ |
| Plane geometry .....  | 1  |
| Solid geometry .....  | ½  |
| Physics .....   | 1  |
| A foreign language.....   | 2  |
| History (American history preferred) or U. S.<br>History and civics ..... | 1  |
| Elective .....  | 4  |

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Total.....15

The requirements for admission to the freshman class of the courses leading to the degree B. S. in chemical engineering, B. S. in civil engineering, B. S. in electrical engineering, and B. S. in mechanical engineering are the same as the above with the exception that chemistry (one unit) is added to the fixed requirements; three units elective instead of four are allowed.

It is desirable for the student to review his preparatory mathematics just before entering the College of Engineering. By such a step much time will be saved and the work of the college will be rendered far more valuable to him.

### THESIS

A graduating thesis is required of each candidate for degree. This will consist of research or design in some branch of engineering, or the review of some existing construction. The subject must be approved by the professor in charge of the department under which it is classified, not later than the first of January in the senior year.

### SEMINAR

The senior and junior students meet for an hour each week with their respective class advisers for the consideration and discussion of engineering questions, not specifically covered by the class room work. In connection with this each student does systematic reading and submits oral and written reports, which are discussed by the class.

### GOVERNMENT TIMBER TESTING SERVICE

The United States government through its forest service has located at the University of Washington a government timber testing station. Three timber testing engineers of the forest service are stationed here, and actual work in the investigation of the mechanical properties of Northwest timber is regularly carried on. The structural materials testing laboratory is used jointly for this work and for University instruction and investigation.

## CURRICULUM IN CHEMICAL ENGINEERING

Leading to the degree of Bachelor of Science in Chemical Engineering.

(For description of each subject see page 197, and following.)

## FRESHMAN YEAR

| FIRST SEMESTER                                | Hours | SECOND SEMESTER                            | Hours |
|---|-------|--|-------|
| Mathematics 1a (plane trig. and algebra)..... | 4     | Mathematics 2a (analytical geometry) ..... | 4     |
| Chemistry 1a .....                            | 4     | Chemistry 2a .....                         | 4     |
| Civil Eng. 1, 3 (Eng. drawing) .....          | 6     | Civil Eng. 4 (Eng. drawing) ..             | 2     |
| English 1a .....                              | 2     | Civil Eng. 20 (surveying) ..               | 4     |
| Mechanical Eng. 1 (shop) ..                   | 2     | English 2a .....                           | 2     |
| Military training .....                       | 2     | Mechanical Eng. 2 (shop) ..                | 2     |
|   |       | Military training .....                    | 2     |
|   | <hr/> |  | <hr/> |
|   | 16+4  |  | 16+4  |

## SOPHOMORE YEAR

|  |       |   |       |
|--|-------|---|-------|
| Mathematics 3a (calculus) ..                 | 4     | Mathematics 4a (calculus) .               | 4     |
| Physics 1a, 1b .....                         | 6     | Physics 2a, 2b .....                      | 5     |
| Chemistry 8 (qualitative) ..                 | 4     | Chemistry 9 (quantitative) .              | 4     |
| Mechanical Eng. 21 (steam engineering) ..... | 2     | Mechanical Eng. 10 (machine design) ..... | 3     |
| Mechanical Eng. 3 (shop) ..                  | 2     | Mechanical Eng 4 (shop) ..                | 2     |
| Military training .....                      | 2     | Military training .....                   | 2     |
|  | <hr/> |   | <hr/> |
|  | 16+4  |   | 16+4  |

## JUNIOR YEAR

|   |       |  |       |
|---|-------|--|-------|
| Civil Eng. 41 (mechanics) .                         | 4     | Civil Eng. 50 (hydraulics) ...           | 4     |
| Mathematics 5a (calculus) .                         | 2     | Chemistry 4 (organic) .....              | 4     |
| Chemistry 3 (organic) .....                         | 4     | Geology 9 (mineralogy) .....             | 4     |
| Electrical Eng. 5 .....                             | 4     | Chemistry 14 (chemical technology) ..... | 4     |
| Mechanical Eng. 40 (experimental engineering) ..... | 2     |  |       |
|   | <hr/> |  | <hr/> |
|   | 16    |  | 16    |

## SENIOR YEAR

|   |       |  |       |
|---|-------|--|-------|
| Metallurgy 1 .....                      | 4     | Chemistry 16 (Gas and fuel analysis) ..... | 4     |
| Chemistry 22 (physical chemistry) ..... | 4     | Chemistry 23 (electro-chemistry) .....     | 4     |
| Chemistry 15 (water analysis) .....     | 4     | Thesis .....                               | 4     |
| Elective .....                          | 4     | Elective .....                             | 4     |
|   | <hr/> |  | <hr/> |
|   | 16    |  | 16    |



## CURRICULUM IN CHEMICAL ENGINEERING

Leading to the degree of Bachelor of Science.

(For description of each subject see page 197, and following.)

## FRESHMAN YEAR

| FIRST SEMESTER                                 | Hours | SECOND SEMESTER                          | Hours |
|--|-------|--|-------|
| Mathematics 1a (plane trig. and algebra) ..... | 4     | Mathematics 2a (analytic geometry) ..... | 4     |
| Modern language .....                          | 4     | Modern language .....                    | 4     |
| Chemistry 1 .....                              | 4     | Chemistry 2 .....                        | 4     |
| English 1a .....                               | 2     | Civil Eng. 20 (surveying) ..             | 4     |
| Civil Eng. 1 (drawing) .....                   | 2     | English 2a .....                         | 2     |
| Military training .....                        | 2     | Military training .....                  | 2     |
|  | <hr/> |  | <hr/> |
|  | 16+2  |  | 18+2  |

## SOPHOMORE YEAR

|  |       |  |       |
|--|-------|--|-------|
| Mathematics 3a (calculus) ..             | 4     | Mathematics 4a (calculus) ..             | 4     |
| Modern language .....                    | 4     | Modern language .....                    | 4     |
| Chemistry 3b .....                       | 4     | Physics 1a, 1b .....                     | 6     |
| Civil Eng. 3 (engineering drawing) ..... | 4     | Civil Eng. 4 (engineering drawing) ..... | 2     |
| Mechanical Eng. 1 (shop) ..              | 2     | Mechanical Eng. 2 (shop) ..              | 2     |
| Military training .....                  | 2     | Military training .....                  | 2     |
|  | <hr/> |  | <hr/> |
|  | 16+4  |  | 16+4  |

## JUNIOR YEAR

|                                       |       |   |       |
|---------------------------------------|-------|---|-------|
| Physics 2a, 2b .....                  | 5     | Civil Eng. 41 (mechanics) ..              | 4     |
| Mathematics 5a (calculus) ..          | 2     | Geology 9 (mineralogy) .....              | 4     |
| Chemistry 3 (organic) .....           | 4     | Chemistry 4 (organic) .....               | 4     |
| Mechanical Eng. 21 (steam eng.) ..... | 2     | Mechanical Eng. 10 (machine design) ..... | 3     |
| Chemistry 9 (quantitative) ..         | 4     | Mechanical Eng 4 (shop) ..                | 2     |
| Mechanical Eng. 8 (shop) ..           | 2     |   |       |
|                                       | <hr/> |   | <hr/> |
|                                       | 17+2  |   | 15+2  |

## SENIOR YEAR

|                                     |       |  |       |
|-------------------------------------|-------|--|-------|
| Civil Eng. 50 (hydraulics) ..       | 4     | Chemical Eng. 14 (chemical technology) ..... | 4     |
| Chemistry 15 (water analysis) ..... | 4     | Bacteriology 4 .....                         | 4     |
| Metallurgy 1 .....                  | 4     | Electrical Eng. 5 .....                      | 4     |
| Bacteriology 8 .....                | 4     | Chemistry 16 (gas and fuel) ..               | 4     |
|                                     | <hr/> |  | <hr/> |
|                                     | 16    |  | 16    |

## GRADUATE YEAR

(Supplementary work to above.)

Leading to degree of Master of Science in Chemical Engineering.

|   |       |  |    |
|---|-------|--|----|
| Chemistry 22 (physical chemistry) ..... | 4     | Chemistry 23 (electro-chemistry) ..... | 4  |
| Mechanical Eng. 40 (experimental) ..... | 2     | Civil Eng. 58 (sewage treatment) ..... | 2  |
| Thesis .....                            | 4     | Chemistry 27 (chemical theory) .....   | 2  |
| Elective .....                          | 6     | Thesis .....                           | 3  |
|   | <hr/> | Elective .....                         | 5  |
|   | 16    |  | 16 |

## CURRICULUM IN CIVIL ENGINEERING

Leading to the degree of Bachelor of Science in Civil Engineering.

(For description of each subject see page 197, and following.)

## FRESHMAN YEAR

| FIRST SEMESTER                                 | Hours      | SECOND SEMESTER                            | Hours      |
|--|------------|--|------------|
| Mathematics 1a (plane trig. and algebra) ..... | 4          | Mathematics 2a (analytical geometry) ..... | 4          |
| Chemistry 1a .....                             | 4          | Chemistry 2a .....                         | 4          |
| Civil Eng. 1, 8 (drawing) ..                   | 6          | Civil Eng. 4 (drawing) ....                | 2          |
| English 1a .....                               | 2          | Civil Eng. 20 (surveying) ..               | 4          |
| Mechanical Eng. 1 .....                        | 2          | English 2a .....                           | 2          |
| Military training .....                        | 2          | Mechanical Eng. 2 (Shop) ..                | 2          |
|  |            | Military training .....                    | 2          |
|  | <hr/> 16+4 |  | <hr/> 16+4 |

## SOPHOMORE YEAR

|   |            |                              |            |
|---|------------|------------------------------|------------|
| Mathematics 3c. (calculus) ..             | 4          | Mathematics 4a (calculus) .. | 4          |
| Physics 1a, 1b .....                      | 6          | Physics 2a, 2b .....         | 5          |
| Civil Eng. 21 (surveying) ..              | 3          | Civil Eng. 22 (surveying) .. | 3          |
| Chemistry 12 (Industrial chemistry) ..... | 3          | Geology 1a .....             | 4          |
| Civil Eng. 7 (drawing) ....               | 1          | Civil Eng. 8 (drawing) ....  | 1          |
| Military training .....                   | 2          | Military training .....      | 2          |
|   | <hr/> 17+2 |                              | <hr/> 17+2 |

## JUNIOR YEAR

|   |          |  |          |
|---|----------|--|----------|
| Mathematics 5a (calculus) ..                  | 2        | Civil Eng. 50 (hydraulics) ..              | 4        |
| Civil Eng. 41 (mechanics) ..                  | 4        | Civil Eng. 42 (mechanics) ..               | 3        |
| Civil Eng. 81 (railway operation) .....       | 3        | Civil Eng. 82 (railway construction) ..... | 2        |
| Electrical Eng. 5 .....                       | 4        | Civil Eng. 45 (masonry construction) ..... | 5        |
| Civil Eng. 23 (topographical surveying) ..... | 3        | Civil Eng. 70 (highways) ..                | 2        |
|   | <hr/> 16 |  | <hr/> 16 |

## SENIOR YEAR

|   |          |   |          |
|---|----------|---|----------|
| Civil Eng. 61 (bridges) ....                      | 4        | Civil Eng. 62 (bridges) ....                | 3        |
| Civil Eng. 55 (water supply and irrigation) ..... | 3        | Civil Eng. 56 (sanitary) ....               | 3        |
| Civil Eng. 51 (hydraulic power) .....             | 3        | Law 80 (contracts and specifications) ..... | 2        |
| Civil Eng. 65 (structural materials) .....        | 3        | Thesis .....                                | 3        |
| Optional .....                                    | 4        | Optional .....                              | 6        |
|   | <hr/> 17 |   | <hr/> 17 |

Options will be chosen with the consent of the class adviser from the following groups:

## GROUP 1.

| FIRST SEMESTER                          | Hours | SECOND SEMESTER                         | Hours |
|---|-------|---|-------|
| Astronomy 8a (elementary geodesy) ..... | 4     | Astronomy 4a (Geodetic astronomy) ..... | 2     |
|   |       | Astronomy 6 (least squares) .....       | 2     |
|   |       | Elective (restricted) .....             | 2     |

## GROUP 2.

|  |   |  |   |
|--|---|--|---|
| Civil Eng. 71 (highway construction) ..... | 4 | Civil Eng. 72 (city streets and pavements) ..... | 4 |
|  |   | Chemistry 18 (road oils and tars) .....          | 2 |

## GROUP 3.

|  |   |  |   |
|--|---|--|---|
| Civil Eng. 48 (advanced mechanics) ..... | 2 | Civil Eng. 44 (advanced mechanics) ..... | 2 |
| Civil Eng. 73 (bridges)....              | 2 | Civil Eng. 64 (bridges).....             | 2 |
|  |   | Elective (restricted) .....              | 2 |

## GROUP 4.

|  |   |   |   |
|--|---|---|---|
| Civil Eng. 57 (water supply and irrigation design) ..... | 2 | Civil Eng. 58 (sanitary engineering design) .....   | 2 |
| Chemistry 15 (water analysis) .....                      | 2 | Bacteriology 10 .....                               | 2 |
|  |   | Pol. and social science 18 (municipal government).. | 2 |

## GROUP 5.

|  |   |   |   |
|--|---|---|---|
| Civil Eng. 38 (yards and terminals) .....    | 2 | Civil Eng. 34 (tunnelling and track elevation)..... | 2 |
| Electrical Eng. 44 (electric railways) ..... | 2 | Civil Eng. 35 (railway electrification) .....       | 2 |
|  |   | Elective (restricted) .....                         | 2 |

## CURRICULUM IN CIVIL ENGINEERING

Leading to the Degree of Bachelor of Science.

(For description of each subject see page 197, and following.)

## FRESHMAN YEAR

| FIRST SEMESTER                                 | Hours      | SECOND SEMESTER                            | Hours      |
|--|------------|--|------------|
| Mathematics 1a (plane trig. and algebra) ..... | 4          | Mathematics 2a (analytical geometry) ..... | 4          |
| Modern language .....                          | 4          | Modern language .....                      | 4          |
| Chemistry 1 .....                              | 4          | Chemistry 2 .....                          | 4          |
| English 1a .....                               | 2          | English 2a .....                           | 2          |
| Civil Eng. 1 (drawing) ....                    | 2          | Civil Eng. 20 (surveying)..                | 4          |
| Military training .....                        | 2          | Military training .....                    | 2          |
|  | <hr/> 16+2 |  | <hr/> 18+2 |

## SOPHOMORE YEAR

|                             |            |                             |            |
|-----------------------------|------------|-----------------------------|------------|
| Mathematics 3a (calculus).. | 4          | Mathematics 4a (calculus).. | 4          |
| Chemistry 8b .....          | 4          | Physics 1a, 1b .....        | 6          |
| Modern language .....       | 4          | Modern language .....       | 4          |
| Civil Eng. 3 (drawing)....  | 4          | Civil Eng. 4 (drawing)....  | 2          |
| Mechanical Eng. 1 (shop)..  | 2          | Mechanical Eng. 2 (shop)..  | 2          |
| Military training .....     | 2          | Military training .....     | 2          |
|                             | <hr/> 16+4 |                             | <hr/> 16+4 |

## JUNIOR YEAR

|   |          |  |          |
|---|----------|--|----------|
| Mathematics 5a (calculus)..               | 2        | Civil Eng. 41 (mechanics)..                  | 4        |
| Physics 2a, 2b .....                      | 5        | Electrical Eng. 5 .....                      | 4        |
| Civil Eng. 21 (surveying)..               | 3        | Civil Eng. 22 (surveying)..                  | 3        |
| Chemistry 12 (industrial chemistry) ..... | 3        | Civil Eng. 70 (highways)..                   | 2        |
| Mechanical Eng. 10 (machine design) ..... | 3        | Mechanical Eng. 21 (steam engineering) ..... | 2        |
|   | <hr/> 16 |  | <hr/> 15 |

## SENIOR YEAR

|   |          |  |          |
|---|----------|--|----------|
| Civil Eng. 23 (surveying)..             | 3        | Civil Eng. 50 (hydraulics)..               | 4        |
| Civil Eng. 42 (mechanics)..             | 3        | Civil Eng. 45 (masonry construction) ..... | 5        |
| Civil Eng. 31 (railway operation) ..... | 3        | Civil Eng. 32 (railway construction) ..... | 2        |
| Political science 1a .....              | 3        | Elective .....                             | 4        |
| Geology 1a .....                        | 4        |  |          |
|   | <hr/> 16 |  | <hr/> 15 |

## GRADUATE YEAR

Leading to the degree of Master of Science in Civil Engineering.

|   |          |   |          |
|---|----------|---|----------|
| Civil Eng. 61 (bridges)....                       | 4        | Civil Eng. 62 (bridges)....                 | 3        |
| Civil Eng. 55 (water supply and irrigation) ..... | 3        | Civil Eng. 56 (sanitary engineering) .....  | 3        |
| Civil Eng. 51 (hydraulic power) .....             | 3        | Law 80 (contracts and specifications) ..... | 2        |
| Civil Eng. 65 (structural materials) .....        | 3        | Thesis .....                                | 3        |
| Optional .....                                    | 4        | Optional .....                              | 6        |
|   | <hr/> 17 |   | <hr/> 17 |

## CURRICULUM IN ELECTRICAL ENGINEERING

Leading to the degree of Bachelor of Science in Electrical Engineering.

(For description of each subject see page 197, and following.)

## FRESHMAN YEAR

| FIRST SEMESTER                                 | Hours | SECOND SEMESTER                            | Hours |
|--|-------|--|-------|
| Mathematics 1a (plane trig. and algebra) ..... | 4     | Mathematics 2a (analytical geometry) ..... | 4     |
| Chemistry 1a .....                             | 4     | Chemistry 2a .....                         | 4     |
| Civil Eng. 1, 8 (drawing) ..                   | 6     | Civil Eng. 4 (drawing)....                 | 2     |
| English 1a .....                               | 2     | Civil Eng. 20 (surveying) ..               | 4     |
| Mechanical Eng. 1 (shop) ..                    | 2     | English 2a .....                           | 2     |
| Military training .....                        | 2     | Mechanical Eng. 2 (shop) ..                | 2     |
|  |       | Military training .....                    | 2     |
|  | <hr/> |  | <hr/> |
|  | 16+4  |  | 16+4  |

## SOPHOMORE YEAR

|   |       |   |       |
|---|-------|---|-------|
| Mathematics 3a (calculus) ..                  | 4     | Mathematics 4a (calculus) ..              | 4     |
| Physics 1a, 1b .....                          | 6     | Physics 2a, 2b .....                      | 5     |
| Mechanical Eng. 10 (machine design) .....     | 3     | Mechanical Eng. 11 (machine design) ..... | 2     |
| Chemical Eng. 18 (industrial chemistry) ..... | 3     | Mechanical Eng. 20 (mechanism) .....      | 2     |
| Mechanical Eng. 8 (shop) ..                   | 2     | Political Science 1a .....                | 3     |
| Military training .....                       | 2     | Mechanical Eng. 4 (shop) ..               | 2     |
|   |       | Military training .....                   | 2     |
|   | <hr/> |   | <hr/> |
|   | 16+4  |   | 16+4  |

## JUNIOR YEAR

|  |       |   |       |
|--|-------|---|-------|
| Mathematics 5a (calculus) ..                 | 2     | Civil Eng. 42 (mechanics) ..            | 3     |
| Civil Eng. 41 (mechanics) ..                 | 4     | Electrical Eng. 2, 3 .....              | 7     |
| Electrical Eng. 1 .....                      | 4     | Civil Eng. 50 (hydraulics) ..           | 4     |
| Physics 5a (electrical measurements) .....   | 4     | Mechanical Eng. 40 (experimental) ..... | 2     |
| Mechanical Eng. 21 (steam engineering) ..... | 2     |   |       |
|  | <hr/> |   | <hr/> |
|  | 16    |   | 16    |

## SENIOR YEAR

|   |       |  |       |
|---|-------|--|-------|
| Electrical Eng. 21 and 22 (alternating currents) ..             | 8     | Electrical Eng. 23 and 24 (alternating currents) ... | 6     |
| Electrical Eng. 44 or 81 (electric railways) (telephones) ..... | 2     | Electrical Eng. 46 (central stations) .....          | 2     |
| Electrical Eng. 86 (dynamo design) .....                        | 2     | Electrical Eng. 48 (power transmission) .....        | 2     |
| Mechanical Eng. 30 (steam turbines) .....                       | 2     | Thesis .....   | 4     |
| Civil Eng. 58 (hydraulic design) .....                          | 2     | Elective .....                                       | 2     |
|   | <hr/> |  | <hr/> |
|   | 16    |  | 16    |

## CURRICULUM IN ELECTRICAL ENGINEERING

Leading to the degree of Master of Science.

(For description of each subject see page 197, and following.)

## FRESHMAN YEAR

| FIRST SEMESTER                                 | Hours | SECOND SEMESTER                            | Hours |
|--|-------|--|-------|
| Mathematics 1a (plane trig. and algebra) ..... | 4     | Mathematics 2a (analytical geometry) ..... | 4     |
| Modern language .....                          | 4     | Modern language .....                      | 4     |
| Chemistry 1 .....                              | 4     | Chemistry 2 .....                          | 4     |
| English 1a .....                               | 2     | Civil Eng. 20 (surveying) ..               | 4     |
| Civil Eng. 1 (drawing) .....                   | 2     | English 2a .....                           | 2     |
| Military training .....                        | 2     | Military training .....                    | 2     |
|  | <hr/> |  | <hr/> |
|  | 16+2  |  | 16+2  |

## SOPHOMORE YEAR

|                              |       |                              |       |
|------------------------------|-------|------------------------------|-------|
| Mathematics 3a (calculus) .. | 4     | Mathematics 4a (calculus) .. | 4     |
| Modern language .....        | 4     | Modern language .....        | 4     |
| Chemistry 2a .....           | 4     | Physics 1a, 1b .....         | 6     |
| Civil Eng. 3 (drawing) ..... | 4     | Civil Eng. 4 (drawing) ..... | 2     |
| Mechanical Eng. 1 (Shop) ..  | 2     | Mechanical Eng. 2 (Shop) ..  | 2     |
| Military training .....      | 2     | Military training .....      | 2     |
|                              | <hr/> |                              | <hr/> |
|                              | 16+4  |                              | 16+4  |

## JUNIOR YEAR

|   |       |  |       |
|---|-------|--|-------|
| Mathematics 5a (calculus) ..              | 2     | Civil Eng. 41 (mechanics) ..               | 4     |
| Physics 2a, 2b .....                      | 5     | Electrical Eng. 1 .....                    | 4     |
| Political science 1a .....                | 3     | Physics 5a (electrical measurements) ..... | 4     |
| Mechanical Eng. 10 (machine design) ..... | 3     | Mechanical Eng. 11 (machine design) .....  | 2     |
| Chemistry 13 (industrial chemistry) ..... | 3     | Mechanical Eng. 20 (mechanism) .....       | 2     |
| Mechanical Eng. 3 (Shop) ..               | 2     | Mechanical Eng. 4 .....                    | 2     |
|   | <hr/> |  | <hr/> |
|   | 16+2  |  | 16+2  |

## SENIOR YEAR

|  |       |   |    |
|--|-------|---|----|
| Civil Eng. 42 (mechanics) ..                 | 3     | Electrical Eng. 21, 22 .....                      | 8  |
| Electrical Eng. 2 and 3 .....                | 7     | Electrical Eng. 32 or 41 (telephones) (meters) .. | 2  |
| Civil Eng. 50 (hydraulics) ..                | 4     | Mechanical Eng. 40 (experimental) .....           | 2  |
| Mechanical Eng. 21 (steam engineering) ..... | 2     | Civil Eng. 53 (hydraulic motors) .....            | 2  |
|  | <hr/> | Elective .....                                    | 2  |
|  | 16    |   | 16 |

## GRADUATE YEAR

Leading to the degree of Master of Science in Electrical Engineering.

|   |       |  |       |
|---|-------|--|-------|
| Electrical Eng. 23, 24 (alternating currents) ... | 6     | Electrical Eng. 51-52 (transient electrical phenomena) ..... | 4     |
| Electrical Eng. 44 (electrical railways) .....    | 2     | Electrical Eng. 48 (power transmission) .....                | 2     |
| Electrical Eng. 36 (dynamo design) .....          | 2     | Electrical Eng. 46 (central stations) .....                  | 2     |
| Mechanical Eng. 30 (steam turbines) .....         | 2     | Thesis .....   | 4     |
| Civil Eng. 65 (structural materials) .....        | 2     | Elective .....   | 4     |
| Elective .....                                    | 2     |  |       |
|   | <hr/> |  | <hr/> |
|   | 16    |  | 16    |

## CURRICULUM IN MECHANICAL ENGINEERING

Leading to the degree of Bachelor of Science in Mechanical Engineering.

(For description of each subject see page 197, and following.)

## FRESHMAN YEAR

| FIRST SEMESTER                              | Hours | SECOND SEMESTER                            | Hours |
|---|-------|--|-------|
| Mathematics 1a (plane trig. & algebra)..... | 4     | Mathematics 2a (analytical geometry) ..... | 4     |
| Chemistry 1a .....                          | 4     | Chemistry 2a .....                         | 4     |
| Civil Eng. 1, 3 (drawing)..                 | 6     | Civil Eng. 4 (drawing)...                  | 2     |
| English 1a .....                            | 2     | Civil Eng. 20 (surveying)..                | 4     |
| Mechanical Eng. 1 (shop)..                  | 2     | English 2a .....                           | 2     |
| Military training .....                     | 2     | Mechanical Eng. 2 (shop)..                 | 2     |
|   |       | Military training .....                    | 2     |
|   | <hr/> |  | <hr/> |
|   | 16+4  |  | 16+4  |

## SOPHOMORE YEAR

|   |       |   |       |
|---|-------|---|-------|
| Mathematics 3a .....                      | 4     | Mathematics 4a (calculus) 4               | 4     |
| Physics 1a, 1b .....                      | 6     | Physics 2a, 2b .....                      | 5     |
| Mechanical Eng. 10 (machine design) ..... | 3     | Mechanical Eng. 11 (machine design) ..... | 2     |
| Chemistry 13 (industrial chemistry) ..... | 3     | Political science 1a .....                | 3     |
| Mechanical Eng. 3 (shop)..                | 2     | Mechanical Eng. 20 (mechanism) .....      | 2     |
| Military training .....                   | 2     | Mechanical Eng. 4 .....                   | 2     |
|   |       | Military training .....                   | 2     |
|   | <hr/> |   | <hr/> |
|   | 16+4  |   | 16+4  |

## JUNIOR YEAR

|  |       |  |       |
|--|-------|--|-------|
| Mathematics 5a (calculus) 2                        | 2     | Civil Eng. 42 (mechanics). 3                   | 3     |
| Civil Eng. 41 (mechanics) 4                        | 4     | Electrical Eng. 7 .....                        | 4     |
| Electrical Eng. 1.....                             | 4     | Civil Eng. 50 (hydraulics) 4                   | 4     |
| Mechanical Eng. 21 (steam and boiler design) ..... | 2     | Mechanical Eng. 22 (engines and boilers) ..... | 2     |
| Mechanical Eng. 41 (experimental) .....            | 3     | Mechanical Eng. 24 (valve gears) .....         | 2     |
| Mechanical Eng. 5 (shop)..                         | 2     | Mechanical Eng. 6 (shop)..                     | 2     |
|  |       |  | 2     |
|  | <hr/> |  | <hr/> |
|  | 15+2  |  | 15+2  |

## SENIOR YEAR

|   |       |  |       |
|---|-------|--|-------|
| Civil Eng. 53 (hydraulic design) .....              | 2     | Mechanical Eng. 25 (gas engines) .....             | 2     |
| Mechanical Eng. 12 (machine design) .....           | 2     | Mechanical Eng. 13 (machine design) .....          | 2     |
| Mechanical Eng. 23 (engine and boiler design) ..... | 3     | Mechanical Eng. 31 (heating and ventilating) ..... | 2     |
| Mechanical Eng. 30 (steam turbines) .....           | 2     | Mechanical Eng. 32 (power plants) .....            | 2     |
| Mechanical Eng. 33 (thermodynamics) .....           | 2     | Mechanical Eng. 43 (experimental) .....            | 2     |
| Civil Eng. 65 (structural materials) .....          | 2     | Elective .....                                     | 2     |
| Mechanical Eng. 42 (experimental) .....             | 3     | Thesis .....                                       | 4     |
|   | <hr/> |  | <hr/> |
|   | 16    |  | 16    |

## CURRICULUM IN MECHANICAL ENGINEERING

Leading to the Degree of Bachelor of Science.

(For description of each subject see page 197, and following.)

## FRESHMAN YEAR

| FIRST SEMESTER                              | Hours | SECOND SEMESTER                            | Hours |
|---|-------|--|-------|
| Mathematics 1a (plane trig. & algebra)..... | 4     | Mathematics 2a (analytical geometry) ..... | 4     |
| Modern language .....                       | 4     | Modern language .....                      | 4     |
| Chemistry 1 .....                           | 4     | Civil Eng. 20 (surveying)..                | 4     |
| English 1a .....                            | 2     | Chemistry 2 .....                          | 4     |
| Civil Eng. 1 (engineering drawing) .....    | 2     | English 2a .....                           | 2     |
| Military training .....                     | 2     | Military training .....                    | 2     |
|   | <hr/> |  | <hr/> |
|   | 16+2  |  | 18+2  |

## SOPHOMORE YEAR

|                             |       |                             |       |
|-----------------------------|-------|-----------------------------|-------|
| Mathematics 3a (calculus) . | 4     | Mathematics 4a (calculus) . | 4     |
| Chemistry 2a .....          | 4     | Modern language .....       | 4     |
| Modern language .....       | 4     | Physics 1a, 1b.....         | 6     |
| Civil Eng. 3 (drawing)...   | 4     | Civil Eng. 4 (drawing)....  | 2     |
| Mechanical Eng. 1 (shop) .  | 2     | Mechanical Eng. 2 (shop) .  | 2     |
| Military training .....     | 2     | Military training .....     | 2     |
|                             | <hr/> |                             | <hr/> |
|                             | 16+4  |                             | 18+4  |

## JUNIOR YEAR

|   |       |   |       |
|---|-------|---|-------|
| Mathematics 5a (calculus) .               | 2     | Civil Eng. 41 (mechanics) .               | 4     |
| Physics 2a, 2b.....                       | 5     | Electrical Eng. 1 .....                   | 4     |
| Political science 1a.....                 | 3     | Mechanical Eng. 11 (machine design) ..... | 2     |
| Mechanical Eng. 10 (machine design) ..... | 3     | Mechanical Eng. 20 (mechanism) .....      | 2     |
| Chemistry 13 (industrial chemistry) ..... | 3     | Mechanical Eng. 21 (steam)                | 2     |
| Mechanical Eng. 3 (shop) .                | 2     | Elective .....                            | 2     |
|   |       | Mechanical Eng. 4 (shop) .                | 2     |
|   | <hr/> |   | <hr/> |
|   | 16+2  |   | 16+2  |

## SENIOR YEAR

|  |       |   |       |
|--|-------|---|-------|
| Civil Eng. 42 (mechanics) .                    | 3     | Civil Eng. 53 (hydraulic motors) .....              | 2     |
| Electrical Eng. 7.....                         | 4     | Mechanical Eng. 33 (thermodynamics) .....           | 2     |
| Civil Eng. 50 (hydraulics) .                   | 4     | Mechanical Eng. 32 (power plants) .....             | 2     |
| Mechanical Eng. 41 (experimental) .....        | 3     | Mechanical Eng. 24 (valve gears) .....              | 2     |
| Mechanical Eng. 22 (engines and boilers) ..... | 2     | Mechanical Eng. 23 (engine and boiler design) ..... | 2     |
| Mechanical Eng. 5 (shop) .                     | 2     | Mechanical Eng. 12 (machine design) .....           | 2     |
|  |       | Mechanical Eng. 42 (experimental) .....             | 3     |
|  |       | Mechanical Eng. 6 (shop) .                          | 2     |
|  | <hr/> |   | <hr/> |
|  | 16+2  |   | 15+2  |



GRADUATE YEAR

Leading to the degree of Master of Science in Mechanical Engineering.

| FIRST SEMESTER  | Hours  | SECOND SEMESTER  | Hours  |
|---|--|--|--|
| Electrical Eng. 21, 22 (alternating currents) . . . . | 8  | Mechanical Eng. 31 (heating and ventilating) . . . . . | 2  |
| Mechanical Eng. 13 (machine design) . . . . .         | 2  | Mechanical Eng. 25 (gas engines) . . . . .             | 2  |
| Mechanical Eng. 39 (steam turbines) . . . . .         | 2  | Mechanical Eng. 26 (gas engine design) . . . . .       | 2  |
| Mechanical Eng. 43 (experimental) . . . . .           | 2  | Electrical Eng. 44 (electric railways) . . . . .       | 2  |
| Civil Eng. 65 (structural materials) . . . . .        | 2  | Mechanical Eng. 3* (graphic statics) . . . . .         | 2  |
|   |  | Elective . . . . .                                     | 2  |
|   |  | Thesis . . . . .                                       | 4  |
|   | <hr style="width: 10%; margin: 0 auto;"/> 16 |  | <hr style="width: 10%; margin: 0 auto;"/> 16 |

DEPARTMENTS OF INSTRUCTION

CHEMISTRY

(Bagley Hall)

PROFESSOR BYERS, PROFESSOR BENSON, ASSISTANT PROFESSOR DEHN, ASSISTANT PROFESSOR ROSE, DR. TRUMBULL

1-2. GENERAL CHEMISTRY. Four credits. The year. Freshman engineers. Professor BYERS, . . . . .

To meet the needs of students who have not had chemistry in the preparatory schools, a course is offered consisting of two lectures and six hours laboratory work per week. Textbooks: Smith's College Chemistry and Laboratory Manual.

1a-2a. GENERAL CHEMISTRY. Four credits. The year. Freshman engineers. Professor BYERS, DR. TRUMBULL.

Two lectures and six laboratory hours per week. At least one of these laboratory hours will be devoted to quiz work upon the subject matter of the lectures. Textbooks: Smith's General Chemistry, Smith's Laboratory Manual, and Byers and Knight's Qualitative Analysis.

1b. GENERAL CHEMISTRY. Four credits. Second semester. Assistant Professor ROSE.

Repetition of 1a. Strong students or those carrying light course will be permitted to elect this course without the pre-

quisite high school course; but to satisfy the required work of the engineering curricula, such students must elect some other four-hour course in the department of chemistry.

2b. **GENERAL CHEMISTRY.** Four credits. First semester. Assistant Professor ROSE.

Continuation of 1b.

3-4. **ORGANIC CHEMISTRY.** Four credits. The year. Junior chemical engineers. Assistant Professor DEHN.

Bernthsen-Sudborough's text is used as a reference book in connection with the lectures and Sudborough-James' laboratory manual is used as a laboratory guide.

8. **ADVANCED QUALITATIVE ANALYSIS.** Four credits. First semester. Sophomore chemical engineers. Professor BYERS.

Lectures on the theory of solution as applied to analytical work. Laboratory work on the analysis of alloys and minerals and illustrations of the subject-matter of the lectures. Two lectures and six laboratory hours per week.

8b. **ELEMENTARY QUALITATIVE ANALYSIS.** Four credits. First semester. Sophomore chemical engineers. MRS. MORGAN.

Chemistry 1-2 is followed by a course in qualitative analysis. The course consists of two lectures and six laboratory hours per week. Textbook: Byers and Knight.

9. **QUANTITATIVE ANALYSIS.** Four credits. The year. Sophomore chemical engineers. Professor BENSON.

Gravimetric and volumetric analysis. Moody's Quantitative Analysis. Twelve laboratory hours and one recitation per week.

12. **INDUSTRIAL CHEMISTRY.** Three credits. The year. Sophomore and junior civil engineers. Prerequisite, 2a, 2b, 8b. Professor BENSON.

Chemistry of the materials for engineering, such as cement, wood preservatives, paints, explosives, paving materials, clay products and structural steel. Two lectures and one laboratory afternoon.

13. **INDUSTRIAL CHEMISTRY.** Three credits. First semester. Sophomore and junior electrical engineers and mechanical engineers. Prerequisite, 2a, 2b, or 8b. Professor BENSON.

Chemistry of materials of engineering such as explosive mixtures, oils, lubricants, fuels, boiler water, insulating materials, alloys and the commercial forms of iron. Two lectures and one laboratory period.

14. **CHEMICAL TECHNOLOGY.** Four credits. Second semester. Junior and senior chemical engineers. Professor BENSON.

Required of chemical engineers and elective for students who have had quantitative chemistry. A course dealing with a detailed study of chemical industries. Two lectures and two laboratory periods per week.

15. **WATER ANALYSIS.** Four credits. First semester. Senior chemical engineers. Professor BENSON.

A course consisting of one lecture and twelve hours laboratory work per week will be given in the analysis of water for both industrial and sanitary purposes.

16. **GAS AND FUEL ANALYSIS.** Four credits. Second semester. Senior chemical engineers. Professor BENSON.

Two lectures and two laboratory periods per week.

17. **SOILS AND FERTILIZERS.** Two credits. Second semester. Professor BENSON.

A lecture course dealing with the fundamental ideas necessary for field identification and classification of soils and a discussion of the elements of fertility.

18. **ROAD OILS AND TARS.** Two credits. Second semester. Professor BENSON.

A course offered as a civil engineering option for students in highway engineering. One lecture and one laboratory period.

22. **PHYSICAL CHEMISTRY.** Four credits. First semester. Senior and graduate chemical engineers. Prerequisites, 8, 9, college physics. Dr. TRUMBULL.

An elementary course dealing with fundamental theories of chemistry based upon physical measurements. Three lectures and one laboratory period per week.

23. **ELECTRO CHEMISTRY.** Four credits. Second semester. Senior and graduate chemical engineers. Prerequisites, 8 and college physics. Professor BYERS and Dr. TRUMBULL.

The lecture course deals with the historical development of electro chemistry, the theories of electrolysis, migration of ions, concentration cells, solution pressure, etc. The laboratory work consists of the preparation of compounds by electrolysis and electro synthesis, electro-plating, etc., and of illustrations of the subject matter of the lecture work.

27. **CHEMICAL THEORY.** Two credits. The year. Graduate chemical engineers. Professor BYERS.

All graduate students registering in the department of chemistry will be expected to take a two-hour course throughout the year in the historical development of fundamental laws and theories.

### CIVIL ENGINEERING

(Engineering Building)

PROFESSOR FULLER, PROFESSOR MC CAUSTLAND, PROFESSOR MORE, ASSISTANT PROFESSOR HARRIS, ACTING ASSISTANT PROFESSOR STEVENS, MR. MILLER, MR. GLEASON, MR. MUEHLSTEIN, MR. NEWTON, MR. WERNECKE, MR. STRANDBERG, MR. MAY, MR. FOWLER

1. ENGINEERING DRAWING. Two credits. The year. All freshman engineers. Prerequisites, plane geometry. Assistant Professor HARRIS, Mr. GLEASON, Mr. MUEHLSTEIN, Mr. NEWTON, Mr. WERNECKE, Mr. STRANDBERG, Mr. MAY.

Linear drawing, Roman and Gothic capital letters; free hand lettering.

3. ENGINEERING DRAWING. Four credits. The year. All freshman engineers. Prerequisites, solid geometry, preceded or accompanied by drawing 1. Assistant Professor HARRIS, Mr. GLEASON, Mr. MUEHLSTEIN, Mr. WERNECKE, Mr. STRANDBERG and Mr. MAY.

The elements of descriptive geometry, including the principles of shades, shadows and perspective.

4. ENGINEERING DRAWING. Two credits. The year. All freshman engineers. Prerequisite, 3.

Continuation of drawing 3. Problems and tracings.

7-8. ENGINEERING DRAWING. One credit. The year. Sophomore civil engineers. Prerequisite, 4. Assistant Professor HARRIS, Acting Assistant Professor STEVENS.

Working drawings, including tracings. Course 7 is repeated in the second semester; course 8 is also given in the first semester.

17. FOREST SURVEYING. (Short session in Forestry, first year, Jan.-Mar.). Laboratory deposit, three dollars. Mr. NEWTON.

Engineering drawing, topographical and map drawing. Instructions and field practice in the use of the chain, hand compass, and Forest Service compass, hand level, clinometer and transit in direct application to the requirements of the U. S. Forest Service

18. **FOREST SURVEYING.** (Short session in Forestry, second year, Jan.-Mar.). Laboratory deposit, three dollars. Mr. NEWTON.

Traversing by various conventional methods, June 11th and mining claim surveys, plane triangulation and topographical work. U. S. Public Land Subdivision.

19. **MINE SURVEYING.** (Short session in Mining, Jan.-Mar.). Laboratory deposit, three dollars. Mr. NEWTON.

Instruction and field practice in the use of simple instruments for making surface and underground surveys. The elements of drawing, lettering, sketch mapping and field work. Judicial functions of the mine surveyor and the rules governing mineral surveys.

20. **ELEMENTARY PLANE SURVEYING.** Four credits. The year. All freshman engineers. Prerequisites, Math. 1a and C. E. 1. Laboratory deposit, three dollars. Mr. GLEASON, Mr. NEWTON, Mr. MUEHLSTEIN and assistants.

Theory and use of chain, compass, transit and level. Adjustment of instruments. United States Public Land surveys. Map and computation of areas.

21. **MAPPING AND TOPOGRAPHIC DRAWING.** Three credits. The year. Sophomore C. E. Prerequisite, C. E. 20. Laboratory deposit, three dollars. Mr. MILLER.

Use of conventional signs and colors. Construction of maps and profiles from field notes. Use of contour maps in engineering design. City surveying.

22. **CONSTRUCTION SURVEYING.** Three credits. The year. Sophomore C. E. Prerequisites, Math. 2a, C. E. 21. Laboratory deposit, three dollars. Mr. MILLER.

Theory and practice of simple and compound curves. Computation of earthwork. Use of mass diagrams. Staking out engineering work.

23. **TOPOGRAPHIC SURVEYING.** Three credits. The year. Junior C. E. and Mining Engineering. Prerequisites, Math. 3a and C. E. 21. Laboratory deposit, three dollars. Mr. MILLER.

Base line measurement, reading, adjusting and computing triangulation systems. Topographic surveying, including plane-table, photography and cartography.

24-25. **FOREST SURVEYING.** Four credits. The year. Sophomore and junior Forestry. Prerequisites, Math. 1a and Forestry 2. Laboratory deposit, three dollars. Mr. NEWTON.

Engineering lettering and map drawing. Chain, compass, transit and level surveying, with reference to work in forest. United States subdivision of public lands.

26. **FOREST TOPOGRAPHY.** Four credits. First semester. Junior Forestry. Prerequisite, C. E. 25. Laboratory deposit, three dollars. Mr. NEWTON.

Topographic surveys as applied to forestry. Reconnoissance and sketch maps, and exercises in reading and adjusting triangulation systems. Filling in topographic details with plane table and transit. Beginning of elementary railroad surveying.

27. **LOGGING RAILROADS.** Four credits. Second semester. Junior Forestry. Prerequisites, C. E. 26. Laboratory deposit, three dollars. Mr. MILLER.

Elementary railroad engineering including curves and earthwork and the economic location of logging railways. Cost estimates.

28. **MINE SURVEYING.** Three credits. The year. Sophomore mining engineers. Prerequisite, C. E. 20. Laboratory deposit, three dollars. Mr. NEWTON.

Surface and underground practice. Observation for meridian. Topography. Mining Claim Surveys. Plane triangulation. Tunnel and vertical shaft work and connections. Mapping.

31. **RAILWAY OPERATION.** Three credits. First semester. Junior C. E. Prerequisites, 22, accompanied by 41. Laboratory deposit, three dollars. Mr. MILLER.

Economics of the operation of railways from an engineering standpoint. Train weights and resistances, costs, etc. Maintenance of way and equipment.

32. **RAILWAY CONSTRUCTION.** Two credits. Second semester. Junior C. E. Prerequisite, 31. Laboratory deposit, three dollars. Mr. MILLER.

The economics of railway location and the relation of location to operation. Contracts and specifications.

33. **YARDS AND TERMINALS.** Two credits. First semester. Senior and graduate C. E. Prerequisite, 32. Mr. MILLER.

The design and operation of the large yards of modern railway organizations, and the control of trains by means of signaling and interlocking.

34. **TUNNELLING AND TRACK ELEVATION.** Two credits. Second semester. Senior and graduate C. E. Prerequisite, 32. Mr. MILLER.

The problems confronting the engineer in track elevation and the construction of subways.

35. RAILWAY ELECTRIFICATION. Two credits. Second semester. Senior and graduate C. E. Prerequisite, 32 and E. E. 44. Mr. MILLER.

The economic principles involved in the electrification of existing railway lines and the construction and operation of rapid transit lines.

41-42. MECHANICS. 41, either semester. Four credits. 42, either semester, three credits. All junior engineers. Prerequisites, Mathematics 4a, physics 1a. Students entering this course must give satisfactory evidence of a *working knowledge* of the fundamentals of arithmetic, algebra, geometry and trigonometry. Professor MORE, Acting Assistant Professor STEVENS, Mr. MUEHLSTEIN and Mr. WERNECKE.

Statics, dynamics and mechanics of materials.

43-44. ADVANCED MECHANICS. Two credits. The year. Senior and graduate engineers. Prerequisites, 42 and 45. Professor MORE.

General theories of flexure, elasticity and least work, with applications.

45. MASONRY CONSTRUCTION. Five credits. Second semester. Junior C. E. Prerequisites, 8, preceded or accompanied by 42. Professor MORE and Mr. WERNECKE.

A study of the property of the materials employed in masonry construction, and their use in foundations, piers, abutments, retaining walls, dams and arches.

50. HYDRAULICS. Four credits. The year. All junior engineers. Prerequisite, preceded or accompanied by 42. Assistant Professor HARRIS and Mr. STRANDBERG.

Flow of water through pipes and orifices, over weirs and in open channels; energy, impulse and reaction of jets with application to impulse wheels. Review of hydrostatics.

51. HYDRAULIC POWER. Three credits. First semester. Senior and graduate C. E. Prerequisite, 50. Assistant Professor HARRIS.

Stream flow, storage and generation of power. Development and theory of turbines, design of a spillway, penstock and turbines; test of an existing powerplant.

53. **HYDRAULIC MOTORS.** Two credits. First semester. Senior and graduate E. E. and M. E. Prerequisite, 50. Assistant Professor HARRIS.

Development and theory of water wheels and turbine pumps; design of a reaction turbine.

54. **HYDRAULIC MINING.** (Short session in Mining, Jan.-Mar.) To be arranged. Professor McCAUSTLAND.

A course of two lectures per week on theory and practice of hydraulic mining.

55. **WATER SUPPLY AND IRRIGATION.** Three credits. First semester. Senior and graduate C. E. Prerequisite, 50. Professor McCAUSTLAND.

A study of the principal engineering operations necessary to secure suitable water supplies for cities and towns and water for irrigation. The purification of water supplies.

56. **SANITARY ENGINEERING.** Three credits. Second semester. Senior and graduate C. E. Prerequisite, 55. Professor McCAUSTLAND.

A study of the design and construction of sewerage systems, both combined and separate. Sewage treatment.

57. **WATER SUPPLY AND IRRIGATION PROBLEMS.** Two credits. First semester. Senior and graduate C. E. Professor McCAUSTLAND.

Supplementary to course 55, with special problems and investigations.

58. **SEWAGE TREATMENT.** Two credits. Second semester. Senior and graduate C. E. and Chem. E. Professor McCAUSTLAND.

Supplementary to course 56, with special problems in matters relating to public health.

61-62. **BRIDGES.** Four credits first semester. Three credits second semester. The year. Senior and graduate C. E. Prerequisite, 45. Professor FULLER and Professor MORE.

Stresses, design and deflection of simple trusses. Detail drawings. Estimates.

63-64. **HIGHER STRUCTURES.** Two credits. The year. Seniors and graduate C. E. Prerequisite, preceded or accompanied by 61-62. Professor FULLER.

Primary and secondary stresses. Design.



65. **STRUCTURAL MATERIALS.** Three credits. First semester. Senior C. E. and M. E. and graduate E. E. Prerequisite, 42. Laboratory deposit, three dollars. Professor FULLER and Mr. MUEHLSTEIN.

An experimental study of the physical properties of materials of construction.

70. **HIGHWAYS.** Two credits. Second semester. Junior C. E. Mr. MAY.

A general survey of the location, construction and maintenance of country roads and city streets, with special emphasis upon the construction of the cheaper roads; *i. e.* earth, sand, clay and gravel up to \$5,000 per mile.

71. **HIGHWAY CONSTRUCTION.** Four credits. First semester. Senior C. E. Prerequisites, 32 and 70. Mr. MAY.

The economics of highway location, construction, and maintenance of the more permanent character, *i. e.* \$5,000 per mile and up. All standard laboratory tests of highway metals.

72. **CITY STREETS AND PAVEMENTS.** Four credits. Second semester. Senior C. E. Prerequisite, 71. Mr. MAY.

A study of city streets and pavements, including estimates and inspection; also, a study of the manufacture and testing of materials of paving.

### **ELECTRICAL ENGINEERING** (Engineering Building)

PROFESSOR MAGNUSSON, ASSISTANT PROFESSOR LOEW, MR. JOHNSON, MR. CURTIS, MR. KAYLOR, MR. CRAWFORD  
FOR UNDERGRADUATES

1. **ELECTRICAL ENGINEERING.** Four credits. The year. Junior E. E. and M. E. Assistant Professor LOEW and Mr. CURTIS.

Theory of the electric and magnetic circuits; construction, operation and characteristics of direct current generators and motors.

2. **ELECTRICAL ENGINEERING.** Three credits. The year. Junior and senior E. E. Assistant Professor LOEW.

Continuation of course 1, and including storage batteries and the principles of photometry.

3. **DYNAMO LABORATORY.** Four credits. The year. Junior and senior E. E. Must be taken in connection with course 2. Assistant Professor LOEW and Mr. KAYLOR.

Experimental work on direct current dynamo machinery and storage batteries. Commercial photometry.

5. **ELECTRICAL ENGINEERING.** Four credits. The year. Assistant Professor LOEW, Mr. CURTIS and Mr. KAYLOR.

An abbreviated course for civil and chemical engineers and for students in Forestry.

6. **ELECTRICAL ENGINEERING.** Three credits. Second semester. Mr. KAYLOR.

The application of electricity to mining; for students in mining engineering.

7. **ELECTRICAL ENGINEERING.** Four credits. Second semester. For students in Mechanical Engineering who have completed course 1. Mr. KAYLOR.

The more important features of direct current dynamos, elementary alternating current theory and a few experiments with alternating current machinery.

10. **ELEMENTARY ELECTRICAL ENGINEERING.** Four credits. The year. Mr. CURTIS and Mr. KAYLOR.

The laws of electric and magnetic circuits with application to direct current machinery without the use of advanced mathematics. For students having considerable practical experience with electrical machinery and appliances.

15. **ALTERNATING CURRENTS.** Four credits. First semester. Elective for students who have completed courses 5, 7 or 10. Assistant Professor LOEW and Mr. CURTIS.

An introduction to alternating currents theory and practice. Laboratory work on alternating current machinery.

#### FOR GRADUATES AND UNDERGRADUATES

21. Four credits. First semester. Senior E. E. and graduate M. E. Professor MAGNUSON.

The theory of the generation of single phase and polyphase currents. Vector diagrams and the symbolic method of analysis. The theory of transformers, polyphase induction motors, synchronous motors, rotary converters and transmission lines. Interlinked polyphase systems.

22. Four credits. First semester. Senior E. E. and graduate M. E. Must be taken in connection with course 21. Professor MAGNUSON and Mr. CURTIS.

Experimental work on alternating current machinery.

23. Four credits. Second semester. Continuation of course 21. Senior and graduate E. E. Professor MAGNUSSON and Mr. CURTIS.

The theory of single phase induction and commutator motors. The effects of motors on transmission systems. Phase control and regulation.

24. ALTERNATING CURRENTS LABORATORY. Two credits. Second semester. Senior and graduate E. E. Mr. CURTIS.

A continuation of course 22 with tests on large commercial machines.

31. TELEPHONES. Two credits. The year. Senior and graduate E. E. Mr. JOHNSON.

Theory, construction, and operation of telephone and telephone systems. General station practice.

32. TELEPHONES AND TELEGRAPHS. Two credits. Second semester. Senior E. E. Mr. JOHNSON.

Details of automatic and manual switchboards. Testing and locating of faults. Multiplex and wireless telegraphy. Railway signal systems.

36. DYNAMO DESIGN. Two credits. First semester. Senior and graduate E. E. Assistant Professor LOEW.

Complete design of one direct current generator or motor.

37. DESIGN OF ELECTRICAL APPARATUS. Two credits. Second semester. Assistant Professor LOEW.

Design of switchboards, transformers, alternating generators or motors.

41. METERS. Two credits. Second semester. Senior E. E. Mr. JOHNSON.

Detail study of different types of electrical meters and the problems arising in the measurements of electrical energy for various commercial requirements.

44. ELECTRIC RAILWAYS. Two credits. First semester. Senior and graduate E. E., graduate M. E. Professor MAGNUSSON.

Electrical equipment and rolling stock; roadbed; construction, and operation of direct current, single phase and polyphase systems.

46. CENTRAL STATIONS OF ELECTRIC LIGHTING. Two credits. Second semester. Mr. CURTIS.

Location, design, and operation of electric central stations. Electric lightning systems.

48. **POWER TRANSMISSION.** Two credits. Second semester. Senior and graduate E. E. Assistant Professor LOEW and Mr. CRAWFORD.

Location, design, and operation of electric power transmission systems.

51-52. **TRANSIENT ELECTRICAL PHENOMENA.** Two credits. The year. Graduate E. E. Professor MAGNUSSEN.

The exponential law for simple transients. Single and double energy transients. Current oscillations and traveling waves. Natural periods of transmission lines. Short circuit transients. Surges. Corona. Lighting Phenomena.

### MECHANICAL ENGINEERING

(Engineering Building)

PROFESSOR EASTWOOD, ASSISTANT PROFESSOR WILSON, MR. THERKELSEN,  
MR. BEATTIE, MR. KANE

1. **CARPENTRY AND WOOD-TURNING.** Two credits. The year. Freshman and sophomore M. E., C. E., E. E. and Ch. E. Mr. BEATTIE and Mr. THERKELSEN.

2. **PATTERN MAKING AND CABINET WORK.** Two credits. The year. Freshman and sophomore M. E., C. E., E. E. and Ch. E. Mr. BEATTIE and Mr. THERKELSEN.

3. **FORGE AND FOUNDRY.** Two credits. The year. Sophomore and junior M. E., E. E., and Ch. E. Mr. KANE.

4. **MACHINE WORK.** Two credits. The year. Sophomore and junior M. E., E. E. and Ch. E. Mr. KANE.

5. **MACHINE WORK.** Two credits. First semester. Junior and senior M. E. Mr. KANE.

Advanced.

6. **MACHINE WORK.** Two credits. Second semester. Junior and senior M. E. Mr. KANE.

Advanced.

7. **MANUAL ARTS, WOODWORK.** Two credits. The year. Mr. BEATTIE.

For teachers.

8. **MANUAL ARTS, METALWORK.** Two credits. The year. Mr. KANE.

For teachers.

9. **MINE TIMBER FRAMING.** Two credits. Second semester. Mr. BEATTIE.

10. **MACHINE DESIGN.** Three credits. The year. Sophomore and junior M. E., E. E., Ch. E. and junior C. E. Prerequisite, engineering drawing 4. Mr. THERKELSEN.

A study of the design of machine details, giving practice in the application of modern formulae and manufacturers' standards.

11. **MACHINE DESIGN.** Two credits. The year. Sophomore and junior M. E. and E. E. Prerequisite, 10, preceded or accompanied by mechanism 20. Mr. THERKELSEN.

A continuation of course 10, consisting in the design of gearing, cone pulleys and belt transmission. Practice in tracing and blue-printing.

12. **DESIGN OF SPECIAL MACHINERY.** Two credits. First semester. Senior M. E. Prerequisites, 11 and mechanics 41. Assistant Professor WILSON.

Special problems in the design of hoisting and pumping machinery.

13. **ADVANCED MACHINE DESIGN.** Two credits. Second semester. Senior and graduate M. E. Prerequisites, 12, 20, and mechanics 42. Assistant Professor WILSON.

Special problems in the design of machine tools, and automatic machinery.

20. **MECHANISM.** Two credits. First or second semester. Sophomore and junior M. E. and E. E. Assistant Professor WILSON.

A study of the operation of machines involving the transmission of forces and the production of determinate motions.

21. **STEAM ENGINEERING.** Two credits. The year. Junior M. E. and C. E.; junior and senior E. E.; sophomore and junior Ch. E. Professor EASTWOOD.

The various forms of steam apparatus used in modern power plants, considering the construction, use and reasons for installing such apparatus.

22. **ENGINES AND BOILERS.** Two credits. Second semester. Junior and senior M. E. Prerequisite, 21. Professor EASTWOOD.

The generation and use of steam in boilers and engines; valve gears; governors; the conditions necessary for maximum efficiency; the influence of economizers, feed-water heaters, etc., upon the engine and boiler performance.

23. **ENGINES AND BOILER DESIGN.** Three credits. First semester. Senior M. E. Prerequisites, 11, 22 and mechanics 41. Professor EASTWOOD.

One complete problem will be assigned for solution in the class room.

24. **VALVE GEARS.** Two credits. Second semester. Junior M. E. Prerequisite, 21 or 22. Assistant Professor WILSON.

The theory and practice of designing the various kinds of valve gears for steam engines.

25. **GAS ENGINES.** Two credits. Second semester. Senior and graduate M. E. Prerequisite, 21. Assistant Professor WILSON.

The development of gas engineering, including the different types of gas engines, and gas producers and methods of testing.

26. **GAS ENGINE DESIGN.** Two credits. First or second semester. Graduate M. E. Prerequisite, 25.

Calculations and plans for the design of a given type of gas engine.

30. **STEAM TURBINES.** Two credits. First semester. Senior and graduate M. E. and E. E. Prerequisite, 21. Professor EASTWOOD.

The theory, construction and design of steam turbines.

31. **HEATING AND VENTILATING.** Two credits. Second semester. Senior and graduate M. E. Prerequisite, 21. Professor EASTWOOD.

The various systems of heating and ventilating, methods of design and tests.

32. **POWER PLANTS.** Two credits. Second semester. Senior M. E. Prerequisite, 22. Professor EASTWOOD.

The design of power plants involving their location, buildings, prime movers, power transmission, etc.

33. **THERMODYNAMICS.** Two credits. First semester. Senior M. E. Prerequisites, 21 or 22, physics 2a, and mathematics 4b. Professor EASTWOOD.

The fundamental principles underlying the transformation of heat into work, with reference to the steam engine, the gas engine and hot air engine, and the operation of refrigerating machinery; efficiency of the simple, compound, and multiple expansion engine.

34. **GRAPHIC STATUS OF MECHANISM.** Three credits. First semester. Graduate M. E. Prerequisite, mechanics 41. Professor EASTWOOD.

The graphic determination of the forces acting at different points in machines used for hoisting, crushing, punching and power transmission. The effects of friction and the stiffness of ropes and belts.

40. **EXPERIMENTAL ENGINEERING.** Two credits. First or second semester. Junior and senior E. E., junior and graduate Chem. Eng. Prerequisite, preceded or accompanied by 21. Assistant Professor WILSON.

Calibrations of thermometers, gages, indicator springs, etc. Friction and mechanical efficiency tests of the simple steam engine. One complete engine and boiler test with report.

41. **EXPERIMENTAL ENGINEERING.** Three credits. First semester. Junior and senior M. E. Same as 40 except an additional laboratory period is provided.

42. **EXPERIMENTAL ENGINEERING.** Two credits. First semester. Senior M. E. Prerequisite, 41. Assistant Professor WILSON.

A continuation of course 40, involving more extended and complete investigations. Special attention is given to the theory involved and previous experiments. Gas and fuel analysis.

43. **EXPERIMENTAL ENGINEERING.** Two credits. Second semester. Senior and graduate M. E. Prerequisite, 42. Professor EASTWOOD and Assistant Professor WILSON.

An advanced course in commercial testing.

45. **STEAM LABORATORY.** Two credits. First semester.

Arranged especially for students in the College of Forestry. Consists of two laboratory periods and is intended to familiarize the student with the fundamental equipment for steam generation and use. Practice will be given in the care and manipulation of the steam engine and boiler, and auxiliary apparatus.

50. **NAVAL ARCHITECTURE.** Two credits. First semester. Elective. Professor EASTWOOD.

The calculations common to ship construction, accompanying regular drafting room work.

51. **SHIP DRAWING AND DESIGN.** Two credits. Second semester. Elective. Professor EASTWOOD.

An application of the principles of naval architecture to the design of a steamship for a definite purpose.

# COLLEGE OF FORESTRY

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## FACULTY

- THOMAS FRANKLIN KANE, PH. D., Johns Hopkins, President.
- HUGO WINKENWERDER, M. F., Yale, Professor of Forestry, Dean.
- BURT P. KIRKLAND, A. B., Cornell, Associate Professor of Forestry.
- E. T. CLARK, M. F., Yale, Assistant Professor of Forestry.
- L. A. NELSON, Instructor in Scaling.
- OLIVER P. M. GOSS, C. E., Purdue, Lecturer in Timber Physics.
- DONALD KNAPP, M. F., Michigan, Instructor.
- 
- J. ALLEN SMITH, PH. D., Michigan Professor of Political and Social Science.
- JOHN THOMAS CONDON, LL. M., Northwestern, Professor of Law.
- HORACE G. BYERS, PH. D., Johns Hopkins, Professor of Chemistry.
- TREVOR KINCAID, A. M., Washington, Professor of Zoology.
- FREDERICK ARTHUR OSBORN, PH. D., Michigan, Professor of Physics.
- THEODORE CHRISTIAN FRYE, PH. D., Chicago, Professor of Botany.
- EVERETT OWEN EASTWOOD, B. S., M. A., Virginia, Professor of Mechanical Engineering.
- DAVID CONNOLLY HALL, Sc. M., M. D., Chicago, Professor of Physical Training.
- HENRY KREITZER BENSON, PH. D., Columbia, Professor of Chemistry.
- GEO. S. WILSON, B. S., Nebraska, Assistant Professor of Mechanical Engineering.
- EDWIN JAMES SAUNDERS, A. M., Harvard, Assistant Professor of Geology.
- GEORGE IRVING GAVETT, M. S. (C. E.), Michigan, Assistant Professor of Mathematics.



## SPECIAL LECTURERS

- GEORGE H. CECIL, District Forester, United States Forest Service, Lecturer on Forest Administration.
- R. E. BENEDICT, Forest Inspector, Canadian Forest Service, Lecturer on Forest Protection.
- R. H. MACMILLAN, Chief Forester, British Columbia, Lecturer on Forest Administration.
- THEORNTON T. MUNGER, Chief of Silvics, District 6, United States Forest Service, Lecturer on Silvics and Planting.
- J. B. KNAPP, Assistant District Forester, District 6, United States Forest Service, Lecturer on Forest Products.
- C. J. BUCK, Assistant District Forester, District 6, United States Forest Service, Lecturer on Forest Law.
- D. W. HARRINGTON, D. V. M., Lecturer on Veterinary Science and Animal Husbandry.
- FRANK H. LAMB, Lamb Timber Co., Lecturer on Scientific Logging.
- THORP BABCOCK, Secretary West Coast Lumberman's Association, Lecturer on Milling.

## LUMBERMEN'S ADVISORY COMMITTEE

- GEO. S. LONG, Weyerhaeuser Timber Co., Tacoma.
- J. J. DONOVAN, Bloedel-Donovan Lumber Mills, Bellingham.
- EDW. P. BLAKE, Wash. Log. Brokerage Co., Seattle.

## PURPOSE AND LOCATION

The School of Forestry was established in 1907. It has a two-fold purpose; first, to afford instruction in the principles and practice of forestry; second, to promote the interests of forestry in the State of Washington by encouraging the right use of forest resources.

The school has exceptional advantages in its location. The University campus comprises 355 acres, a portion of which is in timber, and offers splendid opportunities for field work in silviculture and forest measurements. Other excellent forests are within walking distance of the campus. The University also owns large forest tracts in various parts of the state, where students may conduct extensive research work. The immense national forests within a few hours' ride of Seattle afford practical object lessons in the art of forest management. The city of Seattle is

in the center of the timber industry of Washington and the Northwest. In its many sawmills and wood-working industries, the student has unrivaled opportunities for studying wood utilization.

### ADMISSION

| FRESHMAN CLASS                                   | Credits |
|--|---------|
| English .....                                    | 4       |
| Algebra .....                                    | 1½      |
| Plane geometry .....                             | 1       |
| Solid geometry .....                             | ½       |
| Physics .....                                    | 1       |
| United States history and civics or history..... | 1       |
| Botany .....                                     | 1       |
| One foreign language.....                        | 2       |
| Elective .....                                   | 3       |
| Total.....                                       | 15      |

Students may be admitted:

- (1) By presenting a certificate of graduation from an accredited school covering the above subjects.
- (2) By passing a satisfactory examination in the above subjects.

### ADVANCED STANDING

Credit will be given for subjects pursued at other colleges of recognized rank upon presentation of certificates that such subjects have been satisfactorily completed, or upon examination. Graduates of this institution and others of similar rank are admitted to graduate standing.

### SPECIAL STUDENTS

Persons twenty-one years of age or over, who are not regularly qualified for admission, but who have pursued special lines of studies related to forestry may be admitted as special students, on giving satisfactory evidence of their ability to pursue the work.

### SPECIAL SHORT COURSES FOR FOREST RANGERS AND LUMBERMEN

(See page 226.)

Applicants must be at least twenty years old and show ability to carry the work with profit to themselves. Admission to classes is without examination.

### LABORATORY DEPOSITS

Forestry courses 1, 4, and 19, \$1.00; forestry courses 5, 6, 7, 7a, and 7b, \$2.00; botany, \$3.00; chemistry, \$10.00; geology 1c, \$1.00; physics, \$6.00 (for the year); zoology, \$2.00.

NOTE.—The laboratory deposits in each case are for materials used and cover repairs of apparatus. The student is entitled to a refund for such portion of the fee as is not used.

### FIELD EXCURSIONS

Much of the instruction in technical forestry is given in the field, necessitating frequent field excursions in nearby forests, logging camps and sawmills. The expenses of these excursions are about \$15.00 for the freshman year, \$25.00 for the sophomore year, \$25.00 dollars for the junior year, and \$50.00 for the senior year.

### SUMMER WORK

Students of forestry are urged to spend their summer vacations in some line of practical work connected with the forest industry. Situated, as the school is, in the heart of a great lumbering section and near extensive national forests, ample opportunity is offered for summer employment. Students not only acquire valuable experience in this way, but earn a considerable portion of their University expenses.

### COURSES AND DEGREES

The School of Forestry offers four groups of study. Groups I and II are undergraduate groups leading to the degree of bachelor of science in forestry. Group I is designed to prepare students more especially for government and state work in forestry.

Group II (lumberman's group) is planned to meet the needs of young men preparing to take charge of logging and milling operations, or wishing to enter on a business career in some phase of the lumber industry. The group provides for several electives, thus permitting considerable specialization on the part of the student.

Group III covers five years. Like Group I, it is designed for young men who expect to enter the field of professional forestry, but who wish a broader foundation for the work than a four-year group makes possible. It is especially recommended for those young men who expect to enter the government service as forest

assistants. The first four years lead to the degree of bachelor of science, and the fifth year to the degree of master of science in forestry.

Group IV is a two-year group, designed for men who, having obtained a collegiate degree, wish to take up the profession of forestry. The group leads to the degree of master of science in forestry.

Thorough courses in the auxiliary sciences, mathematics, surveying and political economy are required in all groups as a foundation for the technical courses in forestry.

### GROUPS OF STUDY AND DEGREES

The College of Forestry offers four groups of study as follows:

#### GROUP I.

For students who expect to enter the United States or state forest reserve work. This is a four year course leading to the degree bachelor of science in forestry.

#### FRESHMAN YEAR

| FIRST SEMESTER                            | Hours | SECOND SEMESTER              | Hours |
|---|-------|------------------------------|-------|
| Forestry 1 (El. Dendrology) .....         | 4     | English 1c (Composition) ..  | 4     |
| Botany 11 (Gen. Botany) ..                | 4     | Botany 12 (Morphology) ..    | 4     |
| Chemistry 1a (Gen. Chem.)                 | 4     | Chemistry 2a (Gen. Chem.) .. | 4     |
| Math. 1a (Plane, trig. and algebra) ..... | 4     | Geology 1c (For. Geology) .. | 4     |
| For. 15 (Woodcraft) .....                 | 1     | Drill .....                  | 2     |
| Drill .....                               | 2     |                              |       |
|   | <hr/> |                              | <hr/> |
|   | 16+3  |                              | 16+2  |

#### SOPHOMORE YEAR

|                              |       |                              |       |
|------------------------------|-------|------------------------------|-------|
| Civil Eng. 24 (Surveying) .. | 4     | Civil Eng. 25 (Surveying) .. | 4     |
| Zoology 13 .....             | 4     | Forestry 4 (Silviculture) .. | 6     |
| Physics 3a (Gen. Physics) .. | 4     | Physics 4a (General Phy.) .. | 4     |
| Political Science 1a .....   | 3     | Zoology 14 .....             | 2     |
| Drill .....                  | 2     | Drill .....                  | 2     |
|                              | <hr/> |                              | <hr/> |
|                              | 15+2  |                              | 16+2  |

#### JUNIOR YEAR

|                              |       |                                     |       |
|------------------------------|-------|-------------------------------------|-------|
| Botany 43 (Plant Phys.) ..   | 4     | Botany 16 (Diseases of trees) ..... | 4     |
| Civil Eng. 26 (Topog. Surv.) | 4     | Civil Eng. 27 (R. R. Surv.)         | 4     |
| Forestry 5 (Mensuration) ..  | 4     | Forestry 6 (Mensuration) ..         | 4     |
| Forestry 7 (Technology) ..   | 4     | Forestry 8 (Economics) ..           | 2     |
| Forestry 9 (Hist. & Policy)  | 2     | Business Law .....                  | 2     |
|                              | <hr/> |                                     | <hr/> |
|                              | 18    |                                     | 16    |

SENIOR YEAR

|   |  |
|---|--|
| Forestry 11 (Management).. 4                      | Forestry 10 (Administration)..... 2    |
| Forestry 13 (Adv. Dendrology)..... 3              | Forestry 12 (Management).. 5           |
| Forestry 17 (Lumbering).. 5                       | Forestry 14 (Adv. Mensuration)..... 2  |
| Forestry 19 (Timber Phys.) 3                      | Forestry 16 (Wood preservation)..... 2 |
| Forestry 21 (Utilization).. 3                     | Forestry 18 (Lumbering).. 6            |
| Forestry 24 (Adv. Silviculture) (Elective)..... 2 |  |
| Required.....18                                   | 17                                     |

GROUP II. LUMBERMAN'S GROUP

For students who expect to work with lumber companies as logging engineers. Degree, bachelor of science in forestry.

FRESHMAN YEAR

| FIRST SEMESTER                            | Hours | SECOND SEMESTER               | Hours |
|---|-------|-------------------------------|-------|
| Forestry 1 (El. Dendrology) 4             |       | English 1c (Composition)... 4 |       |
| Botany 11 (Gen. Botany).. 4               |       | Botany 12 (Morphology)... 4   |       |
| Chemistry 1 (Gen. Chem.) 4                |       | Chemistry 2 (Gen. Chem.) 4    |       |
| Math. 1a (Plane trig. and algebra)..... 4 |       | Geology 1c (For. Geology). 4  |       |
| Forestry 15 (Woodcraft)... 1              |       |                               |       |
| Drill..... 2                              |       | Drill..... 2                  |       |
|   | 16+3  |                               | 16+2  |

SOPHOMORE YEAR

|                               |                                |
|-------------------------------|--------------------------------|
| Civil Eng. 24 (Surveying).. 4 | Civil Eng. 25 (Surveying).. 4  |
| Zoology 13 (Entomology).. 4   | Forestry 4 (Silviculture)... 6 |
| Physics 3a (Gen. Phys.)... 4  | Physics 4a (Gen. Phys.)... 4   |
| Pol. Science 1a..... 3        | Zoology 14..... 2              |
| Mech. Eng. 2 (shop)..... 2    | Mech. Eng. 3 (Shop)..... 2     |
| Drill..... 2                  | Drill..... 2                   |
|                               | 15+4                           |
|                               | 16+4                           |

JUNIOR YEAR

|                                     |                               |
|-------------------------------------|-------------------------------|
| Civil Eng. 26 (Topog. Surv.) 4      | Civil Eng. 27 (R. R. Surv.) 4 |
| Forestry 5 (Mensuration).. 4        | Forestry 6 (Mensuration).. 4  |
| Forestry 7 (Wood Technology)..... 4 | Forestry 8 (Economics)... 2   |
| Mech. Eng. 21 (Steam Eng.) 2        | Botany 16 (Tree diseases). 4  |
| M. E. 45 (Steam Lab.)..... 2        | Business law..... 2           |
|                                     | Elective..... 2               |
|                                     | 18                            |
|                                     | 18                            |

SENIOR YEAR

|  |  |
|--|--|
| Forestry 11 (Management).. 4           | Forestry 12 (Management).. 5           |
| Forestry 17 (Lumbering).. 5            | Forestry 13 (Lumbering).. 6            |
| Forestry 21 (Utilization).. 3          | Forestry 16 (Wood Preservation)..... 2 |
| Forestry 19 (Timber Phys.) 3           | Forestry 14 (Adv. Mens.).. 2           |
| Forestry 24 (Adv. Silviculture)..... 2 | Forestry 10 (Administration)..... 2    |
|  | 17                                     |
|  | 17                                     |

## GROUP III. FIVE YEAR COURSE

Group III is designed to allow for thorough specialization along three distinct lines, viz.: (1) state and forest service work, or forest management; (2) logging engineering, and (3) forest products. Technical forestry work has now reached a stage in its development where some specialization is almost necessary. It is believed that such specialization cannot be thorough in a four year course. In the plan outlined below the work of the fourth and fifth years has been made largely elective within certain prescribed studies. This will enable the student to select work that will meet his own particular needs. The degree of bachelor of science is awarded upon the completion of the work of the first four years and master of science in forestry at the completion of the fifth year.

## RECOMMENDATIONS FOR CHOICE OF STUDIES

*For specialization in Forest Management*, the following electives are recommended: C. E. 26, Botany 16, Zoology 14, Elementary Law, and Forestry, 7, 9, 13, 14, 19, 21, 22, 25, 24, 32, and 36.

*For specialization in Logging Engineering*: C. E. 26 and 27, Elementary Law, Zoology 14, Electrical Engineering 5, Mech. Engineering 21, Mechanical Engineering 45 and Forestry 7, 9, 14, 17, 18, 19, 21, 22, and 32.

*For specialization in Forest Products*: Chem. 3 and 4, or Chem. 8b, and 14, Botany 16, Electrical Engineering 5, Mechanical Engineering 21 and 45, and Forestry 7, 7b, 13, 16, 19, 21 and 22.

## GROUP III. THE FIVE YEAR GROUP.

## FRESHMAN YEAR

| FIRST SEMESTER                    | Hours      | SECOND SEMESTER                          | Hours      |
|-----------------------------------|------------|--|------------|
| Mathematics 1a .....              | 4          | Mathematics 2a (Anal. and algebra) ..... | 4          |
| Modern Language .....             | 4          | Modern Language .....                    | 4          |
| Botany 11 (Gen. Botany) ..        | 4          | Botany 12 (Morphology) ..                | 4          |
| Forestry 1 (El. Dendrology) ..... | 4          | Geology 1c (Gen. Geology) ..             | 4          |
| Forestry 15 (Woodcraft) ..        | 1          | Drill .....                              | 2          |
| Drill .....                       | 2          |  |            |
|                                   | <hr/> 16+8 |  | <hr/> 16+2 |

## SOPHOMORE YEAR

|                                    |            |                              |            |
|------------------------------------|------------|------------------------------|------------|
| English 1 .....                    | 4          | English 2 .....              | 4          |
| C. E. 24 (Surveying) .....         | 4          | C. E. 25 (Surveying) .....   | 4          |
| Chemistry 1 (Gen. Chem.) ..        | 4          | Chemistry 2 (Gen. Chem.) ..  | 4          |
| Zoology 13 (For. Entomology) ..... | 4          | Forestry 4 (Silviculture) .. | 6          |
| Elective M. E. (Shop) .....        | 2          | Elective M. E. (Shop) .....  | 2          |
| Drill .....                        | 2          | Drill .....                  | 2          |
|                                    | <hr/> 16+2 |                              | <hr/> 18+2 |
| Required .....                     | 16+2       | Required .....               | 18+2       |

## JUNIOR YEAR

|                              |    |                               |    |
|------------------------------|----|-------------------------------|----|
| Physics 3a .....             | 4  | Physics 4a .....              | 4  |
| Forestry 5 (Mensuration) ..  | 4  | Forestry 6 (Mensuration) ..   | 4  |
| Forestry 33 (Products) ..... | 2  | Forestry 34 (Products) .....  | 2  |
| Political Science 1a .....   | 3  | Botany 16 (Tree diseases) ..  | 4  |
| Elective                     |    | Elective                      |    |
| Chemistry 3 (Organic) .....  | 4  | Chemistry 4 (Organic) .....   | 4  |
| C. E. 26 (Topography) .....  | 4  | M. E. 4 .....                 | 2  |
| M. E. 2 .....                | 2  | C. E. 27 (R. E. Surveying) .. | 4  |
| Required .....               | 17 | Required .....                | 18 |

## SENIOR YEAR

|                                    |    |                                       |    |
|------------------------------------|----|---------------------------------------|----|
| Forestry 11 (Management) ..        | 4  | Forestry 12 (Management) ..           | 3  |
| Forestry 35 (Gen. Lumbering) ..    | 4  | Zoology 14 .....                      | 2  |
| Elective                           |    | Forestry 8 (For. Economics) ..        | 2  |
| M. E. 45 .....                     | 2  | Electives                             |    |
| M. E. 21 .....                     | 2  | Elect. Eng. 5 .....                   | 4  |
| Forestry 9 (Hist. & Policy) ..     | 2  | Elementary law .....                  | 2  |
| Chemistry 8b .....                 | 4  | Chemistry 14 .....                    | 4  |
| Botany 43 .....                    | 4  | Forestry 32 (Cruising and scaling) .. | 2  |
| Forestry 24 (Adv. Silviculture) .. | 2  |                                       |    |
| Required .....                     | 16 | Required .....                        | 17 |

## GRADUATE YEAR

|                             |    |                                       |    |
|-----------------------------|----|---------------------------------------|----|
| Thesis .....                | 4  | All electives                         |    |
| Elective                    |    | Forestry 10 (Administration) ..       | 2  |
| Forestry 13 (Adv. Den.) ..  | 3  | Forestry 22 (Sc. Management) ..       | 2  |
| Forestry 7 (Technology) ..  | 4  | Forestry 21 (Utilization) ..          | 5  |
| Forestry 19 (Tim. Phys.) .. | 4  | Forestry 14 (Field Mensuration) ..    | 4  |
| Forestry 17 (Log. Eng.) ..  | 4  | Forestry 36 (Adv. For. Management) .. | 6  |
| Forestry 25 (Seminar) ..... | 2  | Forestry 18 (Log. Engineering) ..     | 6  |
|                             |    | Forestry 16 (Preservation) ..         | 4  |
|                             |    | Forestry 26 (Seminar) .....           | 2  |
|                             |    | Forestry 7b (Adv. Technology) ..      | 2  |
|                             |    | Forestry 27 (Research) .....          | 2  |
| Required .....              | 17 | Required .....                        | 16 |

## GROUP IV.

## (Graduate Group)

Leading to the degree of master of science in forestry.

Students who are graduates of this university or of other institutions of equal rank, and who have a satisfactory knowledge of botany, geology, physics, chemistry, trigonometry, surveying and languages are granted this degree on the completion of the following courses:

Silviculture, advanced dendrology, timber physics, forest utilization, forest management, forest entomology, forest mensura-

tion, wood preservation, wood technology, forest economics, lumbering, thesis.

#### SPECIAL ANNOUNCEMENT

It is the plan of the College of Forestry to discontinue Groups I and II at the beginning of the year 1914-1915 and unless serious objections to this plan should develop before that time Group III only be offered thereafter. This means that students who have enrolled in Groups I or II prior to that date will have the privilege to graduate from those groups. The reasons for this change are summed up on page 218 under "Group III, Five Year Course."

Under the new arrangement students will be able to obtain practically as broad a general training in forestry in four years as under the old system, but persons who wish to specialize should pursue the work for five years.



**DEPARTMENT OF INSTRUCTION****SUBJECTS PRESENTED BY THE FACULTY OF FORESTRY**

1. **ELEMENTARY DENDROLOGY.** Four credits. First semester. Required of freshmen. Two recitations, four hours laboratory work, field trips additional. Laboratory deposit \$1.00. Professor WINKENWERDER and Mr. KNAPP.

The nomenclature and classification of trees. The use of keys. A study is made of one type species of each genus of the important timber trees of North America. Identification and distribution of the species of the Northwest. Texts: Sargent's Manual of the Trees of North America; Sudworth's Trees of the Pacific Slope.

Course 1 is repeated in the second semester for students entering at that time.

15. **WOODCRAFT.** One credit. First semester. Required of all freshmen in forestry. Assistant Professor CLARK and Dr. HALL.

Food lists, camp cooking, woods clothing, camp equipment, camp sanitation, packing a horse, general woodcraft. Course concludes with a half dozen lectures on first aid to the injured.

A special section in Forestry 15 will be arranged for students not regularly enrolled in Forestry providing at least six students apply for the course.

4. **SILVICULTURE.** Six credits. Second semester. Required second year forestry. Four recitations, one-half day field work. Laboratory deposit, \$1.00. Professor KIRKLAND.

A study of the individual tree; forest ecology; the forest as a whole; treatment of the forest regions; forest types; silvical characters of trees; seed collecting; nursery practice; transplanting.

5. **FOREST MENSURATION.** Four credits. First semester. Two recitations and six hours field or laboratory work. Laboratory deposit \$2.00. Required of all juniors and graduate students. Assistant Professor CLARK and Mr. KNAPP.

The construction and use of common types of log rules and hypsometers; methods of computing volumes of logs and trees; the principles involved in the use of form factors; the construc-

tion and use of volume tables; the elements of scaling and cruising. Text: Graves' Forest Mensuration.

6. **FOREST MENSURATION.** Four credits. Second semester. Two recitations, six hours field or laboratory work. Laboratory deposit \$2.00. Required of all juniors and graduate students. Professor WINKENWERDER and Mr. KNAPP.

Methods of studying growth in diameter and volume. The construction of growth and yield tables. Text: Graves' Forest Mensuration.

7. **WOOD TECHNOLOGY.** Four credits. First semester. Required of juniors and graduate students. Laboratory deposit \$2.00. Professor WINKENWERDER and Mr. KNAPP.

Wood structure, leading to the identification of the commercial timbers of the United States. The physical and chemical properties of wood. Each student is required to prepare permanent microscopic mounts of fifty species. Text: Record's Economic Woods.

7a. **WOOD IDENTIFICATION.** Two credits. First semester. Open to students in other departments of the university who upon consultation can show ability to carry the work. Professor WINKENWERDER and Mr. KNAPP.

This course includes only the laboratory work of course 7. Two three-hour laboratory periods a week. Laboratory deposit \$2.00. Text: Record's Economic Woods.

7b. **ADVANCED WOOD TECHNOLOGY.** Two credits. Either semester.

A continuation of the laboratory work of course 7. Open to seniors and graduate students. Prerequisite, forestry 7. Laboratory deposit \$2.00. Mr. KNAPP.

8. **FOREST ECONOMICS.** Two credits. Second semester. Required in junior or senior year, all groups. Associate Professor KIRKLAND.

The forest as a natural resource; the forest compared with other natural resources; history of the conservation movement; the special relation of forests to conservation problems; the relation of forests to climate, soil, erosion, irrigation, water-power, navigation, grazing, public health, industry and labor; forest taxation, and tariff on timber. Open to students in other departments.

9. **FOREST HISTORY AND POLICY.** Two hours. First semester. Required of juniors in Group 1. Associate Professor KIRKLAND.

Forest policy of the United States; forestry in the states and our island possessions; the rise of forestry abroad.

10. **FOREST ADMINISTRATION.** Two credits. Second semester. Required of seniors in Group I and graduates in Group III. Associate Professor KIRKLAND.

Objects of forest administration; regulations and instructions governing disposal of timber, range, and all other forest resources; use and disposal of land; rights-of-way; protection against fire, and trespass; improvement work; fiscal matters; principles and details of each subject, including investigations, reports, permits, use of all forms, supervision of work; suggestions and demonstrations.

11-12. **FOREST MANAGEMENT.** Four credits, first semester. Five credits, second semester. Required of seniors in Groups I and II and graduates in Group III. Associate Professor KIRKLAND.

Economic management of forest lands; consideration of the normal forest; forest valuation; forest finance; regulation of the yield; working plans; forest administration; forest management on national forests. In the second half of the second semester the work is transferred to the field.

13. **ADVANCED DENDROLOGY.** Three credits. First semester. Required of seniors in Group I and graduates in Group III. Mr. KNAPP.

An extension of course 1 covering the identification and distribution of all important commercial tree species of the United States.

14. **FIELD FOREST MENSURATION.** Two credits. Second semester. Required of seniors and graduates in all groups. Associate Professor CLARK.

This course will be given in the field the second half of the semester in connection with the field work in lumbering and forest management. It supplements and enlarges upon the work of timber estimating and mapping as given in courses 5 and 6.

16. **WOOD PRESERVATION.** Two credits. Second semester. Required of seniors in all groups. Prerequisite, one year of chemistry. Professor WINKENWERDER.

The decay of timber and methods of preventing it; the various methods of preservative treatment; the treatment of special products. Report work on commercial treating plants.

16a. **ADVANCED WOOD PRESERVATION.** Two credits. First or second semester. Primarily for graduate students. Elective. Professor WINKENWERDER and Mr. Goss.

A laboratory course for students who wish to specialize in forest products. Assigned readings, problems with the open tank plant and special studies at the local commercial plants.

17-18. **LOGGING ENGINEERING.** Five credits first semester. Six credits second semester. Required of all seniors and graduates. Assistant Professor CLARK.

The construction and use of all types of logging machinery and equipment. The organization of logging companies, capital required. Construction of logging railroads, landings, camps, water systems, etc. Topographic and railroad surveying applied to logging operations. Organization and cost of operations. Lectures, demonstrations at plants manufacturing logging machinery, field work in nearby logging camps. During the second half of the second semester the work is transferred to the field where extensive work in logging engineering is carried on.

19. **TIMBER PHYSICS.** Three credits. First semester. Required of juniors in all groups. Laboratory deposit \$1.00. Mr. Goss.

Various stresses which wood must resist; methods of making tests; theory of flexure; relation between moisture and strength; between specific gravity and strength; mechanical properties of wood.

19a. **ADVANCED TIMBER PHYSICS.** Two credits. Either semester. For seniors and graduates. Elective. Mr. Goss.

A laboratory course which enlarges upon the work offered in course 19.

21. **FOREST UTILIZATION.** Three credits. First semester. Required of seniors and graduates in all groups. Professor WINKENWERDER.

The methods of harvesting and the manufacture of secondary forest products; statistics of production; markets. The utilization of waste. Important foreign products imported into the United States. Classroom work supplemented by visits to industries engaged in the utilization of secondary forest products.

\*22. **SCIENTIFIC MANAGEMENT.** Two credits. Second semester. Associate Professor KIRKLAND.

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\* Not given in 1913-1914.

Fundamental principles of scientific management, with special reference to the lumber industry.

24. **ADVANCED SILVICULTURE.** Two credits. First semester. For seniors and graduates. Prerequisite, forestry 4. Associate Professor **KIRKLAND.**

Advanced work for students who desire to specialize in silviculture and management.

25-26. **SEMINAR.** One credit. The year. For seniors and graduates. Professor **WINKENWERDER,** Associate Professor **KIRKLAND,** Mr. **KNAPP.**

Reviews, assigned readings, reports, and discussions on current periodical literature and the more recent Forest Service publications.

27-28. **RESEARCH.** Two credits. Either semester or both. For seniors and graduates.

29. **GENERAL FORESTRY.** Two credits. First semester. Offered only to students not regularly enrolled in the College of Forestry, and may be taken at the University or as extension course by correspondence. Professor **WINKENWERDER.**

The natural history of the tree and of the forest; the forests of Oregon and Washington; the forest as an economic factor (including forest influences); the nature and control of forest fires; harvesting the forest crop; the utilization of forest and wood waste; the status of forestry in the United States; forestry in the Pacific Northwest. Lectures, assigned readings and reports.

30. **CHARACTERISTICS OF TREES.** Two credits. Second semester. Offered only to students not regularly enrolled in the College of Forestry, and may be taken at the University or as a correspondence course. Mr. **KNAPP.**

The identification, distribution, life-habits, and uses of the trees of the Pacific Northwest. Lectures supplemented by laboratory work and field trips.

31. **TEACHER'S COURSE.** One credit. Either semester. Offered only as a correspondence course. Must be accompanied or preceded by course 29. Professor **WINKENWERDER.**

The following courses, scheduled only in the new five year course (Group III, page 218), will not be offered in 1913-1914.

32. **SCALING AND CRUISING.** Two credits. Second semester. Assistant Professor **CLARK,** Mr. **NELSON.**

33-34. **FOREST PRODUCTS.** Two credits. The year. Professor **WINKENWERDER.**

35. **GENERAL LUMBERING.** Four credits. First semester. Assistant Professor **CLARK** and Special Lecturers.

36. **ADVANCED FOREST MANAGEMENT.** Six credits. Second semester. For graduate students only. Prerequisite Forestry 11 and 12. Associate Professor **KIRKLAND.**

The following additional changes will also be made in the new five year group:

Courses 16 and 16a in Wood Preservation will be combined into one four-hour course. Likewise courses 19 and 19a in Timber Physics. Course 21 will be made a five-hour course with laboratory work. Course 17 will be changed from five to four hours.

#### SPECIAL SHORT COURSES IN FORESTRY AND LUMBERING

Session 1914—January 5 to March 28.

**OBJECT.** The short courses are planned to meet the needs of persons already engaged as forest rangers or guards, who are desirous of increasing their efficiency, of those who intend to take up this work, of timber land owners, and of lumbermen engaged in woods work.

#### NATURE OF THE WORK

The work is intensely practical in its nature. Instruction is given by lectures, demonstrations, and laboratory and field exercises. In so far as it may be advisable the student is allowed with the consent of the dean to select from the list of subjects offered those best adapted to meet his individual needs. The courses of study are arranged into 2 groups: I, The Ranger Group, and II, The Lumbermen's Group. See special statement under each below.

#### EXPENSES

|  |              |
|--|--------------|
| Deposit for materials supplied.....                                | \$2.00       |
| Deposit to insure care in use of instruments<br>(returnable) ..... | \$2.00       |
| Board and lodging, per month .....                                 | \$20-\$25.00 |
| Books, drawing instruments, etc., about.....                       | \$15.00      |
| Field trips .....  | \$10-\$15.00 |

**NOTE.**—The total expenses for the twelve weeks, exclusive of transportation to and from the University need not exceed one hundred dollars.

## REGISTRATION AND TERMS OF ADMISSION

Persons who intend to enroll for any of the short courses should present themselves for registration at the Good Roads building on the University grounds on January 3 or 5. Although students will be permitted to register later than the days set it will be of advantage for the student to have his registration completed in time to take up the class room work promptly on Tuesday, January 6. At the close of the session a statement will be issued to each student showing the work which was satisfactorily completed.

Admission to classes is without examination, but applicants must be at least 20 years old and show ability to carry the work with profit to themselves. Those who wish to carry the work in lumbering should in addition have worked at least three months in a logging camp.

## GROUP I. THE RANGER COURSE

This course may be pursued for either one or two years during the months specified. The work of the second year consists largely of a continuation of the subjects studied the first year, enlarging upon them and fitting the student to carry on the more difficult work he is likely to meet with in his profession. The United States Forest Service cooperates with the University in this course by assisting in the work of instruction. The subjects included in this course are the following:

## OUTLINE OF SUBJECTS

*Regular First Year Subjects.*      *Regular Second Year Subjects.*

- |                               |                          |
|-------------------------------|--------------------------|
| 1s. Silviculture              | 13s. Silviculture        |
| 2s. Forest Measurements       | 14s. Forest Measurements |
| 3s. Forest Surveying          | 15s. Forest Surveying    |
| 4s. Geology (rocks and soils) | 16s. Forest Management   |
| 5s. Characteristics of Trees  | 17s. Logging             |

Additional subjects which may be taken either first or second year (electives):

- 6s. Forest Administration
- 7s. Forest Botany
- 8s. Forest Law
- 9s. First Aid to Injured
- 10s. Veterinary Science
- 11s. Diseases of Trees
- 12s. English Composition

## II. LUMBERMEN'S GROUP

This course of studies is offered for the benefit of men actively engaged in work in the woods who wish instruction and practice in cruising, scaling, simple methods of topographic and railroad surveying, and the fundamental technical problems encountered in modern logging operations on the Pacific Coast. It is not expected that, in the short time allowed for this work, the men will become fully equipped logging engineers. The aim of the course is to help young men already familiar with the elementary principles to increase their efficiency in matters that demand some technical knowledge. For this reason all applicants should present evidence that they have worked at least three months in a logging camp.

## REQUIRED SUBJECTS IN LUMBERMEN'S COURSE

- 2s. Forest Measurements
- 3s. Forest Surveying
- 17s. Logging
- 9s. First Aid to Injured.

In addition to the above a limited number of subjects may be selected from the Ranger Group. Selections from the following are suggested:

- 5s. Characteristics of Trees.
- 4s. Geology
- 8s. Forest Law
- 1s. Silviculture.

## DESCRIPTION OF SUBJECTS

The subjects are here arranged according to number as scheduled in the outlines.

1s. SILVICULTURE. Three lectures or recitations a week, field work additional. Mr. KNAPP and Mr. MUNGER.

The requirements of trees for soil, light, water and climate; the special requirements of the trees of the Northwest. The reproduction of trees, how to secure new growth after logging by natural reproduction; systems of cutting to this end. Reproduction by seeding and planting, seed collecting; nursery practice; transplanting.

2s. FOREST MEASUREMENTS. (a) General Mensuration. Two lectures and one-half day field work a week. Assistant Professor CLARK.



The theory of construction and the use of log rules; their comparative values; other units for measuring timber. The construction and use of height measures and diameter measures; how to make and use volume tables.

(b) **Scaling.** Lectures accompanied by extensive practical exercises in the woods. This work is given during the last four weeks of the course. Mr. NELSON.

Methods of deducting for defects; the keeping of scale records; log grading.

(c) **Cruising and Mapping.** Lectures accompanied by extensive field practice. The last two weeks of the course are largely given over to field practice. Assistant Professor CLARK.

The methods of cruising timber in use in the Northwest; how to tell defect and allow for it; woods mapping; preparation of cruising reports.

3s. (C. E. 17). **FOREST SURVEYING.** First year. Two lectures and two four-hour laboratory periods. Laboratory deposit three dollars. Mr. NEWTON.

Engineering drawing, topographical and map drawing. Instruction and field practice in the use of the chain, hand compass, and Forest Service compass, hand level, clinometer and transit in direct application to the requirements of the U. S. Forest Service.

4s. **GEOLOGY.** First year. Two lectures or recitations a week. Assistant Professor SAUNDERS.

Common minerals, manner of their occurrence and identification; mining lode and placer work; how to select ore samples and use gold pan; work confined mainly to that which will assist in determining the validity of mineral and coal claims. Soils, classification; liability to erosion.

5s. **CHARACTERISTICS OF TREES.** Two lectures or recitations and one two-hour laboratory period a week. Professor WINKENWERDER.

Simple characters by which the local trees may be recognized, both in the summer and winter condition; their classification, distribution and use.

6s. **FOREST ADMINISTRATION.** Three lectures or recitations a week. Associate Professor KIRKLAND, Mr. CECIL, Mr. MACMILLAN, Mr. BENEDICT.

(a) **Policies.** Objects of forest administration. Use of the

national forests; timber sales; privileges, and grazing policies; organization of the Forest Service; duties and qualifications of forest officers.

(b) **Methods.** Regulations and instructions governing disposal of timber, range and all other forest resources; use and disposal of land; rights of way; protection against fire and trespass; improvement work; fiscal matters; investigations, reports, permits, use of forms and supervision of work.

**7s. FOREST BOTANY.** One two-hour laboratory period a week.  
**Mr. HOTSON.**

A study of roots, stems, leaves, flowers and their modifications. Fruits and seeds. How plants are named and how to find their names. Special emphasis is placed on range plants.

**8s. FOREST LAW.** A series of eight to twelve special lectures.  
**Mr. BUCK.**

Interpretation of state and federal land, mining, live stock, water and forest laws; rulings and decisions; rules of practice before U. S. land offices; what constitutes trespass; what constitutes evidence and how to get it; authority of forest officers; when and how to make arrests.

**9s. FIRST AID TO INJURED.** Ten lectures. **Dr. HALL.**

What to do in case of accidents, how to use bandages; the treatment of shock, bruises, cuts, burns, and poisoning. Demonstrations.

**10s. VETERINARY SCIENCE.** Two lectures or recitations a week.  
**Dr. HARRINGTON.**

The handling of common diseases of animals, simple operations. The minor ailments met with every few days are given special attention and specific directions given as to treatment. The stock business; feeds and feeding; breeding; care and management of live stock; stock judging.

**11s. DISEASES OF TREES.** Six to ten lectures. **Mr. HOTSON.**

How fungi are distributed, how they get into the trees and what they do in them. General causes and nature of decay. The general principles underlying the treatment of diseased trees.

**12s. ENGLISH COMPOSITION.** A special class in English Composition will be arranged providing a sufficient number of men express a desire for this work.

13s. **SILVICULTURE.** For second year students. Three lectures a week, field work additional. Associate Professor KIRKLAND.

A continuation of course 1s. Forest ecology; forest regions, and forest types are emphasized. Silviculture systems of management.

14s. **FOREST MEASUREMENTS.** For second year students. Two lectures and one-half day field work. Assistant Professor CLARK.

(a) Advanced work in cruising, topographic mapping and reports. Reports will include detailed forest descriptions, stumpage values, log grades, detailed cost and management of operations; additional practice in scaling.

(b) The construction of volume tables; valuation surveys by the volume curve and arbitrary group methods; methods of obtaining mean and periodic annual growth in height and diameter. Each part of the work demonstrated by field practice.

15s. (C. E. 18). **FOREST SURVEYING.** For second year men. Two lectures and two four-hour laboratory periods. Laboratory deposit three dollars. Mr. NEWTON.

Traversing by various conventional methods. June 11th and mining claim surveys, plane triangulation and topographical work. U. S. Public Land Subdivision.

16s. **FOREST MANAGEMENT.** For second year students. Three lectures or recitations a week. Associate Professor KIRKLAND.

Principles of compound interest as applied to forest property; valuation of forest land; methods of ascertaining the value of forest property; valuation of forest land; methods of ascertaining the value of the forest at different ages as a basis for sales; exchange and damage suits; determining the rotation; plans of management for continuous revenue; forest taxation.

17s. **LOGGING.** Primarily for students in the Lumbermen's Course. Assistant Professor CLARK.

This course confines itself to Pacific Coast conditions. General problems involved in modern logging; detailed study of machines used; operations involved; capital required; cost of logging; topographic mapping; logging spurs.

# SCHOOL OF LAW

## FACULTY

THOMAS FRANKLIN KANE, PH. D., President.

JOHN T. CONDON, LL. M., Dean and Professor of Law.

HARVEY LANTZ, A. M., LL. B., Professor of Law.

GEORGE S. COLE, LL. B., Professor of Law.

IVAN W. GOODNER, LL. B., Professor of Law.

ORVILLE PORTER COCKERILL, A. B., LL. B., Assistant Professor in Law.

EARL G. RICE, A. B., LL. B., Instructor in Law.

## ADMISSION TO THE LAW SCHOOL

To be admitted to regular standing in the Law School students must, in addition to presenting credits or passing examinations entitling them to admission to any other school or college of this University, present credits or pass examinations equivalent to sixty college hours in the College of Liberal Arts of this University or other college or university of recognized standing, plus eight hours in physical training or its equivalent. But beginning with September, 1913, students entering the College of Liberal Arts of this University with the intention of pursuing the study of law, should enroll in the Pre-Law Course, as outlined below, or take a course including the regular freshman and sophomore prescription of that college.

## PRE-LAW CURRICULUM

A course designed for students who will begin law after having taken only the two years college work as required for their admission to the Law School.

The student must take either the prescribed courses in the College of Liberal Arts or the course outlined below:

### FIRST YEAR

|   |         |
|---|---------|
| English (1, 2), Freshman composition..... | 8 hours |
| History, (English or American).....       | 8 hours |
| Chemistry, Zoology or Botany.....         | 8 hours |

(Preferably in the order named).

College Mathematics (1b, 2b) or foreign language..... 8 hours  
 (If the student has taken two years of Latin, it is recommended that he take Roman Law).

Physical or Military Training.

Hygiene and Library.

#### SECOND YEAR

Political and Social Science ..... 8 hours  
 (Either Principles of Sociology and Elementary Economics or American Government).

Philosophy (Two of the following subjects:..... 8 hours  
 Introduction to Philosophy; Ethics; Logic or Psychology; or History of Philosophy.

Sixteen hours from among the following subjects:

Physics; the continuation of a foreign language; English Constitutional History; Political and Social Science; Philosophy; English Literature, a year of Science.

Physical or Military Training ..... 8 hours

For the third and fourth years in the College of Liberal Arts students must classify themselves under some one of the groups as offered, either a regular course or the combined Arts-Law course.

#### ADVANCED STANDING

If, in addition to satisfying the entrance requirements for regular standing in the Law School, the student has earned credits in another law school of satisfactory standing, by regular attendance for at least one academic year of not less than eight months, 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. Not more than two years' credit will be allowed for such work. The right is reserved to refuse advance credit in law in whole or in part, save upon examination. Candidates for advanced standing must spend at least one full college year in this school.

#### SPECIAL STUDENTS

No person will be admitted as a special student in law unless he is twenty-one years of age and his general education is such as to entitle him to take the state bar examination.

Special students who comply with these requirements will be admitted to take such work in law as their previous preparation

enables them to carry successfully, and upon satisfactory completion of sufficient law work to entitle them to take the state bar examination, will be given a certificate or affidavit entitling them to apply for examination. Students who intend to take this method must file notice of their intention to study law with the clerk of the Supreme Court as required by law.

#### SPECIAL STUDENTS BECOMING CANDIDATES FOR DEGREE

Special students may become candidates for a degree upon complying with all the entrance requirements as above set forth in reference to regular students. If a special student intends to become a candidate for a degree by clearing up his entrance requirements during his law studies, he must notify the Dean of the Law School upon registration. Such students will be permitted to carry a limited amount of work in the College of Liberal Arts or the College of Science to enable them to clear up their entrance requirements in law.

#### COMBINED CURRICULA IN ARTS AND LAW

This combined course allows the student with a good record to complete the A. B. and LL. B. in six years. It is open only to those students who have maintained a uniformly good record for scholarship during the first three years of Arts and Sciences.

The student is enrolled in the College of Liberal Arts during the first three years. If at the end of three years he has a uniformly good record for scholarship and has earned ninety or more credits, including all the required work and major and minor, he may for the fourth year register in the Law School for the first year's work in law and must earn in the College of Liberal Arts additional credits sufficient to make his total of arts and science credits amount to ninety-six, and earn in the Law School at least twenty-four credits in the first year law work, to apply on his A. B. degree, thus making his one hundred twenty credits required for the A. B. degree. The A. B. degree will be granted upon the completion of both courses.

The last two years of this combined course are devoted to completing the rest of the required work in the Law School.

Students are strongly advised to complete their full ninety-six credits in Arts and Sciences by the end of the third year, so they can enter the law work clear in the fourth year.

Students from other schools entering this University with advanced standing may take advantage of this combined course, provided they are registered in the College of Liberal Arts for at least one full year's work and earn at least thirty credits in this University before entering the law work.

This privilege will not be extended to normal graduates attempting to graduate in two years nor to undergraduates of other colleges, who enter this University with the rank of senior.

### THESIS

It is the desire of the faculty to encourage original investigation and research by the students. Each candidate for a degree is required to prepare and deposit with the Dean of the School of Law, before the beginning of the spring vacation of his senior year, a thesis of not less than thirty folios in length, upon some legal topic selected by the student and approved by the faculty. The student will be examined by the faculty upon this thesis. It must be printed or typewritten, and securely bound, and is to be kept permanently in the Library of the Law School.

### CARKEEK PRIZE FOR THESIS UPON WASHINGTON LAW

Mr. Vivian M. Carkeek, of the Seattle bar, a graduate of this Law School, class of '01 (the first class to graduate from this Law School) offers an annual prize of twenty-five dollars for the best thesis submitted by members of the senior class, candidates for the degree of bachelor of laws, upon a subject of Washington law, or upon a subject of peculiar interest to Washington lawyers, the subject to be selected by the Dean of the Law School.

### EVENING COURSES IN LAW

The University offers courses in law in the evening, open to those who are not able to attend in the day time. The entrance and graduation requirements for the evening school are the same as for the day school. The studies pursued in the evening school are exactly the same and the same textbooks are used, and the same instructors conduct the course. The evening classes meet three times each week. Monday, Wednesday and Friday.

### INSTRUCTION IN OTHER DEPARTMENTS

Students of the Law School may pursue studies, for which they are prepared, in other departments of the University without charge except that in the laboratory courses the usual lab-

oratory deposits will be required. Those wishing to take advantage of this opportunity must procure permission and proper credentials from the Dean of the Law School.

#### LIBRARIES

The library of the Law School contains about ten thousand well selected volumes, and considerable additions will be made to it each year.

The University library contains about fifty-two thousand volumes and is especially strong in reference works.

The public library of the city of Seattle is open to the free use of our students and is within easy distance of the campus by street car.

#### DEGREES

The degree of bachelor of laws (LL. B.) will be conferred on all students who comply with the entrance requirements for regular students stated hereinbefore, remain in residence in the school for three school years, successfully complete all the required law work provided in this Law School and in addition such electives as will with the required work aggregate eight-two credits, and comply with all the rules and regulations of the faculty and board of regents of this University.

Students admitted to advanced standing based upon credits earned at another law school may count that work towards graduation, subject to the restrictions heretofore stated.

#### EXAMINATION

The members of each class are examined daily throughout the year in their studies, and may be subjected to written examinations at any time in the discretion of the faculty without notice. At the end of each semester the members of each class are subject to written examinations on the courses during the year and their promotion is dependent on successfully passing such examination.

To receive the degree of bachelor of laws it is necessary to pass satisfactory examinations in the entire course of three years. Students who pass these examinations with distinguished excellence will receive the degree of bachelor of laws cum laude.

#### FEES

A tuition fee of forty dollars per annum for day students and twenty dollars per annum for evening students is charged in the



Law School, one-half payable at the beginning of each semester.

A diploma fee of five dollars is charged all students to whom diplomas are issued.

#### ADMISSION TO THE BAR

It is provided by an act of the legislature of the State of Washington that the graduates of this Law School shall be admitted to the bar of the courts of this state upon motion without examination.

#### OTHER INFORMATION

Information on subjects not covered by the foregoing statement will be cheerfully furnished in answer to communications addressed to the Law School of the University of Washington, University Station, Seattle, Washington.

**SCHOOL OF LAW****COURSE OF INSTRUCTION**

1. **AGENCY.** Two credits. First semester. Reinhard's Cases on Agency, Supplemented by Washington Cases. Professor GOODNER.

5, 6. **CONTRACTS.** Six credits. The year. Williston's Cases on Contracts. Professor LANTZ.

9. **CRIMINAL LAW.** Two credits. First semester. Mikell's Cases on Criminal Law and Criminal Procedure (Abridged Edition), supplemented by the Washington Criminal Code and Cases. Assistant Professor COCKERILL.

13. **HOW TO FIND THE LAW.** Two credits. First semester. This course consists of five lectures on legal bibliography followed by a study of the system of legal classification employed in the leading Digests, etc., used by lawyers, and a series of selected practical problems in finding and keeping a record of the law. Professor CONDON.

16. **PERSONS.** Two credits. Second semester. Woodruff's Cases on Domestic Relations and the Law of Persons, supplemented by Washington Cases. Professor LANTZ.

19, 20. **PLEADING.** Four credits. The year. Ames' Cases on Pleading and Whittier's Cases on Common Law Pleading, first semester; Hinton's Cases on Code Pleading and Hepburn's Development of Code Pleading as collateral reading, second semester. Assistant Professor COCKERILL.

24. **PROCEDURE.** Two credits. Second semester. Mikell's Cases on Criminal Law and Criminal Procedure (Abridged Edition) first half of semester, second half of semester, civil actions in the Justice and Superior courts of the State of Washington. Assistant Professor COCKERILL.

27, 28. **PROPERTY.** Four credits. The year. Gray's Cases on Property, (second edition) Volumes I and II. Professor COLE.

30. **STATUTORY INTERPRETATION.** Two credits. Second semester. Washington Cases. Professor CONDON.

33, 34. **TORTS.** Four credits. The year. Ames' Cases on Torts. (2nd. Ed.) first semester; Smith's Cases on Torts, (3rd. Ed.) second semester. Mr. RICE.

#### SECOND YEAR

##### REQUIRED WORK

37, 38. **EQUITY.** Six credits. The year. Ames' Cases in Equity Jurisdiction, volumes I and II, supplemented by Washington Cases. Professor GOODNER.

41, 42. **EVIDENCE.** Four credits. The year. Wigmore's Cases on Evidence, supplemented by Washington Cases and Statutes. Professor CONDON.

45, 46. **PROPERTY.** Four credits. The year. Gray's Cases on Property, (2nd. Ed.) volumes III and V. Professor COLE.

##### ELECTIVES

In addition to the required courses second year students must elect from the following such courses as will, with their required work aggregate fourteen hours.

49. **BILLS AND NOTES.** Two credits. First semester. Huffcut's Cases on Negotiable Instruments. Professor LANTZ.

52. **CARRIERS.** Two credits. Second Semester. Green's Cases on Carriers. This course is a prerequisite to course 139. Professor LANTZ.

56. **DAMAGES.** Two credits. Second semester. Mechem's and Gilbert's Cases on Damages, supplemented by Washington Cases. Assistant Professor COCKERILL.

60. **PARTNERSHIP.** Two credits. Second semester. Gilmore's Cases on Partnership. Assistant Professor COCKERILL.

63, 64. **PRIVATE CORPORATIONS.** Four credits. The year. Warren's Cases on Private Corporations, supplemented by Washington Cases. Professor COLE.

67, 68. **PROCEDURE.** Four credits. The year. This course will relate to the procedure in civil actions in the superior courts. Professor GOODNER.

72. **QUASI-CONTRACTS.** Two credits. Second semester. Woodruff's Cases on Quasi-Contracts. Mr. RICE.

75. SALES. Three credits. First semester. Williston's Cases on Sales and Washington Statutes and Cases. Assistant Professor COCKEBILL.

78. TAXATION. Two credits. Second semester. Goodnow's Cases on Taxation and Washington Statutes and Cases. Professor CONDON.

81. TORTS. Two credits. First semester. Washington Cases. This course is designed to cover the Law of Negligence and the Workmen's Compensation Act for the State of Washington. Mr. RICE.

85. WASHINGTON STATUTE LAW. Two credits. First semester. Washington Cases. Professor CONDON.

### THIRD YEAR

#### REQUIRED WORK

91, 92. CONSTITUTIONAL LAW. Four credits. The year. First semester Federal, second semester, State of Washington. McClain's Cases on Constitutional Law and Washington Cases. Professor CONDON.

95, 96. PROPERTY. Four credits. The year. Gray's Cases on Property (2nd Ed.), volume VI for first semester and Washington Statutes and Cases on Community Property for second semester. Professor COLE.

#### ELECTIVES

In addition to the required courses, third year students must elect from the following or any second year subjects which they have not taken in their second year, such courses as will, with the required work aggregate twelve hours.

99. ADMIRALTY. Two credits. First semester. Ames' Cases on Admiralty. Professor LANTZ.

102. BANKRUPTCY. Two credits. Second semester. Williston's Cases on Bankruptcy and selected Cases. Professor GOODNER.

105. COMPARATIVE STATUTE LAW. Two credits. First semester. Professor CONDON.

108. CONFLICT OF LAWS. Two credits. Second semester. Lorenzen's Cases on Conflict of Laws. Professor LANTZ.

111. HISTORY OF LAW. Two credits. First semester. Textbook to be selected. Professor CONDON.

115. INSURANCE. Two credits. First semester. Textbook to be selected. Professor LANTZ.

118. JURISPRUDENCE. Two credits. Second semester. Textbook to be selected. Professor CONDON.

122. MINING AND IRRIGATION. Two credits. Second semester. Textbook to be selected. Professor .....

125. MORTGAGES. Two credits. First semester. Wyman's Cases on Mortgages and Washington Statutes and Cases. Professor GOODNER.

128. MUNICIPAL CORPORATIONS. Two credits. Second semester. Smith's Cases on Municipal Corporations and Washington Constitution, Statutes and Cases. Mr. RICE.

132. OFFICE PRACTICE. Two credits. Second semester. Conveyancing and examination of abstracts, care of a law office generally, drawing wills and contracts, preparation of briefs and office accounts. Professor CONDON.

136. PROCEDURE. Two credits. Second semester. This is designed as an advanced course in Washington Practice. It will be largely moot court work, involving the drafting of pleadings, jury trials in the Superior Court and the taking of appeals to the Supreme Court. Professor GOODNER.

139. PUBLIC SERVICE COMPANIES. Two credits. First semester. Wyman's Cases on Public Service Companies. Course 52 is a prerequisite to this course. Professor LANTZ.

143. SURETYSHIP. Two credits. First semester. Ames' Cases on Suretyship. Assistant Professor COCKERILL.

146. TRUSTS. Two credits. Second semester. Kenneson's Cases on Trusts. Professor GOODNER.

149. WILLS. Two credits. First semester. Costigan's Cases on Wills. Professor GOODNER.

No first year student may take more than fifteen hours, no second year student may take more than fourteen hours, and no third year student may take more than twelve hours, in any one semester, without special permission of the Law Faculty, except that a student may take one course in which he has failed to pass.

# COLLEGE OF MINES

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## FACULTY.

**THOMAS FRANKLIN KANE, PH. D.,** Johns Hopkins, **PRESIDENT.**

**MILNOR ROBERTS, A. B.,** Stanford, Professor of Mining Engineering and Metallurgy, **DEAN.**

**HENRY LANDES, A. M.,** Harvard, Professor of Geology and Mineralogy.

**\*ALMON HOMER FULLER, M. S., C. E.,** Lafayette, Professor of Civil Engineering.

**JOHN THOMAS CONDON, L. L. M.,** Northwestern, Professor of Law.

**HORACE BYERS, PH. D.,** Johns Hopkins, Professor of Chemistry.

**TREVOR KINCAID, A. M.,** Washington, Professor of Zoology.

**FREDERICK ARTHUR OSBORN, PH. D.,** Michigan, Professor of Physics.

**ROBERT EDOUARD MORITZ, PH. N. D.,** Strassburg, Professor of Mathematics and Astronomy.

**CARL EDWARD MAGNUSSON, PH. D., E. E.,** Wisconsin, Professor of Electrical Engineering.

**EVERETT OWEN EASTWOOD, C. E., A. M.,** Virginia, Professor of Mechanical Engineering.

**D. C. HALL, PH. B., M. D., Sc. M.,** Chicago, Professor of Physical Training.

**E. J. MCCAUSTLAND, B. C. E., M. C. E.,** Cornell, Professor of Civil Engineering.

**CHARLES CHURCH MORE, M. S., C. E.,** Lafayette, Associate Professor of Civil Engineering.

**HENRY KREITZER BENSON, PH. D.,** Columbia, Professor of Chemistry.

**JOSEPH DANIELS, S. B., M. S.,** Lehigh, Assistant Professor of Mining Engineering and Metallurgy.

**VANDERVEER CUSTIS, PH. D.,** Harvard, Assistant Professor of Economics.

**FRANK MARION MORRISON, A. B.,** Michigan, Assistant Professor of Mathematics.

**LOREN DOUGLAS MILLIMAN, A. B.,** Michigan, Associate Professor of English.

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\*Absent on leave during 1912-18.

- GEORGE SAMUEL WILSON, B. S., Nebraska, Assistant Professor of Mechanical Engineering.
- CHARLES M. HARRIS, C. E., Cornell, Assistant Professor of Civil Engineering.
- E. A. LOEW, B. S., Wisconsin, Assistant Professor of Electrical Engineering.
- CLARENCE RAYMOND COREY, E. M., Montana, Instructor in Mining Engineering and Metallurgy.
- HENRY LOUIS BRAKEL, A. M., Washington, Instructor in Physics.
- FRANK EDWARD JOHNSON, E. E., Minnesota, Instructor in Electrical Engineering.
- GEORGE IRVING GAVETT, B. S., C. E., Assistant Professor in Mathematics.
- CHARLES EDWARD WEAVER, Ph. D., Assistant Professor in Geology.
- JOHN W. MILLER, B. S., Instructor in Civil Engineering.
- CHARLES EDWARD NEWTON, E. M., Instructor in Civil Engineering.
- SAMUEL THOMAS BEATTIE, Instructor in Woodwork.
- ALBERT R. SHERMAN, Assistant in Metallurgy.
- JAMES M. McDONALD, Assistant in Mining.
- OLIVER P. SEARING, Assistant in Stock Room.
- HARVEY L. GLENN, B. S., Lecturer on Assaying of Bullion.
- ROBERT F. McELVENNY, E. M., Lecturer on Copper Smelting.
- GEORGE BATES HARRINGTON, S. B., Mass. Inst. Tech., Lecturer on the Economics of Mining.
- DAVID C. BOTTING, State Coal Mine Inspector, Lecturer on Mine Regulations.

#### ADMISSION TO THE FRESHMAN CLASS

To be admitted to the freshman class, students must either (a) pass an examination based on a four-year course amounting in the aggregate to fifteen units, or (b) complete a course of the same length in an accredited school.

The requirements for admission to the freshman class of the College of Mines for curricula I, II, III and IV, leading to the degrees of bachelor of science in mining engineering, in geology and mining, in metallurgical engineering or in coal mining engineering are as follows:

|                 | Units |
|-----------------|-------|
| † English ..... | 4     |
| Algebra .....   | 1½    |

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† A student presenting two units of foreign language may be admitted with three instead of four units of English.

|   |       |
|---|-------|
| Plane geometry .....                    | 1     |
| Solid geometry .....                    | ½     |
| Physics .....                           | 1     |
| Chemistry .....                         | 1     |
| One foreign language.....               | 2     |
| History, American preferred.....        | 1     |
| Or United States history, ½; civics, ½. |       |
| Elective .....                          | 3     |
|   | <hr/> |
| Total.....                              | 15    |

For curriculum leading to the degree of bachelor of science (B. S.), (V) the entrance requirements are the same as the above with the exception that chemistry (one unit) is not a fixed requirement; four instead of three units elective are allowed.

### DEGREES

The four-year curricula in the College of Mines lead to the following degrees: Curriculum I, bachelor of science in mining engineering; curriculum II, bachelor of science in geology and mining; curriculum III, bachelor of science in metallurgical engineering; curriculum IV, bachelor of science in coal mining engineering.

In addition to the above, curriculum V, which leads to the degree of bachelor of science (B. S.), is offered. The entrance requirements for curriculum V are less technical than for the other curricula and the training given by it is broader. Students who graduate in this curriculum are advised to spend an additional year in study and research according to the schedule given for the degree of master of science in mining engineering (M. S. in Min. E.). A new curriculum in coal mining engineering is offered.

The degree of engineer of mines (E. M.) is given to graduates in mining engineering who have practiced their profession for at least three years, and who present a satisfactory thesis. Graduates in metallurgy may receive the degree of metallurgical engineer (Met. E.) under similar conditions.

### MINING AND METALLURGICAL INDUSTRIES AVAILABLE FOR STUDY

Excellent opportunities for becoming familiar with mining and metallurgical operations are open to students in the College of Mines. The amount of time available during the college year for



this purpose is not great and even by using the summer vacations it is impossible for a student to cover the whole field of local industries included in his chosen profession.

Mining machinery of the best type is in operation within easy reach of the University. Much of the heavy mining machinery used in the neighboring states and Alaska is built in the city of Seattle, while the patented machines, such as drills and concentrating tables of all makes are kept in stock and as working exhibits by the firms that supply the North Pacific coast regions. The application of hydraulic mining methods to city grading is being carried on locally on a very large scale and with the most approved pumping and piping appliances and methods. Equally important to the mining engineer are the operations of the steam shovels, which are used largely now in iron, copper and gold mining. The engineers in charge of these plants have given the mining students every opportunity to become familiar with the methods of planning and carrying on the work, and the same statement applies to the mine operators throughout the state.

A brief list of the other available works of interest includes coal mines, with the largest production west of the Rocky mountains; metal mines of gold, silver, copper, arsenic, antimony, iron, etc.; cement plants, glass works, several stone quarries and dressing works; clay mines, clay and pottery works; gravel and sand pits with large production and approved methods; a region of varied geology with many economic minerals; the Tacoma and Everett smelters and refineries; the U. S. assay office; the Irondale steel plant of the Western Steel Corporation, and several plants engaged in metallurgical work.

#### MINING SOCIETY

The Mining Society, affiliated with the American Institute of Mining Engineers, has a membership composed of upperclassmen, graduate students and three sophomores, chosen for the excellence of their records in actual mining. At the monthly meetings of the society addresses are made by prominent mining engineers, and papers descriptive of their summer work are presented by the student members. The officers for 1912-13 are, Oliver P. Searing, president; Fred R. Porter, vice-president; J. E. Berg, secretary; J. M. McDonald, treasurer; A. R. Sherman, corresponding secretary.

**UNITED STATES MINE RESCUE TRAINING STATION**

The United States Mine Rescue Training Station, operated in connection with the College of Mines, occupies a separate building. The "smokeroom," fitted with track and car, overcast airway, doghole, and smudge floors, is the largest of its kind in the country, measuring 25 by 50 feet.

Several sets of the Draeger oxygen apparatus and pulmotor are kept on hand for practice as well as for use in mine rescue work. The purpose of the station is to train miners in the use of oxygen helmets, which are used in cases of mine fires and explosions in both coal and metal mines. From ten days to two weeks' time is required for the course of training. The applicant is taught the construction of the apparatus and is required to wear it for four hours each day, in two periods of two hours each. The practice is carried on in a room filled with gas which cannot be breathed without immediate danger, and the work to be performed is the same as that which would be required in actual mining operations or rescue work. The smokeroom represents a portion of a mine, and is equipped with mine car, track, overcast, timbers and brick. Applicants who have completed the course of training receive a certificate from the U. S. Bureau of Mines.

**INSTRUCTION FOR COAL MINING MEN**

Miners taking the rescue training also receive instructions in the College of Mines on the subjects of mine gases, explosions, and the origin and distribution of Pacific Coast and Alaska coals. Laboratory experiments are carried on to show the methods of analyzing coals and determining the uses to which they may be put. The methods of testing for permissible explosives at the Pittsburg Station and the safe methods of charging, tamping and firing are explained. Special lectures are given by State Mine Inspector Botting, Assistant Inspector Corey and government engineers.

## CURRICULA IN THE COLLEGE OF MINES

## I. CURRICULUM IN MINING ENGINEERING

## FRESHMAN YEAR

| FIRST SEMESTER              | Hours | SECOND SEMESTER            | Hours |
|-----------------------------|-------|----------------------------|-------|
| Mathematics 1a .....        | 4     | Mathematics 2a .....       | 4     |
| Chemistry 1a .....          | 4     | Chemistry 2a .....         | 4     |
| Civil engineering 1, 3..... | 6     | Civil engineering 4 .....  | 2     |
| English 1a .....            | 2     | Civil engineering 20.....  | 4     |
| Mechanical engineering 1..  | 2     | English 2a .....           | 2     |
| Drill .....                 | 2     | Mechanical engineering 9.. | 2     |
|                             |       | Drill .....                | 2     |
|                             | <hr/> |                            | <hr/> |
|                             | 16+3  |                            | 16+4  |

## SOPHOMORE YEAR

|                            |       |                      |       |
|----------------------------|-------|----------------------|-------|
| Geology 1a .....           | 4     | Geology 9 .....      | 4     |
| Mathematics 3a .....       | 4     | Mathematics 4a ..... | 4     |
| Physics 1a.....            | 4     | Chemistry 9 .....    | 4     |
| Physics 1b .....           | 2     | Physics 2a .....     | 4     |
| Civil engineering 28 ..... | 3     | Physics 2b .....     | 1     |
| Drill .....                | 2     | Drill .....          | 2     |
|                            | <hr/> |                      | <hr/> |
|                            | 17+2  |                      | 17+2  |

## JUNIOR YEAR

|                            |       |                                       |       |
|----------------------------|-------|---------------------------------------|-------|
| Mining 4 .....             | 2     | Mining 9 .....                        | 1     |
| Mathematics 5a .....       | 2     | Metallurgy 2 .....                    | 4     |
| Metallurgy 1 .....         | 4     | Geology 17 .....                      | 4     |
| Civil Engineering 41.....  | 4     | Civil engineering 50.....             | 4     |
| Geology 13 .....           | 4     | Economics 1a .....                    | 3     |
| Mechanical engineering 3.. | 2     | Mining practice in summer<br>vacation |       |
| Mining 21 .....            | 1     |                                       |       |
|                            | <hr/> |                                       | <hr/> |
|                            | 16+3  |                                       | 16    |

## SENIOR YEAR

|                     |       |                             |       |
|---------------------|-------|-----------------------------|-------|
| Mining 1 .....      | 4     | Mining 2 .....              | 4     |
| Mining 3 .....      | 2     | Mining 22 .....             | 1     |
| Mining 6 .....      | 1     | Mining 7 .....              | 1     |
| Metallurgy 5 .....  | 3     | Mining 8 .....              | 2     |
| Metallurgy 7 .....  | 3     | Geology 18 .....            | 4     |
| Metallurgy 13 ..... | 3     | Geology 21 .....            | 1     |
|                     | <hr/> | Electrical engineering 6... | 3     |
|                     | 16    |                             | <hr/> |
|                     |       |                             | 16    |

## II. CURRICULUM IN GEOLOGY AND MINING

## FRESHMAN YEAR

|                             | Hours |                            | Hours |
|-----------------------------|-------|----------------------------|-------|
| Mathematics 1a .....        | 4     | Mathematics 2a .....       | 4     |
| Chemistry 1a .....          | 4     | Chemistry 2a .....         | 4     |
| Civil engineering 1, 3..... | 6     | Civil engineering 4.....   | 2     |
| English 1a .....            | 2     | Civil engineering 20.....  | 4     |
| Mechanical engineering 1..  | 2     | English 2a .....           | 2     |
| Drill .....                 | 2     | Mechanical engineering 9.. | 2     |
|                             |       | Drill .....                | 2     |
|                             | <hr/> |                            | <hr/> |
|                             | 16+4  |                            | 16+4  |

## SOPHOMORE YEAR

|                           |       |                      |       |
|---------------------------|-------|----------------------|-------|
| Geology 1a .....          | 4     | Geology 9 .....      | 4     |
| Mathematics 3a .....      | 4     | Mathematics 4a ..... | 4     |
| Physics 1a.....           | 4     | Chemistry 9 .....    | 4     |
| Physics 1b .....          | 2     | Physics 2a .....     | 4     |
| Civil engineering 28..... | 3     | Physics 2b .....     | 1     |
| Drill .....               | 2     | Drill .....          | 2     |
|                           | <hr/> |                      | <hr/> |
|                           | 17+2  |                      | 17+2  |

## JUNIOR YEAR

|                            |       |                            |       |
|----------------------------|-------|----------------------------|-------|
| Mining 4 .....             | 2     | Mining 9 .....             | 1     |
| Metallurgy 1 .....         | 4     | Metallurgy 2 .....         | 4     |
| Metallurgy 3 .....         | 2     | Metallurgy 9 .....         | 2     |
| Geology 13 .....           | 4     | Metallurgy 12 .....        | 3     |
| Geology 20 .....           | 1     | Geology 17 .....           | 4     |
| Civil engineering 23 ..... | 3     | Economics 1a .....         | 3     |
| Mechanical engineering 3.. | 2     | Geology or mining practice |       |
| Mining 21 .....            | 1     | in summer vacation         |       |
|                            | <hr/> |                            | <hr/> |
|                            | 16+3  |                            | 17    |

## SENIOR YEAR

|                    |       |                        |       |
|--------------------|-------|------------------------|-------|
| Mining 1 .....     | 4     | Mining 2 .....         | 4     |
| Mining 6 .....     | 1     | Mining 22 .....        | 1     |
| Metallurgy 5 ..... | 3     | Mining 7 .....         | 1     |
| Metallurgy 7 ..... | 3     | Mining 8 .....         | 2     |
| Geology 20 .....   | 1     | Metallurgy 4 or 6..... | 3     |
| Geology 19 .....   | 4     | Geology 18 .....       | 4     |
|                    | <hr/> | Geology 21 .....       | 1     |
|                    | 16    |                        | <hr/> |
|                    |       |                        | 16    |

III. CURRICULUM IN METALLURGICAL ENGINEERING

FRESHMAN YEAR

| Hours                       |       | Hours                      |       |
|-----------------------------|-------|----------------------------|-------|
| Mathematics 1a .....        | 4     | Mathematics 2a .....       | 4     |
| Chemistry 1a .....          | 4     | Chemistry 2a .....         | 4     |
| Civil engineering 1, 3..... | 6     | Civil engineering 4.....   | 2     |
| English 1a .....            | 2     | Civil engineering 20.....  | 4     |
| Mechanical engineering 1..  | 2     | English 2a .....           | 2     |
| Drill .....                 | 2     | Mechanical engineering 9.. | 2     |
|                             |       | Drill .....                | 2     |
|                             | <hr/> |                            | <hr/> |
|                             | 16+4  |                            | 16+4  |

SOPHOMORE YEAR

|                           |       |                      |       |
|---------------------------|-------|----------------------|-------|
| Geology 1a .....          | 4     | Geology 9 .....      | 4     |
| Mathematics 3a .....      | 4     | Mathematics 4a ..... | 4     |
| Physics 1a .....          | 4     | Chemistry 9 .....    | 4     |
| Physics 1b .....          | 2     | Physics 2a .....     | 4     |
| Civil engineering 28..... | 3     | Physics 2b .....     | 1     |
| Drill .....               | 2     | Drill .....          | 2     |
|                           | <hr/> |                      | <hr/> |
|                           | 17+2  |                      | 17+2  |

JUNIOR YEAR

|                            |       |  |       |
|----------------------------|-------|--|-------|
| Metallurgy 1 .....         | 4     | Mining 9 .....                               | 1     |
| Metallurgy 10 .....        | 3     | Metallurgy 2 .....                           | 4     |
| Civil engineering 41.....  | 4     | Metallurgy 4 .....                           | 3     |
| Economics 1a .....         | 3     | Civil engineering 42.....                    | 8     |
| Mechanical engineering 3.. | 2     | Civil engineering 50.....                    | 4     |
| Mining 21 .....            | 1     | Mechanical engineering 4..                   | 2     |
|                            |       | Metallurgical practice in<br>summer vacation |       |
|                            | <hr/> |  | <hr/> |
|                            | 16+1  |  | 15+2  |

SENIOR YEAR

|                     |       |                    |       |
|---------------------|-------|--------------------|-------|
| Mining 1 .....      | 4     | Mining 22 .....    | 1     |
| Mining 6 .....      | 1     | Mining 2 .....     | 4     |
| Metallurgy 8 .....  | 2     | Mining 8 .....     | 2     |
| Metallurgy 5 .....  | 3     | Mining 7 .....     | 1     |
| Metallurgy 7 .....  | 3     | Metallurgy 6 ..... | 2     |
| Metallurgy 11 ..... | 1     | Metallurgy 8 ..... | 3     |
| Metallurgy 13 ..... | 3     | Geology 18 .....   | 4     |
|                     | <hr/> |                    | <hr/> |
|                     | 17    |                    | 17    |

## IV. CURRICULUM IN COAL MINING ENGINEERING

## FRESHMAN YEAR

|                             | Hours |                            | Hours |
|-----------------------------|-------|----------------------------|-------|
| Mathematics 1a .....        | 4     | Mathematics 2a .....       | 4     |
| Chemistry 1a .....          | 4     | Chemistry 2a .....         | 4     |
| Civil engineering 1, 3..... | 6     | Civil engineering 4.....   | 2     |
| English 1a .....            | 2     | Civil engineering 20.....  | 4     |
| Mechanical engineering 1..  | 2     | English 2a .....           | 2     |
| Drill .....                 | 2     | Mechanical engineering 9.. | 2     |
|                             |       | Drill .....                | 2     |
|                             | <hr/> |                            | <hr/> |
|                             | 16+4  |                            | 16+4  |

## SOPHOMORE YEAR

|                           |       |                      |       |
|---------------------------|-------|----------------------|-------|
| Geology 1a .....          | 4     | Geology 9 .....      | 4     |
| Mathematics 3a .....      | 4     | Mathematics 4a ..... | 4     |
| Physics 1a .....          | 4     | Chemistry 9 .....    | 4     |
| Physics 1b .....          | 2     | Physics 2a .....     | 4     |
| Civil engineering 28..... | 3     | Physics 2b .....     | 1     |
| Drill .....               | 2     | Drill .....          | 2     |
|                           | <hr/> |                      | <hr/> |
|                           | 17+2  |                      | 17+2  |

## JUNIOR YEAR

|                            |       |                           |       |
|----------------------------|-------|---------------------------|-------|
| Mathematics 5a .....       | 2     | Metallurgy 2 .....        | 4     |
| Metallurgy 1 .....         | 4     | Civil engineering 50..... | 4     |
| Civil engineering 41.....  | 4     | Economics 1a .....        | 3     |
| Geology 16 .....           | 3     | Mining 9 .....            | 1     |
| Mining 4 .....             | 2     | Geology 21 .....          | 1     |
| Mechanical engineering 3.. | 2     | Mining 12 .....           | 2     |
| Mining 21 .....            | 1     | Mining 13 .....           | 2     |
|                            | <hr/> |                           | <hr/> |
|                            | 15+3  |                           | 17    |

## SUMMER PRACTICE IN COAL MINING

## SENIOR YEAR

|                             |       |                              |       |
|-----------------------------|-------|------------------------------|-------|
| Mining 1 .....              | 4     | Mining 20 .....              | 4     |
| Mining 3 .....              | 2     | Mining 7 .....               | 1     |
| Mining 6 .....              | 1     | Mining 8 .....               | 2     |
| Mining 15 .....             | 3     | Electrical engineering 6.... | 3     |
| Mining 14 .....             | 2     | Mining 11 .....              | 2     |
| Mechanical eng. 21 and 40.. | 4     | Metallurgy 14 .....          | 3     |
|                             | <hr/> | Mining 16 .....              | 2     |
|                             | 16    |                              | <hr/> |
|                             |       |                              | 17    |

## V. CURRICULUM IN MINING ENGINEERING

Leading to the degree of Bachelor of Science.

## FRESHMAN YEAR

|                               | Hours |                               | Hours |
|-------------------------------|-------|-------------------------------|-------|
| Mathematics 1a .....          | 4     | Mathematics 2a .....          | 4     |
| Chemistry 1 .....             | 4     | Chemistry 2 .....             | 4     |
| English 1a .....              | 2     | Civil engineering 3 .....     | 4     |
| Modern foreign language... 4  |       | Modern foreign language... 4  |       |
| Civil engineering 1 .....     | 2     | Mechanical engineering 9... 2 |       |
| Mechanical engineering 3... 2 |       | Drill .....                   | 2     |
| Drill .....                   | 2     |                               |       |
|                               | <hr/> |                               | <hr/> |
|                               | 16+4  |                               | 16+4  |

## SOPHOMORE YEAR

|                               |       |                            |       |
|-------------------------------|-------|----------------------------|-------|
| Mathematics 3a .....          | 4     | Mathematics 4a .....       | 4     |
| Chemistry 8b .....            | 4     | Physics 1a .....           | 4     |
| Civil engineering 4 .....     | 2     | Physics 1b .....           | 2     |
| Modern foreign language... 4  |       | Chemistry 9 .....          | 4     |
| Mechanical engineering 3... 2 |       | Civil engineering 20 ..... | 4     |
| English 2a .....              |       | Drill .....                | 2     |
| Drill .....                   | 2     |                            |       |
|                               | <hr/> |                            | <hr/> |
|                               | 16+4  |                            | 18+2  |

## JUNIOR YEAR

|                            |       |                                       |       |
|----------------------------|-------|---------------------------------------|-------|
| Mathematics 5a .....       | 2     | Mining 9 .....                        | 1     |
| Physics 2a .....           | 4     | Metallurgy 1 .....                    | 4     |
| Physics 2b .....           | 1     | Electrical engineering 6... 3         |       |
| Geology 1a .....           | 4     | Civil engineering 41 .....            | 4     |
| Civil engineering 28 ..... | 8     | Geology 9 .....                       | 4     |
| Mining 4 .....             | 2     | Mining practice in summer<br>vacation |       |
|                            | <hr/> |                                       | <hr/> |
|                            | 16    |                                       | 16    |

## SENIOR YEAR

|                            |       |                    |       |
|----------------------------|-------|--------------------|-------|
| Metallurgy 2 .....         | 4     | Mining 2 .....     | 4     |
| Mining 1 .....             | 4     | Mining 7 .....     | 1     |
| Civil engineering 42 ..... | 4     | Metallurgy 8 ..... | 2     |
| Geology 13 .....           | 4     | Geology 17 .....   | 4     |
|                            |       | Geology 21 .....   | 1     |
|                            |       | Economics 1a ..... | 3     |
|                            | <hr/> |                    | <hr/> |
|                            | 16    |                    | 15    |

## GRADUATE COURSE IN MINING ENGINEERING

Following course V and leading to the degree of Master of Science in Mining Engineering.

|                             | Hours |                             | Hours |
|-----------------------------|-------|-----------------------------|-------|
| Mining 10 .....             | 3     | Mining 22 .....             | 1     |
| Mining 6 .....              | 1     | Mining 6 .....              | 1     |
| Metallurgy 7 .....          | 3     | Mining 7 .....              | 1     |
| Mining 8 .....              | 2     | Mining 8 .....              | 2     |
| Metallurgy 13 .....         | 3     | Metallurgy 4 .....          | 3     |
| Elective, engineering ..... | 4     | Geology 18 .....            | 4     |
| Mining 21 .....             | 1     | Elective, engineering ..... | 3     |
|                             |       | Mining 11 .....             | 2     |
|                             | 17    |                             | 17    |

Equivalent courses in Coal Mining Engineering may be substituted for those listed above.

The degree of Master of Science in Mining Engineering will also be conferred upon graduates of this College or of other mining colleges of the first class who complete a year (32 credit hours) of graduate work, including a satisfactory thesis, with the grade of A or B. The candidate must also 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.

## VI. SHORT SESSION FOR MINING MEN

The seventeenth annual Short Session for mining men will open on January 6th, 1914, continuing until April 2d. During that period each year twelve of the instructors in mining engineering offer a course for the benefit of persons who are interested in prospecting, mining, smelting, clay or metal-working. Admission to the classes is without examination. Instruction is given by lectures, laboratory exercises, and visits to mines and plants in operation. The past experience and future aims of each student are taken into consideration, and the character of his work arranged accordingly.

No preparation is needed for this course. Many practical men with an interest in some branch of mining but without much education have obtained satisfactory results from the course; others with a college education and mining experience have gained much up-to-date training and information. Practically all the students attend the following subjects: Mining, field trips, mineralogy, geology, mining law; in addition to these subjects, fire assaying and general chemistry are taken by many of the quartz miners,



while the placer men substitute placer mining and surveying. Subject 3 cannot be taken without subjects 5 and 6. Students who satisfactorily complete a course of study are given a certificate stating the amount and character of work done. For students who return a second year, a special course is arranged in continuation of their previous work.

The advantages of the University laboratories and libraries are open to all. Students may board and room at the dormitories or elsewhere, as preferred. There are no charges, except for material used. Deposits are made to cover the actual cost of supplies drawn by each student, the balance of the deposit being returned at the end of the course. All deposits are made at the beginning of the course.

### SUBJECTS

**A. MINING.** Lectures on prospecting, development, mining systems, timbering, mine transportation, pumping, ventilation, and hydraulic mining. Practice with stamp-milling and concentrating machinery, testing of ores, etc. Two lectures and one afternoon a week. Professor ROBERTS and Assistant Professor DANIELS.

**B. FIELD TRIPS.** An outline study of the operations at neighboring mines, mills, and smelters; geological field studies, followed by laboratory practice on the rocks and minerals found. Saturdays. Professor ROBERTS and Assistant Professor DANIELS.

**C. FIRE ASSAYING.** Lectures on sampling, preparing ores for assay, furnaces, fuels, reagents, and the fire assay of gold, silver, lead, and tin ores. The laboratory work includes the testing of reagents, and the assaying of various ores. One lecture and three afternoons a week in laboratory. Deposit, fifteen dollars. Mr. COREY.

**D. METALLURGY.** A study of the principles of metallurgy for the benefit of those who are engaged in the metal trades or in the mining of ores requiring smelter treatment. Two lectures and one afternoon a week. Deposit, five dollars. Mr. COREY.

**CHEMISTRY 1d. GENERAL CHEMISTRY AND QUALITATIVE ANALYSIS.** Laboratory practice in the determination of the common elements. Three lectures a week, and Saturday laboratory. Deposit, ten dollars. Professor BENSON.

**GEOLOGY B. MINERALOGY.** Instruction and practice in blowpipe analysis, with lectures upon the common minerals, and practice in the identification of minerals by field tests. Twice a week. Deposit, two dollars. Assistant Professor WEAVER.

**GEOLOGY.** Lectures on the elements of geology, the common varieties of rock, metalliferous vein and ore deposits, etc. Twice a week. Assistant Professor WEAVER.

**MINING LAW.** A series of lectures on the mining laws of the United States and Alaska. Illustrated by drawings and mine maps. Once a week. Assistant Professor DANIELS and special lectures.

**CIVIL ENG. 19. SURVEYING.** Instruction and field practice in the use of simple instruments for making underground and surface surveys; the elements of drawing, lettering, sketch-mapping and field notes; the rules governing mineral surveys. Two lectures and two afternoons a week. Mr. NEWTON.

**CIVIL ENG. 54. HYDRAULIC MINING.** The elements of hydraulics; the flow of water in pipes, flumes and ditches; the methods and costs of placer mining in its various forms. Two lectures a week. Professor McCaustland.

**MECH. ENG. 3. FORGE.** Practice in sharpening and tempering drill steel and picks; systematic training in the making and care of fires, and the application of various heats, drawing, punching, riveting, bending, twisting, upsetting, welding iron and steel, and making and tempering machine tools. Deposit, two dollars. One afternoon a week. Mr. KANE.

**MECH. ENG. 9. MINE TIMBER FRAMING.** Shop work in the cutting, framing and erection of various types of timbers employed in mining operations. Deposit, two dollars. One afternoon a week. Mr. BEATTIE.

**MINING 21. COAL MINING AND RESCUE TRAINING.** For a description of the short courses in coal mining, first aid to the injured and rescue training, see under "Mine Rescue Training Station," page 246. Assistant Professor DANIELS, State Mine Inspector BOTTING and Government Engineers.

**DEPARTMENTS OF INSTRUCTION****MINING ENGINEERING AND METALLURGY****(Mines Building)**

PROFESSOR ROBERTS, ASSISTANT PROFESSOR DANIELS, MR. COREY; LECTURERS, MR. MO ELVENNY, MR. HARRINGTON, MR. GLENN; ASSISTANTS, MR. SHEERMAN, MR. MC DONALD, MR. SEARING.

**I. MINING ENGINEERING**

Coal miners who are taking the ten days' course in the U. S. Mine Rescue Training Station are given daily instruction and laboratory demonstrations in the subjects of mine gases, ventilation, the origin and composition of coals, and coal analysis.

1. **MINING.** Four credits. First semester. Prerequisite, Senior standing. Professor ROBERTS.

Three lectures and one laboratory period. Lectures on mining, power generation, air compression, hoisting and transportation. Practice with air compressors, machine drills and mine equipment in laboratories and local plants.

2. **ORE DRESSING.** Four credits. Second semester. Prerequisite, Mining 3. Senior or graduate. Deposit, five dollars. Professor ROBERTS and Assistant Professor DANIELS, and Mr. McDONALD.

Two lectures and two laboratory periods. A detailed study of certain branches of ore dressing followed by a full test of ores by mill run checked by assays.

3. **MILLING.** Two credits. First semester. Prerequisite, Junior standing. Professor ROBERTS and Assistant Professor DANIELS, and Mr. McDONALD.

One lecture and one laboratory period. Lectures and mill practice in the principles of ore dressing.

4. **MINE OPERATION.** Two credits. First semester. Prerequisite, Junior standing. Professor DANIELS.

A general study of mine development and operation, considering particularly layout of plant, haulage, hoisting, pumping, etc. The Renton mine is studied in detail. Regular course of training under U. S. Bureau of Mines is required.

5. **FIELD WORK.** One credit. First semester. Professor ROBERTS, and Assistant Professor DANIELS.

One laboratory period (or its equivalent in total time required) and monthly seminar. Class or individual visits to a mine, mill, smelter, or engineering work, to be followed by a report on field notes and sketches.

6. **THESIS OUTLINE.** One credit. First semester. Professor ROBERTS, and Assistant Professor DANIELS, and Mr. COREY.

The outlining of the senior thesis, the gathering of material, study of references, making of drawings, maps, etc., in preparation for the work of the second semester. See mining 8. Senior or graduate.

7. **MINE INSPECTION.** One credit. Second semester. Professor ROBERTS, Assistant Professor DANIELS, and Mr. COREY.

Ten days in the second semester. An excursion of the senior class to a mine or mining district.

8. **THESIS.** Two credits. Second semester. Professor ROBERTS, Assistant Professor DANIELS and Mr. COREY.

A continuation of Mining 6. Weekly consultation and seminars.

9. **JUNIOR EXCURSION.** One credit. Second semester. Required for senior standing. Professor ROBERTS, Assistant Professor DANIELS, and Mr. COREY.

An excursion of the junior class to a mine or mining district. Sometimes made in connection with the senior excursion, mining 7.

10. **MINING METHODS.** Three credits. First semester. Senior or graduate. Professor ROBERTS.

Two lectures and one laboratory period. A detailed study of certain branches of mining.

11. **MINE MANAGEMENT.** Two credits. Second semester. Prerequisite, Senior or graduate standing. Professor DANIELS.

Two lectures. A study of the organization and administration of engineering plants, involving the keeping and interpretation of cost accounts, the efficiency of labor and methods, the financial, legal and social aspects of engineering operation.

12. **COAL RESOURCES OF NORTH AMERICA.** Two credits. Second semester. Two lectures. Prerequisite, Mining 4. Assistant Professor DANIELS.

The occurrence of coal in North America with especial reference to geographic and geologic distribution and structure; study of the various types of coals; classification of coals; commercial requirements of coals.

13. **COAL MINING METHODS.** Two credits. Second semester. Two lectures. Prerequisite, Mining 4. Assistant Professor DANIELS.

Methods of prospecting coal seams; determination of structure and content; methods of development and working, timbering, etc. A detailed study is made of a nearby mine.

14. **MINE GASES AND VENTILATION.** Two credits. First semester. Two lectures. Prerequisite, Mining 13. Assistant Professor DANIELS.

Composition and properties of mine gases, methods of testing. Lighting of mines. Principles of ventilation; ventilating machinery.

15. **MINING PLANT.** Three credits. First semester. Three drafting periods. Prerequisites, Mining 13, 14. Graduate. Assistant Professor DANIELS.

Design of plant and machinery employed in mining and preparing coal for market.

16. **COAL MINING MACHINERY.** Two credits. Second semester. Two lectures. Prerequisite, Senior standing. Graduate. Assistant Professor DANIELS.

Study of coal cutting machines, mine locomotives, fans, hoists, pumps, and tippie or breaker machinery with special reference to application to coal mining.

20. **COAL WASHING.** Four credits. Second semester. Two lectures and two laboratory periods. Prerequisite, Mining 3. Graduate. Assistant Professor DANIELS.

A detailed study of methods of preparing coal for market, together with laboratory tests and runs on various coal to determine best methods of preparation.

21. **MINE RESCUE TRAINING.** One credit. First semester. Twenty-five hours' instruction. Assistant Professor DANIELS.

Practice in the care and use of oxygen rescue apparatus, smoke-room training, and first-aid-to-the-injured work. Required of all students in the junior class.

22. **MINING LAW.** One credit. Second semester. Assistant Professor DANIELS and special lecturers.

A series of lectures on the mining laws of the United States and Alaska, dealing particularly with the subject from the standpoint of the prospector, mining engineer and geologist. Illustrated by diagrams and mine maps.

24. **INDUSTRIAL ORGANIZATION.** Two credits. Second semester. Assistant Professor DANIELS.

A study of the principles of industrial organization and scientific management, involving the consideration of handling labor and materials, methods of operation, cost keeping and performance records, interpretation of efficiency data.

## II. METALLURGY

1. **FIRE ASSAYING.** Four credits. First semester. Prerequisite, Chemistry 9. Deposit, fifteen dollars. Mr. COREY, Mr. GLENN and Mr. SHERMAN.

One lecture and three laboratory periods. The testing of reagents, the crushing, sampling and assaying of ores, furnace and mill products for lead, silver, gold and tin; also, the assay of base and dore bullion.

2. **GENERAL METALLURGY.** Four credits. Second semester. Deposit, ten dollars. Professor ROBERTS, Mr. COREY and Mr. McELVENNY.

Two lectures and two laboratory periods. The properties of metals and alloys, fuels, refractory materials, furnaces and the extraction of the common metals from their ores. Visits to smelter.

3. **METALLURGICAL FUELS.** Two credits. First semester. Deposit, five dollars. Assistant Professor DANIELS.

One lecture and one laboratory period. The composition, manufacture and metallurgical uses of natural and prepared fuels; the methods and costs of coking, gas making, and coal briquetting. Furnace and calorimeter tests of various types of fuels.

4. **COPPER AND LEAD.** Three credits. Second semester. Mr. COREY.

Three lectures. The metallurgy of copper and lead, especially the methods of roasting, smelting and refining.

5. **GOLD AND SILVER.** Three credits. First semester. Mr. COREY. Two lectures and one laboratory period. Amalgamation, cyan-

iding, and chlorination of gold and silver ores. Complete tests checked by assays. Deposit, five dollars.

6. **MINOR METALS.** Three credits. Second semester. Two lectures and one laboratory period. Deposit, five dollars. Mr. COREY.

The metallurgy of zinc, antimony, tin, aluminum, nickel, etc.; a study of the plant required, the methods and costs of treatment.

7. **WET ASSAYING.** Three credits. First semester. Prerequisite, Chemistry 9. Deposit, ten dollars. Mr. COREY.

Technical methods for the determination of copper, lead, zinc, etc., in ores and furnace products, etc.

8. **METALLURGICAL ANALYSIS.** Three credits. Second semester. Prerequisite, Chemistry 9. Deposit, ten dollars. Mr. COREY.

Technical methods of analysis of coals, slags, and industrial products.

9. **PYROMETRY AND ALLOYS.** Two credits. Second semester. One lecture and one laboratory period. Deposit, three dollars. Mr. COREY.

Methods of measuring high temperatures. Union of metals by fusion, compression and electro-deposition; the behavior of metals and alloys under heat. Laboratory practice in thermal measurements, synthesis and testing of alloys.

10. **METALLOGRAPHY.** Two credits. First semester. One lecture and laboratory period. Deposit, three dollars. Assistant Professor DANIELS.

The constitution and microstructure of metals and alloys, especially iron and steel. The preparation and study of metal sections, photomicrography and the use of the microscope to aid in testing structural iron and steel.

11. **METALLURGICAL PROBLEMS.** One credit. First semester. Prerequisites, Chemistry 9, and Metallurgy 2. Mr. COREY.

Physical chemistry for the metallurgist, slag calculations, etc., illustrated by figures quoted from the present practice at a number of smelting plants.

12. **REFRACTORIES.** Three credits. Second semester. One lecture and two laboratory periods. Deposit, three dollars. Mr. COREY.

Methods of testing clays, refractory materials, cement-making materials.

13. **DESIGN OF PLANT.** Three credits. First semester. Three drafting periods. Senior or graduate. Professor ROBERTS and Assistant Professor DANIELS.

The designing of a piece of equipment or a structure for mining, milling or metallurgical purposes.

14. **IRON AND STEEL.** Three credits. Second semester. Three lectures. Assistant Professor DANIELS.

The metallurgy and manufacture of commercial iron and steel, with special reference to their properties and uses in engineering work.

**THESIS.** See Mining 6 and 8.

**SUMMER FIELD WORK.** See Mining 7 and 8.

#### **COURSES GIVEN BY DEPARTMENTS OF OTHER COLLEGES OF THE UNIVERSITY.**

For description of courses taken by mining students which are given by departments of other colleges of the University, see under "departments of instruction" as follows: For courses in departments of Liberal Art or Science, page 93; for courses in departments of Engineering, page 197.



# MUSIC

## (FINE ARTS)

(The Music Building)

THOMAS FRANKLIN KANE, PH. D., (Johns Hopkins), PRESIDENT.

IRVING MACKEY GLEN, A. M., (Oregon), Director.

WALTER EDMUND SQUIRE, (Berlin, Paris), A. A. G. O., Assistant to the Musical Director.

MORITZ ROSEN, (Warsaw, Russia), Teacher of Violin.

ADA DEIGHTON HILLING, (Trinity, London), Teacher of Harmony.

GRACE BLANCHE ZIMMERMAN, A. B., (U. of W.), Teacher of Piano.

KATHERINE ELEANOR HALL, A. B., (Drury), Teacher of Vocal Music.

LUOY K. COLE, Teacher of Public School Music.

ANNE VOLKER, (Oberlin), Assistant in Piano.

AGNES BIRKMAN, Teacher of Public School Drawing.

H. C. LAGOUBGUE, (Conservatoire, Paris), Band Master.

At the January meeting of the Board of Regents of the University a plan for the organization of a college of fine arts, previously recommended by the University faculty, was approved. Instruction is now being offered in theoretical and applied music, with courses leading to the bachelor's degree in music, public school drawing, and in some phases of dramatic art. Announcements will be made from time to time as additional instruction is offered.

### I. MUSIC

PROFESSOR GLEN, MR. SQUIRE, MR. ROSEN, MRS. HILLING, MRS. HALL, MISS ZIMMERMAN, MISS COLE, MR. LAGOUBGUE, MISS VOLKER.

1-2. FUNDAMENTALS OF MUSIC. Two credits. The year. Mr. SQUIRE.

A lecture course in the fundamentals of musical composition and criticism, dealing with elementary theory. This course aims to show development of musical forms from the traditional chant to the symphony, and is intended to make music more intelligible to the listener.

3-4. HARMONY. Two credits. The year. Mrs. HILLING.

Study of intervals, construction, relation and progression of chords, and harmonization of melodies.

5-6. **MUSIC FORM.** Two credits. The year. Mrs. HILLING.  
An essential study of music leading directly to composition.

7-8. **ADVANCED HARMONY.** Two credits. The year. Mrs. HILLING.

Analysis, form, counterpoint, in three or more parts. Composition.

9-10. **HISTORY OF MUSIC.** Two credits. The year. Professor GLEN.

A survey course, covering the progress of musical development from the primitive period to the modern.

12. **MUSICAL APPRECIATION.** Two credits. Second semester. Professor GLEN.

A course planned to make music contribute to liberal culture. Actual presentation of musical masterpieces of different periods, by mechanical devices.

13-14. **CHORAL STUDY.** One credit. The year. Professor GLEN.

The University chorus provides the opportunity, for those qualified, to study the more serious as well as the lighter forms of choral composition. Candidates must satisfy the director as to the extent of their musical ability.

15-16. **APPLIED MUSIC.** One to five credits. The year.

(a) Piano.....Mr. SQUIRE and Miss ZIMMERMAN.

(b) Violin .....Mr. ROSEN.

(c) Voice.....Mrs. KATHERINE HALL.

B. A. students may earn one or two credits a semester; Mus. Bac. students carry a larger number of credits—two to five—as indicated in the set courses. Students enrolled in these courses will be given opportunity, upon demonstration of the required ability, to participate in the public recitals of the department.

17-18. **ORCHESTRAL STUDY.** One credit. The year. Professor GLEN.

The University orchestra affords an unusual opportunity for the study of the various forms of orchestral composition. None admitted without the recommendation of the director.

19-20. **SIGHT READING.** Two credits. The year. Miss COLE.

A course designed for those who may be naturally well equipped for choral work, but who do not possess the requisite ability to read music.

21-22. **PUBLIC SCHOOL MUSIC.** Two credits. The year. Miss COLE.

This course is arranged for the special benefit of those interested in the teaching of music in the public schools, and will, as far as possible, cover both content and method. Only those will be eligible to this course who, in the judgment of the instructor, may be musically well enough equipped to pursue it to advantage.

Credit in courses 13-14 and 17-18 will be given only upon the recommendation of the director, and in course 15-16 upon the recommendation of the instructor in charge and the director.

**CURRICULUM LEADING TO BACHELOR OF MUSIC DEGREE  
WITH VOCAL MUSIC MAJOR:**

**FRESHMAN**

Vocal music, Cr. 8; history of music, Cr. 4; choral study, Cr. 2; English composition, Cr. 8; Italian, Cr. 8; physical training or drill, Cr. 4. Total credits, 34.

**SOPHOMORE**

Vocal music, Cr. 8; harmony, Cr. 4; choral study, Cr. 2; French or German, Cr. 8; physics, Cr. 8; physical training or drill, Cr. 4. Total credits, 34.

**JUNIOR**

Vocal music, Cr. 8; harmony, Cr. 4; choral study, Cr. 2; French or German, Cr. 8; political science, Cr. 6; elective, Cr. 2; Total credits, 30.

**SENIOR**

Vocal music, Cr. 8; choral study, Cr. 2; musical appreciation, Cr. 2; program, Cr. 6; philosophy, Cr. 4; elective, Cr. 8. Total credits, 30.

**CURRICULUM LEADING TO BACHELOR OF MUSIC DEGREE  
WITH INSTRUMENTAL MUSIC MAJOR:**

**FRESHMAN**

Instrumental music, Cr. 10; history of music, Cr. 4; English composition, Cr. 8; Italian, Cr. 8; physical training or drill, Cr. 4. Total credits, 34.

**SOPHOMORE**

Instrumental music, Cr. 10; harmony, Cr. 4; French or German, Cr. 8; physics, Cr. 8; physical training or drill, Cr. 4. Total credits, 34.

## JUNIOR

Instrumental music, Cr. 10; harmony, Cr. 4; German or French, Cr. 8; political science, Cr. 6; elective, Cr. 2. Total credits, 30.

## SENIOR

Instrumental music, Cr. 10; musical appreciation, Cr. 2; philosophy, Cr. 4; program, Cr. 6; elective, Cr. 8. Total credits, 30.

NOTE.—A total of two years of German and two years of French pursued either in high school or in the University is required for the degree. If a student has finished this language work in the high school he shall substitute electives in the University. If he presents neither French nor German for admission he must supply the deficiency above the sixteen hours allowed for in the outlined courses, without credit.

If a student has had two years of Latin he may be excused from the second required year of French or German, at the discretion of the head of the department of music.

The requirements for admission to the courses leading to the degree of bachelor of music shall be identical in academic subjects with those admitting to any course in the College of Arts and Sciences. In addition thereto, there shall be required the equivalent of four years' work in music of the following character:

First Year: Rudiments of music. Melody and rhythm. Principles of touch and technique. Major scales. Studies by Gurliitt, Gaynor, Martin, Lambert, etc.

Second Year: Continuation of work in melody and technique. All major scales. Begin the study of chords in three tones. Studies by Lynes, Behr, Lambert, Tschalkowski, etc.

Third Year: Begin minor scales, essential chords of scales in three positions. Studies by Bertini, Berens, Czerny, Kohler, Clementi, Moszkowski, etc.

Fourth Year: Scales, chords of scales in all positions. Studies by Bertini, Czerny, Loeschorn; easier Mozart and Haydn sonatas, Bach (Little Preludes and Fugues), Schumann.

NORMAL DIPLOMA. Graduates in music may receive in addition to their bachelor of music degree a normal diploma, entitling them to teach music in the public schools, by meeting the requirements of the department of education and such departmental

requirements as the department of music may see fit to institute. This will necessitate a total of at least 132 credits.

**CERTIFICATES OF PROFICIENCY FOR MUSIC SUPERVISORS.** These may be issued by the head of this department to students who may not have completed the requirements for the degree, but who have satisfactorily completed certain stipulated courses at the discretion of the department. These courses include History of Music, Musical Theory, Elementary Harmony, Education, Public School Music, Vocal Music and Drawing.

**COLLEGE COURSES IN APPLIED MUSIC.** The courses outlined are not necessarily arbitrary. They simply indicate the amount and character of the work that the student is expected to cover for his musical degree. Credit will be given for equivalent courses pursued elsewhere.

#### PIANO

**Freshman:** All major and minor scales, chords, in four-note forms, diminished seventh, arpeggios of all common chords, major and minor fundamental position. Studies, Czerny, Op. 299; selected studies of Cramer, Berens, Op. 61; sonatas, Reinecke, Krauss, Mozart, Haydn; two part inventions, Mendelssohn songs, Schuman, Op. 15, MacDowell, etc.

**Sophomore:** Chords in inversions. Studies of Cramer, Czerny, two and three-part inventions of Bach, Maydn, and Mozart, Sonatas; Weber, Schubert, Mendelssohn, Greig, and Moszkowski.

**Junior:** Scales in thirds, sixths, and tenths. Studies, Op. 740 Czerny, Clementi, Gradus ad Parnassum; Bach's French and English suites and fugues; Beethoven, Schumann; easier concertos of Mozart, Mendelssohn; Chopin nocturnes and waltzes.

**Senior:** Studies in Chopin, Clementi, Bach; Well-tempered Clavichord, Brahms, Grieg, Korsakow, MacDowell, etc.

#### VOCAL MUSIC

The course in vocal music is even more flexible than that outlined for piano study. The purpose is to develop the voice and musical understanding so that the best in vocal music may be faithfully interpreted. The fact of having studied vocal music for four years will not necessarily entitle a student to graduation.

**Freshman:** Practical work in voice placing, breathing, studies from among the following: Concone, Op. 9; Marchesi, Op. 1; Panofka, Op. 85; Vaccai, Book I; simple Italian and English songs.

**Sophomore:** Progressive tone work; Bordogni, Concone, Marchesi, Panofka, simple Italian arias, Italian and English songs.

**Junior:** Tone work; advanced technique. Arias from Italian, French and German operas. German song classics; modern French and English songs.

**Senior:** Tone work and technique. Repertoire in opera and oratorio. Recitals; Senior Program.

#### VIOLIN

**Freshman:** Violin schools, Dancla, DeBeriot; Exercises, Wohlfahrt, Op. 45; Etudes, Kayser.

**Sophomore:** Scales, Hrimaly; Studies, Blumenstengel Op. 33, Mazas, Books I and II; Concerto, Accoly; Scene de Ballet, DeBeriot.

**Junior:** Exercises. Schradieck, Books I and II; Etudes, Kreutzer, Fiorillo; Rode: Concertos, De Beriot 7 and 9, Spohr 2 and 8.

**Senior:** Scales, Rosen; Etudes, Gavini; Dont Op. 35; Bach Sonata for violin alone; Concertos, Bruch, Mendelssohn, Wieniawski, D-Minor, Vieuxtemps, No. 4.

**NOTE.**—In the last semester the student is obliged to memorize one sonata by Bach for violin alone and one of the concertos given in the fourth year.

**FEES.** Since most of the work in the courses in applied music must necessarily be of the character of private or individual instruction, the student will be required to pay tuition fees for this work. These fees are payable to the University Bursar and are collected in advance for the entire semester. No rebate will be made for the loss of lessons falling on national or University holidays nor will such lessons be made up by the teacher. The rate charged takes these into consideration. The following quotations are based on one lesson per week. More than one lesson per week will be charged for at the same rate. All lessons are one-half hour in length:

**Piano:** Mr. Squire, \$24.00 per semester; Miss Zimmerman, \$20.00 per semester.

**Vocal Music:** Mrs. Hall, \$24.00.

**Violin:** Mr. Rosen, \$24.00 per semester.

It has been necessary in some cases, and for special reasons, for the director to give private instruction. In such instances the

fee is \$40 per semester for one lesson weekly. Arrangements may be made for individual instruction in other musical courses if necessary or desirable.

Piano for practice may be rented at the Music Building at the following rates:

One hour daily, \$4.00 per semester.

Two hours daily, \$7.50 per semester.

Additional hours, \$2.50 per semester.

All rental charges must be paid in advance. No rebate in these charges will be allowed. Lessons lost through enforced absence may not be made up unless the teacher in charge has been previously notified of the intended absence and is willing to accept the excuse for the absence.

## II. DRAWING

1-2. PUBLIC SCHOOL DRAWING. Two credits. Miss BIRKMAN.

A course, which combined with regular work in methods, is primarily intended for those who wish to teach or supervise drawing in the public schools. The course includes: drill in line drawing; placing and proportion; comparative measurements; free hand practice; principles of perspective; drawing from objects and nature; use of pencil and charcoal; water color theory of color; painting from nature; elementary design and composition; principles of design; practice in simple, abstract designs; landscape and flower composition; free hand lettering.

## III. RELATED COURSES IN OTHER DEPARTMENTS

Attention is called to a few courses in other departments of the University which are open to University students who are looking forward toward fine arts study: Greek 15 (Greek art); Home Economics 21, 22 (home architecture and decoration); Philosophy 19-20 (Esthetics); and Public Speaking and Debate 1, 2, 5-6 (Oral expression and dramatic reading). See "Department of Instruction, Colleges of Liberal Arts and Science."

# COLLEGE OF PHARMACY.

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## FACULTY

- THOMAS FRANKLIN KANE, PH. D., Johns Hopkins, PRESIDENT.  
CHARLES WILLIS JOHNSON, PH. C., PH. D., Michigan, DEAN and  
Professor of Pharmaceutical Chemistry.  
HORACE G. BYERS, PH. D., Johns Hopkins, Professor of Chemistry.  
THEODORE CHRISTIAN FRYE, PH. D., Chicago, Professor of Botany.  
WILLIAM MAURICE DEHN, PH. D., Illinois, Assistant Professor of  
Physiological Chemistry.  
JOHN WEINZIRL, PH. D., Wisconsin, Professor of Bacteriology.  
E. VICTOR SMITH, PH. D., Northwestern, Assistant Professor of  
Zoology and Physiology.  
GEORGE BURTON RIGG, B. S., A. M., Washington, Instructor in  
Botany.  
AGNES FAY MORGAN, S. B., S. M., Chicago, Instructor in Chemistry.  
EDITH HINDMAN, PH. C., B. S., Washington, Graduate Assistant in  
State Food and Drug Analysis.  
JOSEPHINE JOHNSON, PH. C., B. S., Washington, Graduate Assistant  
in Materia Medica.  
EARL M. PLATT, PH. C., Washington, Graduate Assistant in Pharm-  
acy.  
HARRY SIEGEL, Assistant in State Food and Drug Analysis.  
LOUIS S. GILBERTSON, PH. C., Washington, Assistant in Pharmacy.  
FREDERICK MORGAN PADEFORD, PH. D., Yale, Professor of English  
Literature.  
FREDERICK ARTHUR OSBORN, PH. D., Michigan, Professor of Physics.  
PIERRE JOSEPH FREIN, PH. D., Johns Hopkins, Professor of French.  
ROBERT EDOUARD MORITZ, PH. N. D., Strassburg, Professor of Mathe-  
matics.  
FREDERICK WILLIAM MEISNEST, PH. D., Wisconsin, Professor of  
German.

## CURRICULA

Two curricula of study have been outlined. 1. A two-year course which prepares its graduates for responsible positions in the profession of pharmacy, and as pharmaceutical chemists. 2. A four-year course which includes the professional training of the two-year work, and which leads to a regular collegiate degree. Students taking the four-year course will be granted the degree



of pharmaceutical chemist (Ph. C.) upon the completion of the work of the two-year course; and the degree of bachelor of science (B. S.) when four years of work is completed.

#### SPECIAL OPPORTUNITIES OF THE FOUR-YEAR COURSE

The four-year course is outlined to meet the needs of several classes of students. Those students who wish to extend the work of the two-year course will find opportunity in the third and fourth year for specializing in pharmaceutical chemistry and pharmacy, thus becoming proficient in the chemistry of alkaloids, volatile oils, and other plant principles; the testing of foods and drugs for adulteration, both chemically and by use of the microscope; also opportunity for training in bacteriology, zoology, modern foreign language, English, mathematics, and physics. Students with the four-year degree are well prepared not only to take up the regular practice of pharmacy, but also to fill positions as technical and manufacturing chemists and as teachers. The work of the four-year course forms an excellent foundation for the study of medicine. Many of our graduates go to eastern medical schools and find their pharmaceutical training of great help in their medical studies.

#### COLLEGE TRAINING A REQUIREMENT FOR REGISTRATION IN WASHINGTON

Copy of resolutions passed by the Washington State Board of Pharmacy at the meeting held in Seattle, December 27, 28, 29 1911:

"Whereas, section 4 of the pharmacy law of the State of Washington, chapter 213, specifically states that the board of pharmacy may prescribe the preliminary education of applicants for examination, and whereas the board now assembled deems it proper that specific educational requirements should now be formulated; therefore, be it resolved, That on and after July 1st, 1913, the Washington State Board of Pharmacy shall require all applicants for examination as registered pharmacists to submit evidence of having satisfactorily completed one year of college work in a college of pharmacy recognized by the board, and on and after July 1st, 1914, the board shall require of said applicants for examination as registered pharmacists evidence of having graduated from a college of pharmacy embracing at least a two-year course and recognized by the board. Be it further resolved, That, since section 3 of the pharmacy law of the State of Washington, chapter 213, gives the board of pharmacy the power to

approve certain colleges of pharmacy, this board shall recognize only the two state schools of pharmacy in Washington and such other schools and colleges in the country as hold membership in the American Conference of Pharmaceutical Faculties. Be it further resolved, That, since it is not the desire of the board of pharmacy to work hardship on any registered pharmacist now residing in another state who may in the future desire to become registered in the State of Washington, any pharmacist holding full registration papers obtained in another state prior to July 1st, 1912, shall be admitted to examination as candidate for registration in the State of Washington. Be it further resolved, That a copy of these resolutions shall be sent by the secretary to each registered pharmacist, registered assistant pharmacist and registered apprentice in the State of Washington, and to the Pharmaceutical Press of the United States on or before March 1, 1912."

### ENTRANCE REQUIREMENTS

#### 1. CANDIDATES FOR DEGREES

To be admitted clear, as candidate for a degree, in either the two or four-year course of the College of Pharmacy, the student must either (a) pass an examination based on a course amounting in the aggregate to fifteen units, or (b) present a certificate of having completed a four-year course in an accredited high school. Prospective students should mail to the Recorder of the University a detailed statement of studies completed in the high school. This statement must be signed by the principal of the high school. As a rule, the accredited school list of other state universities will be accepted by the University of Washington.

The required subjects are as follows:

|   | Units     |
|---|-----------|
| *English .....  | 4         |
| A foreign language.....   | 2         |
| Algebra .....   | 1½        |
| Plane geometry .....  | 1         |
| Physics .....   | 1         |
| History (American history preferred) or United States history and civics..... | 1         |
| Elective .....  | 4½        |
| <b>Total.....</b>   | <b>15</b> |

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\*A student presenting two units of a foreign language may be admitted with three instead of four units of English.

Candidates may present for entrance any modern foreign language in which they have had a course fairly equivalent to a high school course in English, *i. e.*, which they have used as a spoken and written language and of which they have studied the grammar and literature.

NOTE 1.—To count as a "unit" a subject must be taught five times a week, in periods of not less than forty-five minutes, for a school year of not less than thirty-six weeks.

## 2. ENTRANCE REQUIREMENTS FOR STUDENTS NOT CANDIDATES FOR DEGREES

Students over twenty years of age may enter as specials and pursue the regular two year course of study providing they present at least four entrance units as follows: English: one unit required, and three units selected from the following subjects: foreign language, algebra, science, history, commercial geography, bookkeeping. Such students will not be classed as candidates for a degree, but, upon satisfactorily completing the two year course, as outlined, will receive recognition for it as explained under the heading of certificate graduates. Students desiring to enter under the above conditions should send to the Dean before the opening of the school year credentials signed by the proper school authorities giving detailed information concerning their preparation. Students who are not graduates of high schools will not be admitted as specials unless they have been out of high school at least one year. Special students may become candidates for a degree upon clearing all entrance conditions as listed under the heading Candidates for Degrees.

## DEGREES

1. The degree of pharmaceutical chemist (Ph. C.) will be granted to any student who has fulfilled the entrance requirements, and has completed the two-year course as outlined.

2. The degree of bachelor of science (B. S.) will be conferred upon those who comply with the entrance conditions and complete the four-year course. A degree with honors may be conferred upon a student of the College of Pharmacy, if recommended for this distinction by the dean.

3. The degree of master of science (M. S.) in pharmacy will be conferred upon graduates of the four-year course who complete at least one year of graduate work as outlined and present a satisfactory thesis.

## CERTIFICATE GRADUATES

Students not candidates for degrees who satisfactorily complete the studies outlined in the two-year course will be granted a certificate of graduation. This certificate entitles the holder to take the state board of pharmacy examination for full registration as a pharmacist.

## FOOD AND DRUG LEGISLATION

The enactment of the Food and Drugs Act by Congress, and of similar legislation by most of the states (Washington included), has placed very great importance upon pharmaceutical education. It is at once apparent that a knowledge of drugs is equally important with chemistry in the administration and enforcement of this legislation. The graduate in chemistry is not wholly qualified to act as food and drug inspection chemist for the government, states, private individuals, and corporations, if he is not trained in those subjects included in the collective name of pharmacy. These allied subjects are theory and practice of pharmacy, manufacturing pharmacy, drug assaying, pharmaceutical botany, study of the United States Pharmacopœia and National Formulary, pharmacognosy, materia medica and therapeutics, etc. A great many pharmaceutical chemists are needed to carry out the analytical processes involved in the enforcement of this legislation, but the number of men adequately trained is very limited. Students with high school training are urged to consider these opportunities and to prepare themselves for such positions. The dean of the College of Pharmacy is chemist for the Washington State Department of Agriculture and is also in close touch with the government food and drug work. Courses are offered that will fit students for this line of work.

## LABORATORY DEPOSIT

Pharmacy. The total deposit for first year students is twenty-eight dollars per semester. Second year students have a deposit of twenty-five dollars for the first semester and twenty dollars for the second semester. The student pays only the actual cost of drugs and chemicals used; the remainder of the deposit, less breakage, is returned at the end of the semester.

PHARMACY, MATERIA MEDICA AND CHEMISTRY  
LABORATORIES

Rooms devoted to pharmacy, materia medica and chemistry are located in Bagley Hall, a three-story fireproof building. Spe-

cial sections are provided for pharmacy students in general, organic and qualitative chemistry. Work in prescription practice receives special attention in a room constructed and arranged as a model prescription pharmacy. The materia medica room contains a museum of several hundred samples of official and unofficial crude drugs. It also contains an extensive collection of commercial and biological products manufactured and donated by the H. K. Mulford Company of Philadelphia, Pa., Parke, Davis and Company of Detroit, Michigan, and Eli Lilly and Company, of Indianapolis, Indiana. One room is given to drug assaying and food analysis. The examination of official food and drug samples for the state is under the direction of the Dean of the College of Pharmacy. A well equipped laboratory is devoted to this purpose. Pharmacy students taking botany, physiology and bacteriology have well equipped laboratories in Science Hall.

## CORRESPONDENCE

Inquiries in regard to the College of Pharmacy may be addressed to the Dean of the College or to the Recorder of the University. Students desiring to enter the college will be furnished on request proper blanks for filing entrance credentials. Entrance credentials should be sent to the university before the opening of the school year. The student will then be notified if their credentials are satisfactory. Copies of the Bulletin of the College of Pharmacy may be had upon application.

## REQUIREMENTS FOR GRADUATION

1. WITH DEGREE OF PHARMACEUTICAL CHEMIST
2. WITH CERTIFICATE OF GRADUATION

## FIRST YEAR

|                    | Hours |                    | Hours |
|--------------------|-------|--------------------|-------|
| Chemistry 1e ..... | 4     | Chemistry 2e ..... | 4     |
| Chemistry 1f ..... | 4     | Chemistry 2f ..... | 4     |
| Pharmacy 1 .....   | 4     | Pharmacy 2 .....   | 4     |
| Botany 13 .....    | 4     | Botany 14 .....    | 4     |
|                    | 16    |                    | 16    |

## SECOND YEAR

|                                 |    |                     |    |
|---------------------------------|----|---------------------|----|
| Pharmacy 3 .....                | 2  | Pharmacy 4 .....    | 2  |
| Pharmacy 5 .....                | 2  | Pharmacy 6 .....    | 2  |
| Pharmacy 7 .....                | 4  | Pharmacy 8 .....    | 4  |
| Pharmacy 9 .....                | 4  | Pharmacy 10 .....   | 4  |
| Bacteriology 5 or Zoology 11 .. | 4  | Chemistry 20a ..... | 4  |
|                                 | 16 |                     | 16 |

**3. WITH DEGREE OF BACHELOR OF SCIENCE**

For graduation with the degree of bachelor of science the student is required to do sufficient work in addition to that of the two-year course to make one hundred and twenty hours of credit. Of the additional work the following courses are required:

Rhetoric, 4 hours; trigonometry, 4 hours; modern language, 16 hours; physics, 8 hours; laboratory science, 16 hours.

The work in laboratory science may be elected in bacteriology, botany, geology, pharmacy, pharmaceutical chemistry, physics, physiological chemistry, physiology, toxicology, and zoology.

**4. WITH DEGREE OF MASTER OF SCIENCE IN PHARMACY**

Graduates of the four-year course may continue work for the master's degree as follows:

Not more than 16 hours work allowed outside of the department of pharmacy. Election may be made from one or more of the following studies:

Bacteriology, 8 to 16 hours; botany, 8 to 16 hours; physics, 8 hours; physiological chemistry, 4 to 8 hours.

Not less than 16 hours work to be elected in the department of pharmacy from the following lines of work:

Manufacturing pharmacy, 4 to 8 hours; toxicology, 4 to 8 hours; chemistry of foods or drugs, 8 to 16 hours; plant analysis, 8 to 16 hours. At least 8 hours of the major work to be a research problem and preparation of a thesis. Examination and thesis to conform to the regulations of the graduate school.

**MILITARY TRAINING AND PHYSICAL CULTURE**

All men students in either the two or four-year course are required to take two years of military training. Women students in the two year course are required to take one year of physical culture and in the four-year course to take two years of physical culture.

**DEPARTMENT OF PHARMACY, PHARMACEUTICAL CHEMISTRY, AND MATERIA MEDICA**

(Office, Room 206, Bagley Hall)

PROFESSOR JOHNSON, MISS HINDMAN, MISS JOHNSON, MR. PLATT, MR. SIEGEL, MR. GILBERTSON

**1. THEORY AND PRACTICE OF PHARMACY.** Four credits. First semester. Mr. PLATT.

The study of the principles of pharmaceutical operations, and the manufacture of such preparations as best illustrate these operations.

Deposit, ten dollars per semester.

**2a-1a. THEORY AND PRACTICE OF PHARMACY.** Four credits. First and second semester. Mr. PLATT and Miss JOHNSON.

To meet the need of students entering the second semester course 1 and 2 are repeated.

**2. PHARMACEUTICAL PREPARATIONS.** Four credits. Second semester. Continuation of course 1.

The study and manufacture of galencial and other preparations. Deposit, ten dollars per semester.

**3. U. S. PHARMACOPOEIA.** Two credits. First semester. Miss JOHNSON.

A study of the inorganic and organic chemicals included in the pharmacopœia. The manufacture, tests for purity, assay and medicinal properties are considered.

**4. U. S. PHARMACOPOEIA AND NATIONAL FORMULARY.** Two credits. Second semester. Miss JOHNSON.

A careful study of the United States pharmacopœia and national formulary with the special object of explaining the chemistry involved in the manufacture of the various compounds and preparations and in the assay processes.

**5-6. PRESCRIPTIONS.** Two credits. The year. Mr. PLATT.

One lecture and one laboratory period of three hours per week. For laboratory work the class is divided into three sections. Deposit, five dollars.

**7. PHARMACOGNOSY.** Four credits. Each semester. Miss JOHNSON.

A study of crude drugs, their source, methods of collecting and preserving, identification, active constituents and adulteration.

**8. PHARMACOLOGY AND THERAPEUTICS.** Four credits. Each semester. Miss JOHNSON.

A study of the action of chemicals, drugs and their preparations on the human organism in health and disease, also the physiological action of the various poisons, their antidotes and emergency treatment in cases of poisoning.

**9-10. DRUG ASSAYING.** Four credits. First semester. Professor JOHNSON.

In first semester experiments in gravimetric and volumetric methods of analysis are given with the idea of training the students in the fundamental principles of quantitative chemistry, and at the same time making them familiar with the analysis of substances of pharmaceutical importance. The second semester's

work includes methods of quantitatively estimating the active constituents of crude drugs and their preparations and the testing of alkaloids.

Deposit, ten dollars per semester.

11-12. **ALKALOIDS AND DRUG ASSAYING.** Four credits. The year. Professor JOHNSON.

A course for juniors and seniors in the study of alkaloids, and other plant principles and the analysis of medicinal preparations.

Deposit, ten dollars per semester.

13-14. **FOOD ANALYSIS.** Four credits. The year. Laboratory, three afternoons per week. Professor JOHNSON.

First semester includes the study of the source, preparation, chemical nature and analysis of fats and oils of food and pharmaceutical use. The second semester includes the analysis of the various food products on the market. Methods of the Association of Official Agriculture Chemists are used.

Deposit, ten dollars per semester.

15-16. **MANUFACTURING PHARMACY.** Credit and time to be arranged. Professor JOHNSON and Mr. PLATT.

An advanced course in pharmaceutical manufacturing, including the manufacture of some of the more difficult of pharmacopœial and national formulary preparations as well as a number of inorganic and organic compounds used in pharmacy and medicine.

Deposit, five or ten dollars, according to hours.

17. **TOXICOLOGY.** Credit and time to be arranged. The year. Professor JOHNSON.

A laboratory course on the detection and estimation of poisons in animal tissues and practice in the preparation of testimony for legal cases.

Deposit, five or ten dollars, according to hours.

18. **INVESTIGATION.** Credit and time to be arranged. The year.

Senior and graduate students may undertake some original investigation in pharmacy, pharmaceutical chemistry or chemistry of foods under the direction of one of the instructors.

Deposit, five or ten dollars, according to hours.



# GRADUATE SCHOOL

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## FACULTY

THOMAS FRANKLIN KANE, PH. D., (Johns Hopkins University),  
PRESIDENT.

J. ALLEN SMITH, PH. D. (University of Michigan), Professor of  
Political and Social Science and Dean of the Graduate School.

ORSON BENNETT JOHNSON, LL. B. (Union College of Law), Pro-  
fessor Emeritus of Zoology.

HENRY LANDES, A. M. (Harvard University), Professor of Geology  
and Mineralogy.

EDMOND STEPHEN MEANY, M. L. (University of Wisconsin), Pro-  
fessor of History.

ALMON HOMER FULLER, M. S., C. E. (Cornell University), Professor  
of Civil Engineering.

JOHN THOMAS CONDON, LL. M. (Northwestern University), Pro-  
fessor of Law.

HORACE G. BYERS, PH. D. (Johns Hopkins University), Professor of  
Chemistry.

CAROLINE HAVEN OBER, Professor of Spanish.

TREVOR KINCAID, A. M. (University of Washington), Professor of  
Zoology.

FREDERICK MORGAN PADELFOED, PH. D. (Yale University), Profes-  
sor of English.

MILNOR ROBERTS, A. B. (Stanford University), Professor of Min-  
ing Engineering and Metallurgy.

ARTHUR SEWALL HAGGETT, PH. D. (Johns Hopkins University),  
Professor of Greek.

FREDERICK ARTHUR OSBORN, PH. D. (University of Michigan), Pro-  
fessor of Physics and Director of the Physics Laboratories.

WILLIAM SAVERY, PH. D. (Harvard University), Professor of Phil-  
osophy.

DAVID THOMSON, A. B. (University of Toronto), Professor of Latin.

CHARLES WILLIS JOHNSON, PH. D. (University of Michigan), Pro-  
fessor of Pharmaceutical Chemistry and Dean of the College  
of Pharmacy.

PIERRE JOSEPH FREIN, PH. D. (Johns Hopkins University), Pro-  
fessor of French.

- THEODORE CHRISTIAN FRYE, PH. D.** (University of Chicago), Professor of Botany.
- ROBERT EDOUARD MORITZ, PH. D.** (University of Nebraska), Professor of Mathematics and Astronomy.
- CARL EDWARD MAGNUSSON, PH. D., E. E.** (University of Wisconsin), Professor of Electrical Engineering.
- HARVEY LANTZ, A. M., LL. B.** (Kent Law School), Professor of Law.
- EVERETT OWEN EASTWOOD, C. E., A. M.** (University of Virginia), Professor of Mechanical Engineering.
- FREDERICK WILLIAM MEISNEST, PH. D.** (University of Wisconsin), Professor of German.
- DAVID CONNOLLY HALL, Sc. M., M. D.** (University of Chicago), Director of Physical Training.
- ELMER JAMES McCAUSTLAND, M. C. E.** (Cornell University), Professor of Municipal Engineering.
- REV. HERBERT H. GOWEN, F. R. G. S., M. R. S. A.,** Professorial Lecturer on Oriental History, Literature and Institutions.
- OLIVER HUNTINGTON RICHARDSON, PH. D.** (University of Heidelberg), Professor of European History.
- GEORGE SEAVERNES COLE, LL. B.** (Kent Law School), Professor of Law.
- IVAN WILBUR GOODNER, LL. B.** (University of Nebraska), Professor of Law.
- WALTER GREENWOOD BEACH, A. M.** (Harvard University), Professor of Social Science.
- IRVING MACKEY GLEN, A. M.** (University of Oregon), Professor of Music.
- CHARLES CHURCH MORE, M. S., C. E.** (Cornell University), Professor of Civil Engineering.
- HENRY KREITZER BENSON, PH. D.,** (Columbia University), Professor of Industrial Chemistry.
- JOHN WEINZIRL, PH. D.** (University of Wisconsin), Professor of Bacteriology.
- HUGO WINKENWERDER, M. F.** (Yale University), Professor of Forestry.
- VERNON LOUIS PARRINGTON, A. B.** (Harvard University), Professor of English.
- FREDERICK ELMER BOLTON, PH. D.** (Clark University), Professor of Education and Director of the Department of Education.

- EDWIN JOHN VICKNER, PH. D. (University of Minnesota), Professor of the Scandinavian Languages.
- HERBERT GALEN LULL, PH. D. (University of California), Associate Professor of Education.
- ALLEN ROGERS BENHAM, PH. D. (Yale University), Associate Professor of English.
- FRANK MARION MORRISON, A. B. (University of Michigan), Associate Professor of Mathematics.
- SAMUEL LATIMER BOOTHROYD, M. S. (Colorado Agricultural College), Associate Professor of Astronomy and Mathematics.
- THOMAS KAY SIDEX, PH. D. (University of Chicago), Assistant Professor of Latin and Greek.
- VANDERVEER CUSTIS, PH. D. (Harvard University), Assistant Professor of Economics.
- WILLIAM MAURICE DEHN, PH. D. (University of Illinois), Assistant Professor of Physiological Chemistry and Toxicology.
- OTTO PATZER, PH. D. (University of Wisconsin), Assistant Professor of French.
- EDWARD McMAHON, A. M. (University of Wisconsin), Assistant Professor of American History.
- EDWIN JAMES SAUNDERS, A. M. (Harvard University), Assistant Professor of Geology.
- JOSEPH KINMONT HART, PH. D. (University of Chicago), Assistant Professor of Education.
- GEORGE IRVING GAVETT, B. S. (C. E.), (University of Michigan), Assistant Professor of Mathematics.
- HANS JACOB HOFF, PH. D. (University of Illinois), Assistant Professor of German.
- ROBERT EYSTAFIEFF ROSE, PH. D. (University of Leipzig), Assistant Professor of Chemistry.
- ROBERT MAX GARRETT, PH. D. (University of Munich), Assistant Professor of English.
- EDGAR ALLAN LOEW, B. S., E. E. (University of Wisconsin), Assistant Professor of Electrical Engineering.
- EDWARD GODFREY COX, PH. D. (Cornell University), Assistant Professor of English.
- STEVENSON SMITH, PH. D. (University of Pennsylvania), Assistant Professor of Orthogenics.
- ELI VICTOR SMITH, PH. D. (Northwestern University), Assistant Professor of Zoology.
- GEORGE WALLACE UMPHREY, PH. D. (Harvard University), Assistant Professor of Spanish.

- HENRY LOUIS BRAKEL, PH. D. (Cornell University), Assistant Professor of Physics.
- CHARLES EDWIN WEAVER, PH. D. (University of California), Assistant Professor of Geology.
- JACOB NEIBERT BOWMAN, PH. D. (University of Heidelberg), Assistant Professor of European History.
- WALTER BELL WHITTLESEY, A. B. (University of Washington), Instructor in French.
- ALLEN FULLER CARPENTER, A. M. (University of Nebraska), Instructor in Mathematics.
- GEORGE BURTON RIGG, A. M. (University of Washington), Instructor in Botany.
- ERNEST OTTO ECKELMAN, PH. D. (University of Heidelberg), Instructor in German.
- JOHN WILLIAM HOTSON, A. M. (McMaster University), Instructor in Botany.
- RALPH HASWELL LUTZ, PH. D. (University of Heidelberg), Instructor in History.
- LEWIS IRVING NEIKIRK, PH. D. (University of Pennsylvania), Instructor in Mathematics.
- HJALMAR LAURITS OSTERUD, A. M. (University of Washington), Instructor in Zoology.
- ATTILIO FILIPPO SBEDICO, PH. D. (University of Pennsylvania), Instructor in French and Italian.
- HARLAN LEO TRUMBULL, PH. D. (University of Chicago), Instructor in Chemistry.
- HENRY SLATER WILCOX, A. M. (Harvard University), Instructor in Psychology.
- SAMUEL HERBERT ANDERSON, PH. D. (University of Illinois), Instructor in Physics.
- LESLIE FORREST CURTIS, B. S. (Tufts College), Instructor in Electrical Engineering.
- CURT JOHN DUCASSE, PH. D. (Harvard University), Instructor in Philosophy.
- ERIC TEMPLE BELL, PH. D. (Columbia University), Instructor in Mathematics.
- CHARLES MUNRO STRONG, A. M. (University of Missouri), Assistant Professor of Spanish.
- CHARLES LOUIS HELMLINGE, PH. B. (German Wallace College), Instructor in French.

## GRADUATE FELLOWSHIPS

Three fellowships of \$416.66 each, known as the Loretta Denny fellowships, are open to graduate students in any department of the University. Applications for these fellowships must be in the hands of the Bursar of the University on or before March fifteenth.

## UNIVERSITY TEACHING FELLOWSHIPS

There are also about fifteen teaching fellowships yielding \$450 each. These fellows are expected to give about half time to such work as the head of the department may assign.

## 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.

A graduate of this University or of any other institution of equal rank will be given full graduate standing. In case the student is from a college whose requirements for graduation are not regarded by the dean as equivalent to those of the University of Washington, he must complete the deficiency in undergraduate work as specified by the committee on graduate courses, before being permitted to make application for an advanced degree.

Any graduate student who wishes to become a candidate for a degree, must file an application with the dean of the graduate school, on a blank provided for the purpose, within two weeks after registration. When this application has received the approval of the committee on graduate courses or of the graduate faculty, and the applicant has been notified thereof, the student will be enrolled as a candidate for a degree.

## DEGREES

## THE MASTER'S DEGREE

Graduate students may receive the degree of master of arts or master of science by complying with the following requirements:

1. At least one year's work must be done in residence in undivided pursuit of the studies elected; or not less than two year's in residence, if the candidate is employed as a teacher or regularly engaged in any other occupation or profession. At-

tendance during four summer sessions may be accepted as the equivalent of one year in residence.

2. The candidate must elect a major subject and either one or two minors. He must earn not less than twenty-four credits, with a grade of A. B. or C., at least one-half being in the major subject, and present a thesis which shall embody independent, though not necessarily original research. The total must represent the equivalent of at least thirty hours.

3. No work done in the major subject may be counted toward the master's degree, until the candidate for such degree has complied with the departmental requirement as to previous work in that subject, which in no case shall be less than twelve hours.

4. Upon completion of the work as outlined in the application, the candidate shall be examined by a committee consisting of three or more instructors representing all of the lines of study pursued by the applicant. The finding of this committee must be unanimous. The time and place of the examination, which shall be open to the faculty, shall be publicly announced at least three days in advance. After a conference of the examiners, the result of the examination shall be immediately announced to the candidate, and a formal report of the result shall be communicated to the committee on graduate courses, not later than the Wednesday preceding commencement day.

5. One copy of the thesis in typewritten or printed form (or library hand, in case the thesis is of such character that it cannot be typewritten), prepared and bound according to the conditions prescribed by the librarian, shall be deposited with the Bursar at the time of payment of the diploma fee.

#### THE DOCTOR'S DEGREE

Graduate students will be received as candidates for the degree of doctor of philosophy in chemistry and in other departments as their readiness to undertake the work may be announced.

Graduate students may receive the degree of doctor of philosophy by complying with the following requirements:

1. At least three years of graduate work, the last year of which must be spent in residence at the University of Washington. If a candidate is otherwise engaged in any regular employment, a correspondingly longer time will be required.

2. Evidence of a reading knowledge of both French and German and such other languages as individual departments may require. Evidence of sufficient attainment in these languages

must be presented to the dean and, upon his approval, filed with the recorder at least one academic year before the degree is granted.

3. Completion of courses of study in a major and two minor subjects. The work in the minors to constitute one-third of the total course. The major subject, in addition to the regular courses, shall include the preparation of a thesis embodying the results of a research which shall be a positive contribution to knowledge. This thesis must be approved by a committee appointed by the head of the major department of which the instructor in charge of the thesis shall be a member, and also by the committee on graduate courses.

4. Oral examination in each of the minor subjects before a committee of three, including a representative of the major department. Certificates of the satisfaction of this requirement must be given before the candidate may be admitted to his major examination.

5. An exhaustive written examination in the major subject, not less than six hours in duration, no one session of which may exceed five hours.

6. An oral examination before a committee of three or more representatives of the major department, of not less than two hours. This examination must be approved by the entire committee. All examinations are open to members of the faculty.

7. Thesis, or such parts thereof as may be approved by the committee on graduate courses, must be printed in a form approved by the librarian and supplied with title and biographical sketch and one hundred copies presented to the University library.

The completion of the requirements as specified shall be certified by the head of the major department not later than the Wednesday preceding commencement day.

The doctor's degree will not be granted to graduates of the University of Washington who have not spent two years in graduate work, or three years in undergraduate work, at some other institution.

For the present, instructors in the University of Washington shall not be received as candidates for the doctor's degree.

No Ph. D. degree will be conferred before June, 1914.

## MASTER OF SCIENCE IN ENGINEERING

Courses leading to the degree of master of science in engineering are provided for students in civil engineering, electrical engineering, mechanical engineering, chemical engineering, and mining engineering.

For further information, see Bulletin of College of Engineering, or Bulletin of College of Mines.

## MASTER OF SCIENCE IN FORESTRY

The graduate course in forestry covers two years and is designed especially for men who expect to enter the profession of forestry. But graduates of this University and of other institutions of equal rank, which offer courses in forestry, may complete it in one year, provided they have had at least thirty-two hours of technical forestry.

See Bulletin of College of Forestry.

## MASTER'S DEGREES IN EDUCATION.

Advanced work for teachers leading to the master's degree in education is given by the University. See bulletin of School of Education for further information.

## ASTRONOMY

See Mathematics

## BOTANY

(Science Hall)

PROFESSOR FRYE, MR. RIGG, MR. HOTSON

## 1. BOTANY

5. MORPHOLOGY OF THALLOPHYTES. Four credits. First semester. Prerequisites, botany 2 or 10, or zoology 1 and 2. Professor FRYE.

Study of types of algae and fungi with a view to their evolution, ecology and physiology as shown by structure.

6. MORPHOLOGY OF BRYOPHYTES AND PTERIDOPHYTES. Four credits. Second semester. Prerequisites, botany 2 or 10, or zoology 1 and 2. Professor FRYE.

Studies of types of the families with a view to relationships. Some classification.



43. **PLANT PHYSIOLOGY.** Four credits. First semester. Prerequisites, chemistry 1 and 2; botany 1 and 2, or 9 and 10, or 1 and 10. Mr. RIGG.

The physical and chemical processes in plants so far as the latter may be comprehended without organic chemistry.

44. **PLANT PHYSIOLOGY.** Four credits. Second semester. Prerequisites, botany 43. Mr. RIGG.

The laws underlying growth and movement in plants.

16. **FOREST PATHOLOGY.** Four credits. Second semester. Prerequisites, botany 5 or 11. For forestry students. Mr. HOTSON.

The fungous and bacterial diseases of trees.

\*17. **SEEDS.** Four credits. First semester. Prerequisites, one year of botany, junior standing. Mr. RIGG.

Seed structure and physiology. The recognition of plants by their seeds.

\*20. **PLANT HISTOLOGY.** Three credits. Second semester. Prerequisite, botany 6.

Preparation of slides for the compound microscope. Study of plant tissues.

25-26. **ELEMENTARY AGRICULTURE.** Four credits. The year. Prerequisites, botany 1, and 2 or 10; junior standing. Mr. HOTSON.

Designed as a preparation for those who expect to teach the subject in high schools.

33. **RESEARCH.** Credit and time to be arranged. First or second semesters. Open to qualified students, after consultation, either for thesis work or for credit only. Professor FRYE.

37. **JOURNAL CLUB.** No credit. First or second semester. One meeting per week at time to be arranged. Prerequisite, junior standing, two years of botany. Professor FRYE.

Review of articles in current journals. Suggested for all seniors, graduates and instructors in the department.

41. **GENERAL FUNGI.** Four credits. First semester. Time to be arranged. Prerequisites, botany 11 or 5 and junior standing. Mr. HOTSON.

Morphology and classification of fungi; designed as a basis for plant pathology.

42. **PLANT PATHOLOGY.** Four credits. Second semester. Time to be arranged. Prerequisite, botany 41. Mr. HOTSON.

The courses, symptoms and treatment of some of the common fungal and bacterial diseases of orchard and garden plants and their fruits.

**2. BACTERIOLOGY**  
(Science Hall)

PROFESSOR WEINZIRL, MR. VELDEE

**3. GENERAL BACTERIOLOGY.** Four credits. First semester. Prerequisites, junior standing; botany or zoology, 1 year; chemistry, 1 year. Professor WEINZIRL and Mr. VELDEE.

Methods of growing bacteria and studying their structure, functions and distribution.

**4. SANITARY BACTERIOLOGY.** Four credits. Second semester. Prerequisite, bacteriology 3. Professor WEINZIRL and Mr. VELDEE.

A brief survey of disease bacteria. Most of the time is given to sanitation. Inspection trips.

**6. SANITARY BACTERIOLOGY.** Two credits. Second semester. Required of home economics students. Prerequisite, bacteriology 3.

Professor WEINZIRL.

Sanitation as related to the home and its activities. Lectures only.

**8. MEDICAL BACTERIOLOGY.** Four credits. Second semester. Required of medical students. Prerequisite, bacteriology 3. Professor WEINZIRL and Mr. VELDEE.

The study of pathogenic bacteria.

**11. BACTERIOLOGICAL ANALYSIS.** Two credits. First semester. Prerequisite, bacteriology 4 or 8. Professor WEINZIRL.

Analysis of water, sewage, milk, meat, etc. Laboratory work only.

**12. LABORATORY DIAGNOSIS.** Two credits. Second semester. Prerequisite, bacteriology 4 or 8. Professor WEINZIRL.

The diagnosis of disease by laboratory methods, mainly bacteriological.

**13. SANITARY PROBLEMS.** Two credits. First semester. Prerequisite, bacteriology 3. Professor WEINZIRL.

The sanitary problems relating to water, sewage, and food. Lectures only.

**14. DIAGNOSTIC METHODS.** Two credits. Second semester. Prerequisite, to be taken with bacteriology 12. Professor WEINZIRL.

The consideration of diagnostic methods and their application. Lectures only.

17. IMMUNOLOGY. One or two credits. First semester. Prerequisite, bacteriology 4. Professor WEINZIRL.

Lectures. May be accompanied by laboratory experiments.

19-20. RESEARCH IN BACTERIOLOGY. Four or eight credits. The year. Open to qualified students after consultation. Professor WEINZIRL.

## CHEMISTRY

(Bagley Hall)

PROFESSOR BYERS, ASSOCIATE PROFESSOR BENSON, ASSISTANT PROFESSOR DEHN, ASSISTANT PROFESSOR ROSE, DR. TRUMBULL; DEAN JOHNSON, COLLEGE OF PHARMACY

3-4. ORGANIC CHEMISTRY. Four credits. The year. Assistant Professor DEHN.

Lecture course. Laboratory work on the preparation and testing of representative compounds. Bernthsen-Sudborough's text used in connection with Sudborough-James's laboratory manual as laboratory guide.

5-6. ADVANCED ORGANIC CHEMISTRY. Four credits. The year. Assistant Professor ROSE.

Chemistry of volatile oils, dyestuffs, alkaloids and sugars. Special laboratory work can be arranged.

7. ORGANIC ANALYSIS AND GLASS BLOWING. Two or four credits. The year. Assistant Professor DEHN.

A laboratory course of either two or four hours. Individual instruction.

10. FATS AND OILS. Four credits. First semester. Professor JOHNSON.

Laboratory, three afternoons per week.

15. WATER ANALYSIS. Four credits. First semester. Professor BENSON.

One lecture and twelve hours laboratory work per week in the analysis of water for both industrial and sanitary purposes.

20-21. PHYSIOLOGICAL CHEMISTRY. Four credits. The year. Assistant Professor DEHN.

A course designed for medical, chemical and general science students. Chemical composition of foods, tissues, secretions and excretions, their physiological and pathological changes, with special attention to the composition and chemical analysis of blood, milk, and urine

22-25. **PHYSICAL CHEMISTRY.** Four credits. The year. Three lectures and one laboratory period per week. Dr. TRUMBULL.

An elementary lecture course dealing with fundamental theories of chemistry based upon physical measurements.

23. **ELECTRO CHEMISTRY.** Four credits. Second semester. Professor BYERS and Dr. TRUMBULL.

The lecture course deals with the historical development of electro chemistry, the theories of electrolysis, migration of ions, concentration cells, solution pressure, etc. The laboratory work consists of the preparation of compounds by electrolysis and electro synthesis, electro-plating, etc., and of illustrations of the subject matter of the lecture work.

26. **INVESTIGATION.** Credit to be arranged. The year.

Any student who has completed at least three years' work in chemistry may undertake some original investigation under the direction of one of the instructors. Such work will not be encouraged, however, except when the student is presenting himself for an advanced degree.

27-28. **CHEMICAL THEORY.** Two credits. The year. Professor BYERS.

All graduate students registering in the department of chemistry will be expected to take a two-hour course throughout the year in the historical development of fundamental laws and theories.

29. **ADVANCED ORGANIC PREPARATIONS.** Four credits. The year. Assistant Professor DEHN.

A course prerequisite to organic research.

### EDUCATION (Education Building)

PROFESSOR BOLTON, ASSOCIATE PROFESSOR LULL, ASSISTANT PROFESSOR HART, ASSISTANT PROFESSOR SMITH

#### B. COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES

At least twelve hours in Education and an elementary course in Psychology are prerequisite to all courses in this group, (B), and the following (C).

15. **PROBLEM IN VOCATIONAL EDUCATION.** Two credits. First semester. Assistant Professor HART.

The vocational movement, its meaning and purpose; relation to liberal education; psychological considerations; social phases; vocational guidance. (To be followed by Course 16.)

16. **EDUCATIONAL PROBLEMS OF THE STATE.** Two credits. Second semester. Assistant Professor HART.

A study of the immediate problems that confront educational leaders in the state, general and theoretical; social and practical. (To follow Course 15.)

17. **SOCIAL ASPECTS OF EDUCATION.** Two credits. First semester. Assistant Professor HART.

The social institutions and conditions which form the background of all the work of the school, reinforcing and limiting that work.

18. **SCHOOL GROUNDS, BUILDINGS AND EQUIPMENT.** Two credits. Second semester. Assistant Professor HART.

A constructive study of the physical side of the new school plant. (Should follow the course on Vocational Education.)

\*19. **SCHOOL HYGIENE.** Two credits. First or second semester.

Problems of school hygiene, including: heating, lighting and ventilation; school diseases and medical inspection of schools; hygiene of various school activities.

23-24. **EPOCHS OF EDUCATIONAL HISTORY.** Two credits. The year. Assistant Professor HART.

Intensive study of particularly important periods in the development of education.

26. **HISTORY OF EDUCATION IN THE UNITED STATES.** Three credits. Second semester. Associate Professor LULL.

From 1647 to the present; a study of the growth of elementary, secondary, and, to some extent, higher education. The main emphasis of the course will be laid upon the period from the beginning of the "Common School Revival," 1830, to the present time.

28. **SUPERVISION AND MANAGEMENT.** Three credits. Second semester. Associate Professor LULL.

For those who are preparing for supervision, principalships or teaching positions. Practical problems of school organization and administration, such as the making and administration of courses of study; functions of school boards, superintendents, and principals; supervision of class work, teachers' meetings, student organizations.

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\*Not given in 1913-1914.

30. **THE EDUCATION OF EXCEPTIONAL CHILDREN.** Three credits. Second semester. Assistant Professor SMITH.

Methods of instruction for backward, feebleminded, and deaf children, and for those suffering from speech defects and physical defects. The course will include more training, perception training and the introduction to reading and number work. Prerequisite.

31. **ADOLESCENCE AND THE HIGH SCHOOL.** Two credits. First semester. Professor BOLTON.

A critical consideration of the physical, intellectual, emotional, moral and social characteristics of adolescence and the educative activities suited to the period of secondary instruction. Combined with 47-48 in 1913-1914.

33-34. **PRINCIPLES OF EDUCATION.** (Advanced Course). Two credits. The year. Professor BOLTON.

A course for mature students who have taught considerably or who have done some previous work in the subject and can therefore progress more rapidly than the beginner. Especially designed for teachers of the Seattle schools. Text: Bolton, *Principles of Education*.

#### C. COURSES FOR GRADUATES ONLY

Concerning prerequisites see note under "B."

35. **ADMINISTRATION OF EDUCATION IN THE UNITED STATES.** Three credits. First semester. Associate Professor LULL.

The important problems of educational administration in the United States, national, state and local, relation to the other branches of civil administration. The financing of public education. The administration of the different forms of vocational education. Each student will be assisted in giving special attention to his own problems of school administration. Special reference to the educational problems of the Northwest.

\*37. **STATE SCHOOL SYSTEMS.** Two credits. First semester. Associate Professor LULL.

An intensive study of the organization and administration of public education in various state school systems. Special attention will be given to the county unit and county supervision.

\*38. **CITY SCHOOL SYSTEMS.** Two credits. Second semester. Associate Professor LULL.

An intensive study of the organization and administration of education in large and in small cities.

39-40. FOREIGN EDUCATIONAL SYSTEMS. Two credits. The year Professor BOLTON.

A critical study of current educational organization and practice in foreign countries, especially in Germany, France, England, Norway, Sweden and Canada. Texts: Bolton, *Secondary School System of Germany*, and Farrington, *Primary and Secondary Education in France*.

41. LABORATORY COURSE IN THE EDUCATION OF EXCEPTIONAL CHILDREN. Two credits. First semester. Assistant Professor SMITH.

Definite work in the training of typical cases. Four hours of laboratory work each week. The students will be supervised in the instruction of children with various mental peculiarities. The methods considered in Course 30 in Education will be applied.

\*42. MORAL EDUCATION. Two credits. Second semester. Professor BOLTON.

A study of the meaning of moral education; the degrees of moral development in (a) childhood, and (b) adolescence; native and acquired moral tendencies; various agencies for moral education, such as group activities, the school curriculum; the home, civic and institutional life.

43-44. ADVANCED EDUCATIONAL PSYCHOLOGY. Two credits. The year. Assistant Professor HART.

A study of special problems in the field of educational psychology; expression and impression, the social nature of perception, the nature and development of ideas, "motive" in educational practice, etc.

45-46. INDIVIDUAL RESEARCH AND THESIS WORK. Three credits. The year.

Intensive study and original investigation of special problems. Results are reported in the Seminar and when especially meritorious may be published. Supervised by all members of the department. Consult head of the department for assignment.

47-48. GRADUATE SEMINAR. Two credits. The year. Professor BOLTON.

For graduate students doing intensive study and research. Critical consideration of technical educational literature and of modern educational problems. Reports on individual problems. Technique of research, interpretation of results and thesis writing.

## ELECTRICAL ENGINEERING

(Engineering Building)

PROFESSOR MAGNUSSON, ASSISTANT PROFESSOR LOEW, MR. CURTIS

21. Four credits. First semester. Professor MAGNUSSON.

The theory of the generation of single phase and polyphase currents. Vector diagrams and the symbolic method of analysis. The theory of transformers, polyphase induction motors, synchronous motors, rotary convertors and transmission lines. Interlinked polyphase systems.

22. Four credits. First semester. Professor MAGNUSSON and Mr. CURTIS.

Experimental work on alternating current machinery. Must be taken in connection with course 21.

23. Four credits. Second semester. Professor MAGNUSSON.

Continuation of 21. The theory of single phase induction and commutator motors. The effects of motors in transmission systems. Phase control and regulation. Distortion of wave shape and effects of higher harmonics.

24. ALTERNATING CURRENTS LABORATORY. Two credits. Second semester. Mr. CURTIS.

A continuation of course 22 with tests on large commercial machines.

48. POWER TRANSMISSION. Two credits. Second semester. Assistant Professor LOEW.

Location, design, and operation of electric power transmission systems.

51-52. TRANSIENT ELECTRICAL PHENOMENA. Two credits. The year. Professor MAGNUSSON.

The exponential law for simple transients. Single and double energy transients. Current oscillations and traveling waves. Natural periods of transmission lines. Short circuit transients. Surges. Corona. Lightning Phenomena.

## ENGLISH

(The Auditorium)

PROFESSOR PADELFORD, PROFESSOR PARRINGTON, ASSOCIATE PROFESSOR BENHAM, ASSISTANT PROFESSOR GARRETT, ASSISTANT PROFESSOR COX

37-37. HISTORY OF ENGLISH LITERATURE. Three credits. The year. M. evening. Associate Professor BENHAM.



A study of the development of English literature with special attention to sources.

39-39. ARISTOTLE'S POETICS. Two credits. The year. T., Th. at 2. Assistant Professor COX.

An introduction to literary criticism.

41-41. ADVANCED OLD ENGLISH. Two credits. The year. T. evening. Assistant Professor GARRETT.

For the year 1913-1914 the texts studied will be the Old English Bede, parts of the Anglo-Saxon Chronicle, and native English legends. Prerequisites, course 8, or 34.

38-38. SEMINAR. Four credits. The year. Th. evening. Professor PADELDFORD.

For the year 1913-1914 the subject will be Spenser.

38a-38a. SEMINAR. Two credits. The year. Time to be arranged. Professor PARRINGTON.

The subject will be some problems in American literature.

## FRENCH.

(Denny Hall)

PROFESSOR FREIN, ASSISTANT PROFESSOR PATZER, MR. WHITTLESEY.

### 1. FRENCH

21-22. THE FRENCH NOVEL. Two credits. First and second semester. Mr. HELMLINGE.

History of the French novel from the beginning. Some of the most representative novels will be read in class, and others assigned for outside reading.

23-24. LYRIC POETRY. Two credits. The year. Mr. WHITTLESEY.

History of lyric poetry. Canfield's French Lyrics.

\*25-26. THE FRENCH DRAMA. Two credits. The year.

\*27-28. HISTORY OF THE FRENCH LITERATURE OF THE NINETEENTH CENTURY. Two credits. The year.

\*29-30. HISTORY OF THE FRENCH LITERATURE OF THE EIGHTEENTH CENTURY. Two credits. The year.

31-32. HISTORY OF THE FRENCH LITERATURE OF THE SEVENTEENTH CENTURY. Two credits. The year. Dr. PATZER.

Lectures in French; assigned reading.

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\*Given in alternate years; not given in 1913-1914.

33-34. **TEACHER'S COURSE.** Two credits. The year. Professor FREIN.

Special emphasis on phonetics; both oral and written exercises. Review of grammar.

51-52. **HISTORY OF THE FRENCH LITERATURE OF THE FIFTEENTH AND SIXTEENTH CENTURIES.** Two credits. The year. Professor FREIN.

Lectures in French. Texts of the fifteenth century will be read in class; those of the sixteenth century will be assigned for outside reading.

53-54. **OLD FRENCH READING.** Four credits. The year. Professor FREIN.

Elements of old French grammar, and translation from Old French into modern French of the texts in Bartsch, *Chrestomathie de l'Ancien Français*.

55-56. **HISTORY OF OLD FRENCH LITERATURE.** Two credits. The year. Professor FREIN.

Open only to those who have a reading knowledge of Old French. Those who have had course 53 will ordinarily be prepared to follow the work. Course given in French.

57-58. **FRENCH HISTORICAL GRAMMAR.** Two credits. The year. Professor FREIN.

Lectures on Old French phonology and morphology.

## 2. ITALIAN

5-6. **DANTE.** Two credits. The year. Dr. SBEDICO.

Lectures and reading of selected cantos from the *Divina Commedia*.

## GEOLOGY

(Science Hall)

PROFESSOR LANDES, ASSISTANT PROFESSOR SAUNDERS, ASSISTANT PROFESSOR WEAVER

12. **GEOLOGY AND PALEONTOLOGY OF THE TERTIARY FORMATIONS.** Two credits. First semester. Assistant Professor WEAVER.

13. **OPTICAL CRYSTALLOGRAPHY.** Four credits. First semester. Assistant Professor WEAVER.

Two recitations and two laboratory periods per week.

14. **GEOLOGY OF WASHINGTON.** Two credits. First semester. Professor LANDES.

Two lectures or recitations per week.

15. **ECONOMIC GEOGRAPHY OF WASHINGTON.** Two credits. Second semester. Professor LANDES.

Two lectures or recitations per week.

17. **PETROGRAPHY.** Four credits. Second semester. Assistant Professor WEAVER.

Two recitations and two laboratory periods per week. A study of the distinguishing characteristics of the different groups and species of rocks with practice in their determination by modern petrographical methods.

18. **ECONOMIC GEOLOGY.** Four credits. Second semester. Professor LANDES.

Four recitations per week.

19. **PALEONTOLOGY.** Four credits. First semester. Assistant Professor WEAVER.

Three recitations and one laboratory period per week. Chiefly for students in geology and mining.

20-21. **FIELD WORK.** Hours and credits to be arranged. The year. Professor LANDES, Professor SAUNDERS and Assistant Professor WEAVER.

22-23. **ADVANCED PETROGRAPHY.** Hours and credits to be arranged. The year. Assistant Professor WEAVER.

24-25. **ADVANCED PALEONTOLOGY.** Hours and credits to be arranged. The year. Assistant Professor WEAVER.

26-27. **RESEARCH WORK.** Hours and credits to be arranged. The year. Professor LANDES, Assistant Professor SAUNDERS, Assistant Professor WEAVER.

## GERMAN

(Office Room 20, Law Building)

PROFESSOR MEISNEST, ASSISTANT PROFESSOR HOFF, DR. ECKELMAN

41-42. **STORM OR STRESS PERIOD.** Two or four credits. The year. Professor MEISNEST.

\*43-44. **ROMANTIC SCHOOL.** Two or four credits. The year. Professor MEISNEST.

45-46. **NINETEENTH CENTURY.** Two or four credits. The year. Dr. ECKELMAN.

51-52. **HISTORY OF THE GERMAN LANGUAGE.** One credit. The year. Assistant Professor HOFF.

\*53-54. MIDDLE HIGH GERMAN. Two credits. The year. Assistant Professor HOFF.

55-56. OLD HIGH GERMAN. Two credits. The year. Assistant Professor HOFF.

\*57-58. GOTHIC. Two credits. The year. Assistant Professor HOFF.

### GREEK

(Denny Hall)

PROFESSOR HAGGETT

3-4. HOMER-PLATO. Three credits. The year. Professor HAGGETT. Selections from the Odyssey; Plato's Apology, Crito, and parts of the Phædo.

11-12. ADVANCED READING. Three credits. The year. Professor HAGGETT.

Rapid reading of the entire work (or a considerable portion) of some one author, or extensive work in some one department of Greek literature.

### HISTORY

(Denny Hall)

PROFESSOR MEANY, PROFESSOR RICHARDSON, ASSISTANT PROFESSOR MC MAHON, ASSISTANT PROFESSOR BOWMAN, DR. LUTZ

Students must have had at least one year of history to elect any course in this group.

FOR ADVANCED UNDERGRADUATES AND GRADUATES.

11-12. ENGLISH CONSTITUTIONAL HISTORY. Two credits. The year. Professor Richardson.

The development of the legal and governmental institutions of the English people to the present time. Open to juniors and seniors who have taken or are taking 5, 6, and to law students with consent of the instructor.

13. THE EARLY GERMANS. Two credits. First semester. Pre requisite, 2. Assistant Professor BOWMAN.

The history of the Germans through the period of the Wandering of the Nations and the State Formation.

14. MEDIEVAL CIVILIZATION. Two credits. Second semester Prerequisite, 1. Assistant Professor BOWMAN.

A study of medieval civilization and culture down to the thirteenth century.

15-16. **THE RENAISSANCE AND REFORMATION.** Three credits. The year. Prerequisite, 1-2. Assistant Professor BOWMAN.

A study of the origin and development of the Renaissance and Reformation, and of their spread among the European nations.

17-18. **PRUSSIA AND NORTHERN EUROPE.** Two credits. The year. Prerequisite, 2. Professor RICHARDSON.

This course deals with Sweden as a Great Power, its rise, progress and decline; the rise of Russia and Prussia; the Partition of Poland; and the beginnings of the Eastern Question. Special attention is paid to the economic, political and military development of the Prussian state from its foundation to the acquisition of world-power by Frederick the Great.

\*19-20. **HISTORY OF FRANCE FROM THE REFORMATION TO THE FRENCH REVOLUTION.** Professor RICHARDSON.

21. **THE FRENCH REVOLUTION AND NAPOLEONIC ERA.** Three credits. First semester. Prerequisite, 2. Professor RICHARDSON.

Among the principal topics considered are the following: the material conditions out of which, in France, the Revolution emerged, and the nature of the ideals which inspired it; contemporary conditions in the European states system which facilitated the extension of the Revolution over Europe; the epoch of International Wars, with especial reference to the territorial redistribution of Europe, the beginnings of modern liberalism, and the career of Napoleon.

22. **EUROPE SINCE 1814.** Three credits. Second semester. Prerequisite, 2. Professor RICHARDSON.

Mainly political, introductory to European politics of the present time. The course deals with the fundamental principles and policies of the Era of Reaction under Metternich and the subsequent triumph of liberalism. The chief emphasis is laid upon the establishment of constitutional government and national unity in Germany, Italy and the other states of Western Europe, and upon the careers of great leaders, notably Bismarck and Cavour.

23-24. **EUROPE SINCE 1870, AND CONTEMPORARY EUROPE.** Two credits. The year. Prerequisite, 2 and a reading knowledge of French or German. Dr. LUTZ.

The first part of the course, based upon the study of contemporary histories, is introductory to the latter part, which is based upon the use of current periodicals, newspapers and other publications, in English, French and German. Scientific methods of research are applied to the study of current historical events.

25. HISTORY OF THE UNITED STATES, 1783-1828. Three credits. First semester. Assistant Professor McMAHON.

A study of the organization of the government of the United States and the leading forces shaping its development down to the presidency of Jackson.

26. HISTORY OF THE UNITED STATES, 1828-1860. Three credits. Second semester. Assistant Professor McMAHON.

A continuation of course 25, bringing the study down to the outbreak of the Civil War. In this and the preceding course constitutional history will be studied as the outgrowth of economic and social conditions in the physiographic sections.

27. CIVIL WAR AND RECONSTRUCTION. Three credits. First semester. Assistant Professor McMAHON.

A general study of the Civil War and the period of reconstruction.

28. THE HISTORY OF NATIONAL DEVELOPMENT. Three credits. Second semester. Assistant Professor McMAHON.

A continuation of course 27, in which the development of the American nation will be traced from the close of the reconstruction period to the present time.

29. SPAIN IN AMERICA. Three credits. First semester. Professor MEANY.

A study of the rise and fall of Spanish power in the new world, and an outline of the history of the Spanish-American republics.

30. DEVELOPMENT OF THE PACIFIC. Three credits. Second semester. Professor MEANY.

History of the countries bordering upon the Pacific Ocean, with special reference to the changes now in progress of development.

31-32. HISTORY OF AMERICAN DIPLOMACY. Two credits. The year. Professor MEANY.

A study of the treaties and foreign policy of the United States. Open to those who have taken a narrative course in American history.

33-34. NORTHWESTERN HISTORY. Two credits. The year. Professor MEANY.

From the earliest voyages to the settlement and organization of the territories.

35. THE EVOLUTION OF CHINA—BEFORE THE MANCHU CONQUEST. Two credits. First semester. Professor GOWEN.

36. THE EVOLUTION OF CHINA—MODERN ERA. Two credits. Second semester. Professor GOWEN.

37. THE EVOLUTION OF JAPAN—FEUDAL ERA. One credit. First semester. Professor GOWEN.

38. THE EVOLUTION OF JAPAN—MODERN ERA. One credit. Second semester. Professor GOWEN.

\*39-40. ECONOMIC AND SOCIAL HISTORY OF THE AMERICAN COLONIES. Assistant Professor McMAHON.

\*Not offered in 1913-1914.

43-44. METHODS OF TEACHING HISTORY. One credit. The year. Required of advanced students who expect to teach history. Assistant Professor McMAHON.

Textbooks, assigned readings, courses of study and the best method of presentation will be considered.

#### FOR GRADUATES PRIMARILY

45-46. HISTORIOGRAPHY. One credit. The year. Assistant Professor BOWMAN.

A study of the general history of the writing of history from Herodotus to the present day.

\*47-48. METHODS OF HISTORICAL RESEARCH AND CRITICISM. Professor RICHARDSON.

49-50. ENGLAND UNDER THE TUDORS AND STUARTS. Two to four credits. The year. Professor RICHARDSON.

A graduate course which lays more stress upon the constitutional than upon the political side of the subject. Special attention is paid to constitutional developments under Henry VIII and Elizabeth, and to the antecedents of the Puritan Revolution.

51-52. SEMINAR IN AMERICAN HISTORY. Two credits. The year. Assistant Professor McMAHON.

One evening a week. This course is primarily for graduates or other advanced students who may be admitted by permission of the professor.

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\*Not offered in 1913-1914.

53-54. **JOINT SEMINAR.** Two credits. The year. Open to graduate students and to a limited number of seniors on recommendation of their major professors. Professors **MEANY, SMITH** and **CONDON.**

Designed for study and reports upon the problems in the historical, political, and legal developments of the State of Washington and the Pacific Northwest.

### ITALIAN

(See French and Italian.)

### LATIN

(Denny Hall)

**PROFESSOR THOMSON, ASSISTANT PROFESSOR SIDEX**

\*5. **HORACE, Satires and Epistles. JUVENAL, Satires.** Two credits. First semester. Professor **THOMSON.**

\*6. **TACTUS, Selected books of the Annals.** Professor **THOMSON.**

7. **CICERO, Letters. (Abbott's Selection).** Two credits. First semester. Professor **THOMSON.**

8. **PLINY, Letters. (Westcott's Selection).** Two credits. Second semester. Professor **THOMSON.**

9-10. **TEACHERS' COURSE.** Six credits. The year. Assistant Professor **SIDEX.**

Selected portions of **Cæsar, Bell. Gall. V-VII** and **Bell. Civile; Suetonius, Julius Cæsar; Sallust, Catiline; Vergil, Bucolics and Georgics; Ancient Lives of Vergil.** Review of the portions of **Cæsar, Cicero** and **Vergil** usually read in High Schools. Methods of teaching Latin and discussion of the problems likely to arise in the classroom. Teaching by members of the class under the supervision of the instructor. Visits to schools where Latin is taught and reports on the teaching observed.

18. **LUCRETIVS. Books I and III; Cicero, Tusculan Disputations I and IV.** Two credits. First semester. Professor **THOMSON.**

19. **CICERO, de Officiis. SENECA, Moralia.** Two credits. Second semester. Professor **THOMSON.**



20. QUINTILIAN, X, XII. Two credits. First semester. Professor THOMSON.

21. TACITUS. Histories I, II. Two credits. Second semester. Professor THOMSON.

22. STATIUS, Silvæ; MARTIAL, Epigrams. Two credits. First semester. Assistant Professor SIDEX.

23. TACITUS, Dialogus; QUINTILIAN, 1. Two credits. Second semester. Professor THOMSON.

24. ROMAN ANTIQUITIES. Two credits. Second semester. Assistant Professor SIDEX.

For Latin majors.

## MATHEMATICS

(Science Hall)

PROFESSOR MORITZ, ASSOCIATE PROFESSOR MORRISON, ASSISTANT PROFESSOR GAVETT, DR. NEIKIRK, DR. BELL, MR. CARPENTER

### 1. MATHEMATICS

7-8. ORDINARY AND PARTIAL DIFFERENTIAL EQUATIONS. Three credits. The year. Prerequisites, Math. 5 or Math. 4a. For seniors and graduates. Dr. NEIKIRK.

Introductory course. Solutions of the equations of the first and second order. Determination of constants of integration from initial conditions. Applications to physics, chemistry and astronomy.

\*9-10. VECTOR ANALYSIS. Four credits. The year.

11-12. PROJECTIVE GEOMETRY. Two credits. The year. Prerequisites, two years of college mathematics. For juniors, seniors and graduates. Mr. CARPENTER.

\*13-14. DESCRIPTIVE GEOMETRY AND CURVE TRACING. Four credits. The year. Prerequisites, Math. 5 or Math. 4a. For juniors, seniors and graduates. Mr. CARPENTER.

15. MODERN GEOMETRY. Three credits. First semester. Prerequisites, Math. 5 or Math. 4a. For seniors and graduates. Associate Professor MORRISON.

An introductory course in modern analytical geometry and higher plane curves.

16. DIFFERENTIAL GEOMETRY. Three credits. Second semester. Prerequisites, Math. 15. For seniors and graduates. Associate Professor MORRISON.

Application of the calculus to the metrical properties of twisted curves and surfaces.

17-18. **NON-EUCLIDEAN GEOMETRY.** Two credits. The year. Prerequisites, two years of college mathematics. For juniors, seniors and graduates. Assistant Professor GAVETT.

The growth of the science of geometry; the hypothesis on which it is built; the hypothesis on which rests Euclid's theory of parallels; the discussions to which this theory has been subjected; the logical possibility of the different non-euclidean geometries. This is to be followed by a brief survey of the logical foundations of geometry including the spaces of four or more dimensions.

\*19-20. **FOUNDATIONS OF MATHEMATICS.** Two credits. The year. Prerequisites, Math. 6. For seniors and graduates. Dr. NEIKIRK.

\*21-22. **THEORY OF NUMBERS.** Two credits. The year. Prerequisites, Math. 5 or Math. 4a. For juniors, seniors and graduates. Dr. BELL.

\*23-24. **THEORY OF FUNCTIONS OF A COMPLEX VARIABLE.** Two credits. The year. M., F. at 5. Prerequisites, Math. 5 and Math. 6. For seniors and graduates. Dr. BELL.

\*25-26. **THEORY OF EQUATIONS.** Three credits. The year. Prerequisites, Math. 5 and Math. 6. For seniors and graduates. Professor MORITZ.

27. **INVARIANTS AND COVARIANTS.** Three credits. First semester. T., Th., S. at 11. Prerequisites, Math. 5 and Math. 6. For seniors and graduates. Professor MORITZ.

Based on Elliott's Theory of Quantics.

28. **INFINITE SERIES.** Three credits. Second semester. T., Th., S. at 11. Prerequisites, Math. 5 and Math. 6. For seniors and graduates. Professor MORITZ.

Convergency criteria, Abel's theorem, power series, Hypergeometric series and Fourier's series.

31. **MATHEMATICS JOURNAL AND RESEARCH CLUB.**

Meets on the second Tuesday of each month in Science Building room 2, at 8 P. M. The club consists of advanced students and teachers in the department of mathematics. The purpose of the club is to primarily discuss the research work carried on by members of the club, and secondarily to review important recent mathematical literature.

## 2. ASTRONOMY

(Astronomy Building)

ASSOCIATE PROFESSOR BOOTHROYD

5. THEORY OF PROBABILITIES. Two credits. First semester. T., Th. at 11. Open to juniors, seniors and graduates.

A general treatment of the theory of probabilities leading up to the derivation of the probability function and the general theory of least squares.

6. LEAST SQUARES. Two credits. Second semester. T., Th. at 11. Open to juniors, seniors and graduates. Prerequisites, astronomy 5, except for engineering students who must have had astronomy 3-4 instead. Astronomy 5 is considered very desirable. Associate Professor BOOTHROYD.

The best methods for the adjustment of observations. For engineering students the applications to surveying will be especially considered.

7. ANALYTICAL MECHANICS. Three credits. First semester. Open to juniors, seniors and graduates. Prerequisites, preceded or accompanied by mathematics 5 or mathematics 4a. Physics 1-2. Associate Professor BOOTHROYD.

Mathematical treatment of the laws of force and motion.

8. CELESTIAL MECHANICS. Three credits. Second semester. Open to juniors, seniors, graduates. Prerequisite, astronomy 7. Associate Professor BOOTHROYD.

Mechanics applied to the motion of the heavenly bodies.

9-10. ADVANCED ASTRONOMY. Four or six credits. The year. Open to seniors, graduates. Prerequisites, 16 credits in astronomy, 16 credits in mathematics. Associate Professor BOOTHROYD.

The subject matter of this course will be arranged to meet the needs of the particular students who elect it. Work will be offered along three lines: (a) theoretical astronomy, (b) practical astronomy, (c) astro-physics.

## PHILOSOPHY

(Denny Hall)

PROFESSOR SAVERY, ASSOCIATE PROFESSOR STEVENS, ASSISTANT PROFESSOR SMITH, DR. DUCASSE, MR. WILCOX.

7-8. PRINCIPLES OF PHILOSOPHY. Three credits. The year. Prerequisite, 8 credits in philosophy. Professor SAVERY.

A course in systematic philosophy. (1) The meaning and tests of truth, with special reference to Pragmatism. (2) The construction of a theory of the universe, including an account of the nature of the human self, its relation to the body, the nature of matter, the problem of the freedom of the will. Study of Idealism. (3) The foundation of morality, pessimism and optimism, the evolution and destiny of man.

9-10. PHILOSOPHY OF SCIENCE. Two credits. The year.

The fundamental laws and concepts of the sciences—mathematical, physical and biological. Interpretation of the scientific view of the world and its place in the human economy. Primarily for majors in science.

\*11-12. HISTORY OF RELIGION. Two credits. The year. Mr. DUCASSE.

13-14. PHILOSOPHY OF RELIGION. Two credits. First and second semester. Prerequisite, one course. Professor SAVERY.

(1) The religious experience: the origin, nature and types of religion, and its effect on individual happiness and morality. The social aspect of religion and the religion of democracy. Study of mystical experiences. (2) The truth of religion: the proofs of the existence of God, the basis of faith, pessimism, optimism and meliorism, immortality. Discussion of agnosticism.

\*15-16. PHILOSOPHY IN ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Two credits. The year.

Conceptions of the universe, evolution, the destiny of man, the individual and social ideal in Wordsworth, Shelley, Emerson, Browning, Tennyson, Fitzgerald's Omar Khayyam, James Thomson, Arnold, Swinburne and Whitman. An account of the social ideals of Carlyle, Ruskin, Morris, Shaw, Dickinson, Wells and Chesterton.

17-18. PHILOSOPHY OF THE MODERN DRAMA. Two credits. First and second semester. Prerequisite, one course previous or concurrent. Mr. WILCOX.

Philosophical, ethical and social ideas in Ibsen, Strindberg, Hauptmann, Sudermann, Mæterlinck, Bernard Shaw and other recent dramatists. Introductory study of similar ideas in the Greek drama and Shakespeare.

19-20. ESTHETICS. Two credits. First and second semester. Mr. WILCOX.

The origins and motives of art, and the esthetic principles of architecture, sculpture, painting, music, poetry, the drama, and the decorative arts. The nature of beauty, the sublime, the comic, the tragic. Standards of criticism. Social and democratic theories of art.

22. **ADVANCED LOGIC.** Two credits. Second semester. Prerequisite, 3 or 4. Dr. DUCASSE.

Primarily intended for students interested in logic for its own sake, and for those desirous of attaining to accuracy in thinking of a highly abstract nature. Discussion of the Logical Categories, exposition and illustration of the elements of symbolic logic, consideration of some of the chief types of order, of the logical characteristics of quantitative fields, and of the number concept.

23-24. **CONTEMPORARY PHILOSOPHY.** Two credits. First and second semester. Prerequisite, 1, or 5-6.

Present tendencies in philosophy. The Materialism of Hæckel; the Naturalism of Spencer, Mach, and Pearson; the Idealism of Bradley and Royce; the Pragmatism of James; and the New Realism of Bergson and the American Realists.

25-26. **SEMINARY. THE PHILOSOPHY OF SCHOPENHAUER AND NIETZSCHE.** Two credits. First and second semester. Prerequisite, open to students upon approval of instructor. Dr. DUCASSE.

The philosophy of the Will: the Will to Live and the Will to Power. Contrast of Schopenhauer's pessimism and Nietzsche's affirmation of the value of life, Schopenhauer's doctrine of sympathy and Nietzsche's egoism, democratic and aristocratic codes of morality, the Saint and the Superman.

33. **PHYSIOLOGICAL PSYCHOLOGY.** Four credits. First semester. Prerequisite, 31. One lecture, one recitation, two laboratory periods. Associate Professor STEVENS.

The human brain and spinal cord, demonstration of the motor region of the cortex, summation of stimuli, inhibition, rate of transmission of the nerve impulse, Weber's law and space perception.

34. **EXPERIMENTAL PSYCHOLOGY.** Four credits. Second semester. Prerequisite, 31. Mr. WILCOX.

Training in the methods of experimentation. Qualitative and quantitative experiments in sensation, perception, attention, and association of ideas. One lecture, one recitation and two laboratory periods.

35-36. **PRINCIPLES OF PSYCHOLOGY.** Three credits. The year. Prerequisite, 31. Associate Professor STEVENS.

A systematic study. Students are urged to precede this by physiological psychology.

37. **GENETIC PSYCHOLOGY.** Three credits. First semester. Prerequisite, 31. Mr. WILCOX.

(1) The evolution of mind in animals. (2) The mental development of the child.

38. **EDUCATIONAL PSYCHOLOGY.** Three credits. Second semester. Prerequisite, 31. Mr. WILCOX.

The psychological basis of education. Perception, the learning processes, practice, memory, habit, judgment, attention, and motor functions, with reference to age, sex, race, and individual differences.

40. **ABNORMAL PSYCHOLOGY.** Three credits. Second semester. Prerequisite, 31. Associate Professor STEVENS.

Sleep, dreams, hypnotisms, mediumships, possessions, hallucinations, motor automatisms, double personality and the subconscious.

43-44. **RESEARCH IN PSYCHOLOGY.** Two credits. The year. Prerequisite, 33 or 34. Associate Professor STEVENS.

Opportunity for original investigation.

45. **THE PSYCHOLOGY OF EXCEPTIONAL CHILDREN.** Three credits. First semester. Prerequisite, 31. Assistant Professor SMITH.

The nature and causes of mental defects and peculiarities of children, with special reference to methods of diagnosis and to physical pathology. Prerequisite to the course in the Education of Exceptional Children and to Philosophy.

46. **METHODS OF MENTAL AND PHYSICAL TESTS AND METHODS OF MEASUREMENTS.** Two credits. Second semester. Prerequisite, 45. Laboratory deposit \$1.00. Assistant Professor SMITH.

Laboratory course with conferences. The student will be given practical training in Clinical Psychology and in Experimental Child Psychology.

## PHYSICS

(Basement, Denny Hall)

PROFESSOR OSBORN, ASSISTANT PROFESSOR BRAKEL, and DR. ANDERSON

6. **VIBRATORY PHENOMENA AND SOUND.** Four credits. Second semester. Prerequisites, Physics 1, 2 and Calculus. Professor OSBORN.

The course takes up the development and discussion of the mathematical expressions for wave motions, and various types of vibrations.

7. **LIGHT.** Four credits. First semester. Prerequisites, Physics 1, 2; Math. 4 hours. Professor OSBORN.

This course aims to discuss the more important optical researches and their mathematical theory in elementary form. Their applications to practical problems will be given attention.

8. **ELECTRICITY AND MAGNETISM.** Four credits. First semester. Prerequisites, Physics 1, 2; Math. 4 hours. Three class periods and one laboratory period. Professor BRAKEL.

This course is planned with a view to familiarize the student with the more important experimental and theoretical aspects of the subject.

9. **DIRECT AND ALTERNATING CURRENTS.** Four credits. Second semester. Prerequisites, Physics 8 or 5a and Mathematics, 8 hours. Three class periods and one laboratory period. Professor BRAKEL.

A study of the fundamental principles of direct and alternating currents and the development of methods for the solution of practical problems.

12. **HISTORY OF PHYSICS.** One credit. The year. Prerequisite, 16 hours of Physics. Professor OSBORN.

16. **DYNAMICS.** Two credits. The year. Two class periods. Prerequisites, Physics 10, and Differential Equations. Dr. ANDERSON.

A rigorous mathematical treatment of fundamental principles.

17. **THEORETICAL ELECTRICITY AND MAGNETISM.** Two credits. The year. Prerequisites, 16 hours of Physics, 16 hours of Math. Professor BRAKEL.

A rigorous mathematical treatment of the fundamentals.

18. **ADVANCED OPTICS.** Two credits. Second semester. Professor OSBORN.

Special problems.

19. **THERMODYNAMICS AND KINETIC THEORY OF GASES.** Two credits. The year. Prerequisites, Physics 10, and Differential Equations. Dr. ANDERSON.

Two class periods.

20. **HIGH TEMPERATURE THERMOMETRY.** One credit. Second semester. Prerequisites, Physics 5, 16 hours Math. Dr. ANDERSON. One laboratory period.

21. **ELECTRO-CHEMISTRY AND THEORIES OF E. M. F.** Three credits. Second semester. Professor BRAKEL.

22. **ELECTRON THEORY.** Two credits. The year. Prerequisites, 16 hours Physics, 16 hours Math. or special arrangement. Dr. ANDERSON.

Discussion of recent researches in Conduction of Electricity through Gases, Photo-electric effect and Radioactivity with bearing on the Electron Theory. Two class periods.

24. **COLLOQUIUM.**

Laboratory deposits are \$2.50 per semester in the following courses: 6, 7, 8, 9, 18, 20, 21.

## POLITICAL AND SOCIAL SCIENCE

(Office Room 6, Denny Hall)

PROFESSOR SMITH, PROFESSOR BEACH, ASSISTANT PROFESSOR CUSTIS,  
DR. MC MAHON

10. **PUBLIC FINANCE AND TAXATION.** Three credits. Second semester. Assistant Professor CUSTIS.

Special attention will be given to the problems now before the United States and the several states, particularly Washington.

21-22. **POLITICAL THEORIES.** Two credits. The year. Professor SMITH.

A study of the political ideas that have influenced constitutional development and legislation in England and the United States.

23. **THE GOVERNMENT OF ENGLAND.** Two credits. First semester. Professor SMITH.

To be preceded or accompanied by 19.



30. SOCIAL PSYCHOLOGY. Three credits. Second semester. Professor BEACH.

The growth and nature of custom and convention, and the formation of public opinion. It is also desirable that the student should have had philosophy 15.

33-34. JOINT SEMINAR. Two credits. The year. Professor SMITH, Professor CONDON, Professor MEANY.

Designed for study and reports upon the problems in the historical, political, and legal development of the State of Washington and the Pacific Northwest.

35-36. PRINCIPLES OF ECONOMICS. Three credits. The year. Assistant Professor CUSTIS.

40. CORPORATION FINANCE. Three credits. Second semester. Assistant Professor CUSTIS.

Must be preceded or accompanied by 8.

45-46. SEMINAR IN POLITICAL AND SOCIAL SCIENCE. Two credits. The year.

### SPANISH

(Denny Hall)

PROFESSOR OBER, ASSISTANT PROFESSOR UMPHREY, ASSISTANT PROFESSOR STRONG

FOR UNDERGRADUATES AND GRADUATES

11. TEACHERS' COURSE. Two credits. First semester. Professor OBER.

13-14. CERVANTES. Two credits. The year. Prerequisite, 5-6. Assistant Professor UMPHREY.

15-16. LOPE DE VEGA AND CALDERON. Three credits. The year. Prerequisite, 5-6. Professor OBER.

17-18. THE NOVEL. Three credits. The year. Prerequisite, 5-6. Assistant Professor STRONG.

19-20. THE DRAMA. Three credits. The year. Prerequisite, 5-6. Assistant Professor UMPHREY.

\*21. LYRIC POETRY. Two credits. First semester. Prerequisite, 5-6. Assistant Professor UMPHREY.

\*22. THE SPANISH POPULAR BALLAD. Two credits. Second semester. Prerequisite, 5-6. Assistant Professor UMPHREY.

## FOR GRADUATES

23-24. OLD SPANISH. Two credits. The year. Assistant Professor UMPHREY.

Philology. History of Spanish literature to the 16th century. Reading of the Poema del Cid and selections from other early Spanish writings. Reports on special topics.

## ZOOLOGY

(Science Hall)

PROFESSOR KINCAID, ASSISTANT PROFESSOR E. VICTOR SMITH,  
MR. OSTERUD

3-4. VERTEBRATE ANATOMY. Four credits. The year. Assistant and Professor SMITH.

5. NORMAL HISTOLOGY. Four credits. First semester. Mr. OSTERUD.

6. EMBRYOLOGY. Four credits. Second semester. Mr. OSTERUD.

7. COMPARATIVE HISTOLOGY. Four credits. First semester. Mr. OSTERUD.

8. NEUROLOGY. Four credits. Second semester. Assistant Professor SMITH.

Comparative structure and genesis of sense organs and central nervous systems. To be given on alternate years with 8a.

17-18. GENERAL ENTOMOLOGY. Four credits. The year. Professor KINCAID.

Introduction to study of insects, their structure, classification, ecology and economic relations.

19-20. MUSEUM AND FIELD WORK. Four credits. The year. Professor KINCAID.

Systematic investigation of the local fauna including studies based upon material in the state museum.

21-22. RESEARCH. The year.

Students capable of carrying on independent research will be allowed to do so under the direction of the instructors in charge.

# UNIVERSITY EXTENSION DIVISION

## OFFICERS OF ADMINISTRATION

**THOMAS FRANKLIN KANE, PH. D.**, President of the University.

**EDWIN A. START, A. M.**, Director of the University Extension Division.

**HERMAN A. BRAUER, PH. D.**, in charge Bureau of Municipal and Legislative Reference.

**LEO JONES, A. B.**, in charge Bureau of Debate and Discussion.

## OFFICE STAFF

**IDA N. YEAGER, A. B.**, Assistant to the Director.

**EMILY DODD**, Assistant, Bureau of Municipal and Legislative Reference.

The University Extension Division was organized in May, 1912, as an integral part of the University of Washington, to extend the usefulness of the University, both as a teaching institution for those who cannot avail themselves of the ordinary opportunities of resident study, and as a source of research and information for the state, its communities, and its people. Its activities are organized in

- I. The Department of Instruction.
- II. The Bureaus of
  - (a) Debate and Discussion.
  - (b) Municipal and Legislative Reference.
  - (c) General Information.
  - (d) Lectures.
  - (e) Civic Development.

## I. DEPARTMENT OF INSTRUCTION

### FACULTY

**EDWIN A. START, A. M.**, Director, and Chairman of the University Extension Faculty.

The Extension Faculty is composed of the heads of all departments in which extension courses are given and all instructors giving such courses and of the following:

**CHARLES A. GUSBERG, B. L.**, (University of Paris) Extension Instructor in French.

ALLETTA M. GILLETTE, A. M., (University of Washington) Extension Instructor in English.

A. A. KESTER, A. B., (Olivet College) Extension Instructor in Drawing.

### EXTENSION STUDY

Extension study is carried on by means of:

(1) Correspondence courses, through which individual students may be reached in any part of the state.

(2) Lecture courses with class work at different centers out in the state where classes may be organized, the extent of this depending upon the availability of instructors for field work.

(3) Evening and Saturday classes at the University, a means of study which will be of service to those who live within the territory immediately surrounding the University.

At present this work must be done by members of the Faculty who are already on regular university schedule, whose first duty is to resident students, and until the University Extension work is sufficient to require a staff of extension teachers there will be necessary limits set upon the engagements that can be made. Correspondence courses will ultimately cover all the subjects of the curriculum that can be taught by correspondence, though only a limited number can be offered at the present time.

Extension study is not to be regarded as a quick and easy means of obtaining a degree. Its last and least important use is to obtain formal university credit. Primarily the service of the Extension Division in its courses of instruction is for the benefit of those who are unable to come to the University but who need and desire some of the advantages which university teaching offers. There are offered in the Department of Instruction:

1. Regular university studies which may, under certain conditions, be offered for credit toward a degree.

2. Advanced courses to assist graduates and others in professional or business life to keep in touch with the progress of knowledge.

3. Preparatory studies for those who may not be able to attend the secondary schools.

4. Vocational courses to supply knowledge or training which will directly effect the student's efficiency in his occupation.

### THE METHOD

The University Extension Division publishes a bulletin describing in detail the courses offered by the Department of Instruction and the method of entering upon and carrying them on. Any student contemplating taking extension work should send to the Division for this bulletin which will be furnished together with any special information that may be needed to assist in the selection of courses.

The instruction in these courses is prepared and given by members of the University Faculty, and each course represents a definite amount of work corresponding to an equivalence of work done in residence at the University, or in the standardized schools of our educational system.

To make the work thorough and permanent, the various courses will be arranged, whenever practicable, in co-ordination with the regular residence work, the short courses, and the Summer Session.

Correspondence courses may be begun at any time during the year.

### REQUIREMENTS FOR ADMISSION

No preliminary examination is required for admission to correspondence courses, but the student will be required to give at the time of registration evidence that he is capable of pursuing the desired studies with advantage to himself. Those taking correspondence courses with a view to University credit must comply with the requirements that are imposed upon the resident students for a degree.

### EXPENSES

The giving of extension courses is special and personal service and fees are charged for all courses on account of the extra expense involved in instruction carried on away from the University. The basis of this fee, determined by the successful and extended experience of the University of Wisconsin, will be \$16 for a course of thirty-two assignments, or a proportionate charge for shorter courses. This charge will cover the expense of the instruction and postage one way. Text books, apparatus, and supplies of any kind that will be required for any course in addition to the instructive text furnished by the Division must be purchased by the student. When these supplies cannot be obtained of local dealers they may be ordered through the University

Extension Division, which will obtain them through the co-operative bookstore maintained at the University by the Associated Students of the University of Washington.

#### UNIVERSITY CREDIT

Correspondence students who have had the required preparation for admission to the University and whose program has been approved, will, upon satisfactory completion of a course of correspondence study, be awarded a certificate of credit in the University, but the maximum University credit for work done by correspondence may not exceed one-half of the units required of resident students for graduation. Records of credit for correspondence study are filed in the office of the Extension Division until the student has satisfactorily completed one year in residence, when, if the requirements have been satisfied, the credits may be transferred to the office of the Recorder and applied toward a degree.

The requirement of residence may often be satisfied, in whole or in part, by attendance at the Summer Session of the University. Four summer sessions are accepted for a year of residence.

#### CLASSES

A few courses, necessarily limited as to number and locality, will be given in accessible centres and on evenings and late afternoons at the University as lecture courses, accompanied with the usual class exercises. Such courses have already been given at Tacoma and may be arranged for other near-by cities.

Short courses of lectures may be arranged to run parallel with correspondence courses. The lectures may be open to others besides those carrying on the correspondence course, and two objects thus served.

#### COURSES OF INSTRUCTION FOR 1912-13

The list of extension courses at present offered is subject to change at any time, and additions are frequently made; therefore, if courses are desired in departments not mentioned in this list, inquiry should be made. Full descriptions of the courses will be found in the extension bulletin already referred to, No. 5 in the University Extension Series.

**ASTRONOMY.** Two credit courses of 16 assignments each in General Astronomy are given in this department.

**BOTANY.** Eight courses in botany and horticulture are offered in this department. All of these are credit courses.

**CHEMISTRY.** Extension evening classes at the University will be given by the Department of Chemistry, whenever six or more signify a desire to take any given line of work.

**EDUCATION.** Three lecture courses and four correspondence courses, all credit courses, are offered in the Department of Education.

**ENGINEERING.** Three courses in Civil Engineering, two in Electrical Engineering and three in Mechanical Engineering are offered in the College of Engineering. Some of these may be credit courses.

**ENGLISH.** Four courses of high school grade, eleven of college grade, and two graduate courses, are offered in this department. Some of these are correspondence and some are lecture courses. All may be taken for university credit.

**FORESTRY.** Three courses in Forestry are offered. They may be taken for credit.

**FRENCH.** Ten courses in French are offered. All of these may be taken for credit.

**GEOLOGY.** Five correspondence courses in Geology, all of which may be taken for credit, are offered. A traveling course will be given each summer. That for 1913 will be to the Glacier National Park. A special circular may be had describing this course.

**GERMAN.** Eight courses in German are offered, all of which may be taken for credit.

**GREEK.** The Greek Department offers courses covering the three years' work of the high school, to meet the needs of those who may not be otherwise able to prepare for college. Courses of college grade and graduate courses leading to the degree of A. M. will also be offered when called for.

**HISTORY.** A course in History and one in Civil Government of high school grade and one course in American History are offered by this department. The latter course may be taken for university credit.

**HOME ECONOMICS.** Three courses are offered in this department. These are not credit courses.

**JOURNALISM.** One course is offered in the Department of Journalism. This is not a credit course, but is intended for the practical assistance of newspaper workers.

**LATIN.** The Latin Department offers courses covering the four years' work of the high school, to meet the needs of those who may not be able otherwise to prepare for college. Courses of college grade will be opened if there is a call for them, and this also holds true of graduate courses leading to the degree of A. M.

**LIBRARY ECONOMY.** No formal correspondence course in Library Economy can be offered at present, but all assistance that may be possible will be given in the organization of libraries and in solving the problems of librarians.

**MATHEMATICS.** Four courses in Mathematics are offered, all of them open for university credit.

**MECHANICAL DRAWING.** Four courses in Mechanical Drawing are offered. These may be taken for credit.

**METALLURGY AND MINING.** Special work is offered in the School of Mines for those who are not able to attend the regular courses of the school. Systematic courses along these lines cannot at present be formulated, as the work will have to be directed to meeting individual needs as far as possible. Inquiry should, therefore, be made by anyone interested, accompanied with a full statement of his personal problems and requirements.

**PHILOSOPHY.** Two courses in Philosophy are at present open for extension students in classes held at the University.

**PHYSICS.** Courses in Applied Optics will be given in the department of physics when called for.

**SPANISH.** Five courses in Spanish, all of which may be taken for university credit, are offered.

## II. COMMUNITY SERVICE

### BUREAU OF DEBATE AND DISCUSSION

LEO JONES IN CHARGE

The purpose of this bureau is to foster and assist the practice of debating and open discussion of public questions. There is no more wholesome way of developing habits of right thinking and open mindedness than through full and fair discussion, in which both sides of important questions may be adequately presented. It is, indeed, a most valuable means of general education. Such



debating has been organized and carried on in the high schools of Washington under the auspices of the state department of education and has been stimulated by the annual prizes for competition of accredited high schools of the state given by Senator Wesley L. Jones.

This bureau hopes to further promote and extend this practice, not only in the high schools, but in civic, women's, and farmers' clubs, and in any other organizations interested in such work, by advice, guidance and assistance in obtaining references and materials.

The work of this bureau is closely allied to that of municipal and legislative reference, but it covers the field of information upon public questions in a somewhat different manner and for a different but related purpose.

#### PUBLICATIONS

The bureau will publish, or make available without cost, bulletins which will be practical manuals of the principles of debate, of organization and procedure. There will also be published from time to time bulletins outlining in the form of briefs the arguments for and against propositions of public interest. The range of subjects is wide and growing wider; the need of thorough and intelligent discussion of them in a country like ours, where the people are taking the control of affairs more and more into their own hands, is obvious. These bulletins will also contain adequate working reference lists of published material which is likely to be available or can be furnished by the Bureau. Three bulletins have already been published by the Bureau:

**STATE ROADS AND PERMANENT HIGHWAYS.** Suggestions and references relating to the question assigned for the interscholastic debate of the high schools of Washington for the year 1912-13. University Extension Series, No. 3.

**THE RECALL OF JUDGES.** An outline for debate. University Extension Series, No. 4.

**THE SINGLE TAX.** An outline for debate. University Extension Series, No. 6.

There is in preparation a general manual for debaters and debating organizations and other bulletins relating to various subjects for debate will be published from time to time. In addition to the printed bulletins, the bureau has furnished upon request typewritten outlines similar to the bulletins relating to several subjects which have been debated in certain localities.

## PACKAGE LIBRARIES

Much of the most serviceable material upon these public questions is contained in magazines, newspapers, and government documents, which are not always and everywhere accessible. With the co-operation and assistance of the University Library, the bureau will collect and classify much of this material, preparing it in convenient package libraries, which may be borrowed without charge for a period not to exceed fourteen days which time may in some cases be extended upon request. Particular paragraphs or chapters of books will in some cases be copied and the copies included in the package libraries.

## HOW THIS SERVICE IS OBTAINED

The services of this bureau are rendered without charge to all citizens of the state. For any information in regard to this work not here given and for publications of the bureau, application should be made to the Director, University Extension Division, University of Washington, Seattle.

## MUNICIPAL AND LEGISLATIVE REFERENCE BUREAU

## HERMAN A. BRAUER IN CHARGE

This bureau was organized in the University Extension Division in November, 1912, for the purpose of collecting, classifying, indexing, and making available for the work of the University, for state legislators, state and municipal officers, and for others as far as practicable, accurate data on questions of government, administration and comparative legislation.

The establishment of this bureau by the University is in line with the best precedents of some of our foremost universities, states and municipalities. The public official is at a disadvantage owing to lack of time for adequate investigation of the questions with which he has to deal. It is the duty of the people whom he serves to provide him with expert aid for the study of legislative and administrative problems. This cannot be done better than through the University with its already large corps of experts and its established and steadily growing libraries.

OFFICE. The headquarters of this Bureau is at the University where the secretary in charge may be consulted. The two libraries of the University—general and law—are here available and the bureau is likewise accumulating a large collection of material of immediate value—laws, ordinances, charters, reports, etc.—all of which is classified and indexed for quick reference.

**THE LEGISLATURE.** By resolve of the legislature of 1913 the secretary in charge of the bureau was invited to Olympia and given an office in the Attorney-General's department during the session of the legislature. He acted as advisor and investigator for committees and members of the legislature, utilizing for reference purposes the state general and law libraries.

**MUNICIPAL GOVERNMENT.** The bureau aims to be in close touch with the municipalities of the state and to be prepared to aid their officers in dealing with the problems of municipal government. These problems are various and are often closely involved with state legislation. There are questions of health and sanitation, of traffic and transportation, of street paving, street cleaning, water supply, garbage and sewage disposal, milk and food inspection, public works, public utilities, and public service rates; questions of municipal employment, city planning, parks and playgrounds, civic centers, art commissions, schools, charities and corrections, accounting methods, commission government and the hundred and one other subjects of municipal interest which now exist or from time to time may arise.

It will be seen that the Bureau aims to be a clearing house for municipal and legislative experiments and experience all over the world, so that our public men may be placed in a position to profit both by the wisdom and by the mistakes of states and cities in this and other countries.

The work of this bureau is a natural development of the public service function of the state university. As such public service, it is rendered without fee or charge at any time, except travelling expenses when it is necessary for a representative of the bureau to visit any locality.

It is non-partisan, non-political, and absolutely confidential. Its function is not to convert or convince, nor even to recommend or to offer advice, but to give information in a purely non-partisan spirit, so that facts may speak for themselves. Its services are equally open to those on all sides of any question, its sole object being to provide them with the necessary data for intelligent action.

A circular of information setting forth more in detail the plans and work of the bureau may be had upon application to the Extension Division, Municipal and Legislative Reference Bureau.

**BUREAU OF GENERAL INFORMATION**

The University, through several of its departments, is constantly rendering valuable expert public service. Some of this work has its own established organization. It is intended to make this bureau ultimately a general reference clearing house of general knowledge similar to that provided by the preceding bureau in the special field of government.

In its departments of instruction and of research, in its library, its museum, and its technical schools, all manned by experts, the University has a reservoir of knowledge which it is intended to make of service to the state wherever other agencies are not more available.

The University will in no way, through this bureau, enter the field of professional consulting experts. Indeed, its function will probably often be to recommend the employment of such experts. Beyond this, as the servant of the state, it may properly render gratuitous public service and furnish advice to individuals whose means and interests do not call for paid experts.

Application for its services should be accompanied with a full and detailed statement of the conditions and circumstances leading to the application or inquiry. It is not intended to open a question box for trivial inquiries, but to assist in the solution of the real problems of life with which citizens of the state may have to deal in their personal or private capacity. Problems affecting communities will be considered in preference to those relating to individuals, when it is not possible to deal with all inquiries.

Application for this service should be made to the Director of the University Extension Division, University of Washington, Seattle.

**BUREAU OF LECTURES**

The University Extension Division offers a list of lectures, single or in courses, some of them popular in character, others designed primarily for study classes. The lectures listed by this bureau are, however, distinct from the lecture classes mentioned under the Department of Instruction. As most of the lecturers are members of the University Faculty, the securing of dates for lectures will have to be limited by the prior demands of their university engagements. When arrangements are made sufficiently far in advance, it may be possible to group appointments to the advantage of the lecturer and the local organizations.

The ordinary fee for Extension Lectures is ten dollars (\$10.00) and expenses. This is intended to provide, in addition to his traveling expenses, only a moderate personal fee for the lecturer. The services of the Extension Division is rendered without charge. For illustrated lectures there will sometimes be additional expense, but this is slight, as the Bureau of Lectures provides its own apparatus, reducing the cost of illustration to a minimum.

The policy of this bureau is to provide the best lectures possible for the greatest possible number of auditors at the lowest possible cost. Arrangements can best be through some local organization which can secure the audience and the necessary local work.

The bureau will also provide commencement and teachers' institute speakers when desired.

Those interested in obtaining lectures should apply to the bureau for its list of lectures and any information in regard to arrangements will be cheerfully furnished and all possible assistance given.

#### BUREAU OF CIVIC DEVELOPMENT

It is proposed, as opportunity and desire for such service may arise to promote the organization and helpful activity of social centres, to encourage the wise use of school and other public buildings, the institution of lecture courses and other educational work, and to assist in general in the advancement of communities, large and small, and the quickening of their intellectual life. The Director will be pleased to correspond or confer with persons interested in such work with a view to determining how and to what extent the University may serve in this direction the welfare of the state.

A preliminary bulletin on "The Social and Civic Centre" (University Extension Series No. 2), a summary outline of the subject with a bibliography, has been published and may be had upon application.

#### LOAN COLLECTIONS

It is proposed to prepare collections which may be obtained for specified periods for exhibition in libraries and schools, or to use for educational purposes. These will comprise collections of

- (a) Photographs, of educational or artistic value;
- (b) Lantern slides;

(c) Scientific collections, prepared by the University Museum, those which may be expected to be ready in the near future being geological and educational. The Museum is already the repository of a large amount of valuable scientific material, some of which it is hoped to make more accessible to the people of the state.

## **SUMMER SESSION**

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The tenth annual summer session will be held from June 23d to August 1st, 1913. The date of opening has been placed late enough for teachers coming from long distances or from schools which close late to reach the University in time for the opening.

### **ADMISSION**

Formal entrance examinations are not required. Applicants, however, must give evidence of sufficient maturity and preparation to profit by the work offered.

### **CREDITS**

A maximum of six semester hours of credit may be obtained during the session. Students registering after July 1st will not be permitted except under unusual circumstances to secure the maximum number of hours. Deviations can be secured only by special permission of the faculty.

### **TEXT BOOKS**

Text books may be purchased at reduced rates at the University Book Store. The book store is located on the campus near Denny Hall.

### **FOR WHOM INTENDED**

The summer Session is designed to meet the needs of the following classes of persons:

1. College graduates who wish to specialize or to work for advanced degrees.
2. Superintendents and principals who wish to acquaint themselves with recent progress in education or to study special problems.
3. High school teachers who wish to advance in their special lines of work.
4. Elementary and grammar school teachers who wish to work towards a collegiate degree.
5. Undergraduates who for some good reason find it necessary to shorten the period of their college course.

6. Candidates for certificates who need special courses in education and psychology or other subjects.

7. Persons who are preparing to become specialists in college and normal school positions.

8. Persons who desire practical field-work in botany, geology, and zoology.

9. Persons who wish special instruction in music, drawing, manual training or physical training.

### FACILITIES

The Summer Session is especially designed to be of assistance to teachers who cannot be in attendance during the regular sessions. The University places at the service of teachers practically all of the facilities of the College of Liberal Arts and the College of Science, the School of Education, and the Graduate School. In addition, there is work offered in manual training, music, drawing, and physical training. The laboratories, libraries, and museum are open and the various departments offer both undergraduate and graduate work equal in quality to that offered during the rest of the year. In a very large number of cases heads of departments are in charge of the work. In addition to regular members of the faculty, several prominent lecturers from outside the University will give courses.

### REGISTRATION

Saturday, June 21st, and Monday, June 23d, will be regular registration days. As many as possible should plan to register on Saturday. Class work will begin on Tuesday, June 24th, at 8 o'clock.

### FEES

The regular registration fee of ten dollars (\$10) is required of all students, and admits to all the privileges of the Summer Session, except certain laboratory courses in science and to special music courses requiring individual instruction. See the statements of these courses for the special fees. No reduction of fees will be made because of late registration or early withdrawal. Open lectures are free to all students regularly registered in the Summer Session.

### MASTER'S DEGREE THROUGH SUMMER SESSIONS.

At each succeeding Summer Session a larger number of graduate students are in attendance. In 1912 nearly one third of the



whole number of attendants were graduate students. Many were planning definitely to apply their work toward higher degrees. The University will accept four Summer Sessions of work as a fulfillment of the year of required residence, provided the student does work between the sessions under regulations prescribed by the graduate faculty and the departments concerned. With the new opportunities for extension work many will doubtless be enabled to secure master's degrees in the above manner.

#### CORRESPONDENCE COURSES

The University has established correspondence courses in many departments. These will be of special advantage to students who have been in attendance at Summer Sessions and who wish to go forward to degrees. The correspondence work can be very advantageously planned as a continuation of the regular Summer Session. For detailed information concerning correspondence courses write Director Edwin A. Start.

#### SCHOOL OF EDUCATION

The Summer Session and the School of Education will stand in very close relations to each other. Doubtless a large number who plan to secure a degree or a Normal Diploma through the School of Education will accomplish much of the work in summer sessions. The work of the Summer Session being especially arranged for teachers will make it possible to accomplish this.

For bulletin of the Summer Session address Recorder E. N. Stone. For other information address Frederick E. Bolton, Director of the Summer Session.

# **PUGET SOUND MARINE STATION**

**FRIDAY HARBOR, WASHINGTON**

**June 23—August 1, 1913**

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## **DIRECTOR**

**TREVOR KINCAID, University of Washington.**

## **COUNCIL**

**W. J. BAUMGARTNER, University of Kansas.**

**JOHN F. BOVARD, University of Oregon.**

**HOWARD S. BRODE, Whitman College.**

**H. B. DUNCANSON, Nebraska State Normal**

**WILLIAM MOODIE, Bellingham State Normal.**

**JOHN P. MUNSON, Ellensburg State Normal.**

**GEORGE B. RIGG, University of Washington.**

**MABEL R. MARSH, Puget Sound University.**

**ALBERT R. SWEETSER, University of Oregon.**

**C. H. SHATTUCK, University of Idaho.**

This institution is the outgrowth of work in marine exploration carried on for many years by the biological departments of the University of Washington. In 1904, recognizing the growing demand for this step, a marine station was definitely established in rented quarters at Friday Harbor in the San Juan Archipelago, and sessions have been regularly held each summer since that date. In the year 1909, with a view to widening the scope of usefulness of the institution, it was placed upon a co-operative basis, the majority of the universities and colleges of the Northwest participating in the organization.

The purpose of the station is primarily to furnish instruction to students wishing to acquire at first hand a knowledge of marine life and to give instructors in biology an opportunity to collect materials and data for class use. Secondly, the station hopes to furnish a rendezvous for persons desiring to engage in researches upon marine organisms, especially such as promise to be of practical value to the people of the state.

The location of the station in the midst of the picturesque islands of the San Juan Archipelago, which lies in the northern

section of Puget Sound, surrounded by waters unrivaled for their wealth of ocean life, makes the site an ideal one for the study of marine organisms. The land flora and fauna of the islands are also of great interest and present favorable opportunities for the study of many striking species of birds, plants and insects.

In the spring of 1910 a commodious building was constructed upon a site donated by Mr. Andrew Newhall of Friday Harbor. This structure contains upon its main floor a general laboratory for class work, the office of the director, a store room for two large salt water aquaria. The second floor is occupied by a lecture room and by nine rooms for the convenience of persons engaged in research work. The third story is utilized as a store room and drying loft. The laboratory is abundantly supplied with running fresh and salt water and is lighted by electricity.

The equipment of the station includes microscopes and the essentials for microtome work, also a small but well selected library of books and pamphlets bearing upon the biology of the Pacific Northwest. A steamer is employed to transport parties to points of vantage among the islands, as well as to manipulate the dredge used in exploring the deep waters of the channels and bays in search of bottom forms. Plankton nets are also available, as well as material for quantitative work along this line.

The courses to be offered at the station during the session of 1913 will include the following: Elementary Zoology, Elementary Botany, Animal Ecology, Classification of Algæ, Embryology of the Invertebrates, and Classification of Phanerogams. A maximum of six credits may be earned at the station during the session, and these will be accepted at par by any of the affiliated institutions.

The cost of living is minimized as far as possible for those taking courses at the station. Tent houses are provided as sleeping quarters and excellent board is furnished at the rate of four dollars per week. The expense attached to a stay of six weeks at the station, including the contingent fee of ten dollars, board, lodging and incidentals, need not exceed fifty dollars.

For more detailed information apply to the director, Professor Trevor Kincaid, University Station, Seattle, Wash.

# DEGREES

## CONFERRED 1912

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### BACHELOR DEGREES

#### COLLEGE OF ARTS AND SCIENCES

##### BACHELOR OF ARTS

Grover Charles Adair  
Ruth Abigail Allen  
Lois Velenthol Almack  
Laura Ames  
Pearle Elma Anderson  
Elsie Andrews  
Frederic William Ashton  
Luna Pearl Athen  
Jessie Cameron Ayres

Anna Cordelia Balch  
*(cum laude)*  
Ethel Leona Baldrige  
Ethel Mary Bardell  
Katherine Biggs  
Pearl Boddy  
Herman Carl Bohn  
Marjorie Borrill  
*(cum laude)*  
Edna Fay Bouton  
Ernie Belle Brigham  
Lulu Albia Brown  
Mollie Burnett

Ida Hedwig Carssow  
Eugene Felix Cayo  
Fannie Grace Charles  
Laura Theo Child  
Ruth Anna Christesen  
Charles Walter Clark  
Levi Clark  
Raymond Woollen Clifford  
Ralph Campbell Cochran  
Helen Natalie Collier  
Bess Cowley  
Julia Virginia Cox

Ethel Agnes Daniels  
Lucy Adelaide Daubney  
Myvanny Davies  
Veronica Courtney Day  
Charles Henry Deane  
Lillian Dickinson  
Mae Hazel Dolsen  
Alice May Donaway  
Nellie Gertrude Drake

Samuel Darragh Earhart  
Winfield Richard Eberle  
Elsie Erickson  
*(cum laude)*  
Sadie Ettelson  
Virginia Harriett Evans

Frances Elva Farnham  
Julia Irene Felt  
Hazel Velma Fletcher  
Helen Dean Frater  
John Archibald Frater

Grace Emily Goodner  
Vincent Herbert Gowen  
Clarence Milo Grace  
Ethel Alberta Hanson  
Marjorie Harris  
Clara Hastings  
Alice Pace Hensen  
Edmund Wilbur Hilton  
Beulah Jane Holeman  
Herman Price Hoyle  
Lila Alice Hunter  
Stella Thetta Hunter

## DEGREES

329

Kathryn Margaret Iffland  
 Edna Ione Ingersoll  
 Winnie Davis Joiner  
 Leo Jones  
 Nellie Margaret Keesling

*(cum laude)*  
 Ruth Mary Keyes  
 Irene Mae Kilty  
 John Mitchell Kinseley

Allen Lacey  
 Ruth Elizabeth Laden  
 Sol Harris Lewis

*(cum laude)*  
 Katherine Lentz  
 Herman Joshua Hessel Levison

Tennie Algodt Lind  
 Roy Spencer Lipscomb  
 Mildred West Loring

*(cum laude)*  
 Mary Agnes Lovejoy  
 style="text-align: center;">*(cum laude)*  
 Winifred Lovejoy

Esther Mary McCollough  
 Horace Lyman McCoy  
 Robin Sarah Anne McKinley  
 Corabel MacNaughton  
 Ralph Day Major  
 Anna Dorothy Miller  
 Agnes Myrtle Mobeck  
 Adelaide Moody

Ruth Anna Moody  
 Nellie Nevada Neal  
 Grethen Marlon O'Donnell  
 Kathleen Eudora Parker  
 Stella Eva Pearce  
 Mabel Albertaine Peterson  
 Elizabeth Mae Pollock  
 Edith Louise Potter  
 James William Prater  
 Alida Henrietta Reinberg  
 Margaret Amine Reeder

Stuart Arthur Rice  
 style="text-align: center;">*(cum laude)*  
 Vera Miriam Richards  
 Mary Christina Roberts  
 Winifred Romney  
 Catherine Isabelle Ross  
 Hattie Roys

Margaret Josephine Sackett  
 Ruth Marie Sauter  
 Hugo Henry Schneider  
 Rebecca Schneider  
 Ernest Thornton Shaw  
 Alice Margaret Shelton  
 Florence May Sherman  
 Johnson Sherrick  
 Roxy Margaret Smith  
 Robert Wetzler Stevens  
 William Parberry Stevens  
 Janet Elizabeth Stevenson  
 Ole Stuen  
 Sabra Godfrey-Sweet

Gladys Augusta Teel  
 Ellen Anne Thomas  
 Viola Alice Thurmond  
 Edith Edna Towsley  
 Mien Tsao

Anna Pixlee Warren  
 Margaret Westervelt  
 Laura Regina Wheat  
 Ruth Ellen Whitman  
 Ada Laughlin Sargent Wight  
 Alma Martha Wingate  
 Catharine Nancy Willson  
 Francis Thompson Wilson  
 Maud Wilson  
 Ida Fayette Wright  
 Conrad Evert York  
 Sanford Myron Zeller

### BACHELOR OF SCIENCE

Arnold Clarence Argo  
 Goff MacKinnon

Edna Belle Lawrence

### BACHELOR OF SCIENCE IN HOME ECONOMICS

Nellie Louise Burt  
 Ruth Pauline Evans

Stella May Fowler

## NORMAL DIPLOMAS AND CERTIFICATES

## UNIVERSITY LIFE DIPLOMA

Pearle Elma Anderson  
 Peal Boddy  
 Lulu Albia Brown  
 Grace Annabel Forbes

Nellie Nevada Neal  
 Elizabeth Mae Pollock  
 Addie Lillian Searce  
 Ethel Shave

## UNIVERSITY TEACHERS' CERTIFICATE

Laura Ames  
 Elsie Andrews  
 Anna Cordella Balch  
 Katherine Biggs  
 Marjorie Borrill  
 Mollie Burnett  
 Nellie Louise Burt  
 Ida Hedwig Carssow  
 Fannie Grace Charles  
 Laura Theo Child  
 Ruth Anna Christesen  
 Charles Walter Clark  
 Julia Virginia Cox  
 Inez Helena Craven  
 Ethel Agnes Daniels  
 Lucy Adelaide Daubney  
 Myvanny Davies  
 Veronica Courtney Day  
 Lillian Dickinson  
 Alice May Donaway  
 Ruth Pauline Evans  
 Elsie Erickson  
 Virginia Harriett Evans  
 Sadie Ettelson  
 Julia Irene Felt  
 Hazel Velma Fletcher  
 Helen Dean Frater  
 Rosemary Georgeson  
 Ethel Alberta Hanson  
 Marjorie Harris  
 Clara Hastings  
 Beulah Jane Holeman

Lila Alice Hunter  
 Kathryn Margaret Iffland  
 Nellie Iffland  
 Edna Ione Ingersoll  
 Winnie Davis Joiner  
 Nellie Margaret Keesling  
 Irene Mae Kilty  
 Ruth Elizabeth Laden  
 Roy Spencer Lipscomb  
 Mildred West Loring  
 Robin Sarah Anne McKinley  
 Corabel MacNaughton  
 Adelaide Moody  
 Ruth Anna Moody  
 Kathleen Eudora Parker  
 Vera Miriam Richards  
 Mary Christina Roberts  
 Ruth Marie Sauter  
 Alice Margaret Shelton  
 Johnson Sherrick  
 Roxy Margaret Smith  
 Edgar Adolphus Stanton  
 Gladys Augusta Teel  
 Viola Alice Thurmond  
 Edith Edna Towsley  
 Lovisa Catharine Wagoner  
 Ernest Frederick Wells  
 Laura Regina Wheat  
 Ruth Ellen Whitham  
 Ada Laughlin Sargent Wight  
 Catharine Nancy Willson  
 Alma Martha Wingate

## COLLEGE OF ENGINEERING

## BACHELOR OF SCIENCE IN CIVIL ENGINEERING

Clifford Walter Anderson  
 Horace Morton Bringham  
 Elmer Arthur Conner  
 Herbert Judson Flagg  
 Roy Laird Greene  
 Frank Alvah Kittredge  
 Rolland Wayne Lincoln  
 (*cum laude*)

Anstin Gladstone Mansfield  
 Roy Elmer Smith  
 William Durkee Smith  
 Edwin Leonard Strandberg  
 Clement Waite  
 William Floyd Way

## BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

Harold Edwin Cleaves  
Elven Tinus Ellefson

Marc de Lepine Darrin  
(*cum laude*)

## BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

Otis Edward Keeler  
Roger Bonner Mullen  
Wendell Monroe Nelson

Eugene Irving Pease  
Gail Braddock Shadringer  
Raymond Rex Wisner

## BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

William Lyle Dudley  
Dwight Dryden Hartman

Royal Rudolph Pullen

## COLLEGE OF FORESTRY

## BACHELOR OF SCIENCE IN FORESTRY

Walther Ludwig Elich  
Edward John Hanzlik  
(as of the class of 1911).

Walter Hanson Leve  
Justin Walter Ottestad

## SCHOOL OF LAW

## BACHELOR OF LAWS

Fred Rufus Angevine  
Statira Grant Biggs  
Lloyd Llewellyn Black  
Edwin James Brown  
Edgar Floyd Burns  
Arthur Eugene Campbell  
Edward Francis Chabot  
John Frederick Chesterley  
James Francis Clark  
William Jennings Coyle  
Harold Vivian Davis  
Charles Henry Deane  
Robert Grant Denney  
Ben Driftmier  
Charles Oliver Flint  
Charles Raymond Gray  
Van Christenberry Griffin  
Warren Ort Grimm  
Huber Edwin Grimm  
Fritz Harri  
Nelson Thomas Hartson  
Reed Heilig  
Otis Boutwell Hergert

Andrew Reuben Hillen  
Glenn Edwin Hoover  
Peter Husby  
Harry Leo Jones  
Palmer Kennedy  
Ronald George McPhee  
Russell Anderson Mackey  
John Gordon March  
John Egbert Marshall  
Louis Aleck Molin  
Melville Mucklestone  
Arthur Edward Nafe  
Carleton Howard Norris  
Wallace Farnan Pardoe  
Morris Jack Schwartz  
William Batholomew Severyns  
Herbert Henry Sieler  
Ewing Stephens  
Lane Summers  
Myron Weldon Tupper  
Walter Andrew Wand  
Ellis Edwin Warner  
Grover Clark Winn

## COLLEGE OF MINES

## BACHELOR OF SCIENCE IN MINING

|                       |                         |
|-----------------------|-------------------------|
| Monroe Tetsuji Awoki  | Henry Ambrose Cole      |
| Paul Thomas Benson    | Horace Holmes Crary     |
| Robert Wilson Bissell | Albert Charles Jenkins  |
| ( <i>cum laude</i> )  | Clinton Robert Lewis.   |
| Delbert Earl Carr     | Errol Llewilyn Thomason |
|                       | Arthur Edward Williams  |

## BACHELOR OF SCIENCE IN GEOLOGY AND MINING

|                       |                     |
|-----------------------|---------------------|
| George Oakley Hallock | Warren Slocum Smith |
|-----------------------|---------------------|

## BACHELOR OF SCIENCE IN METALLURGICAL ENGINEERING

Franklin George Roberts

## BACHELOR OF SCIENCE

Carl Bernard Anderson

## COLLEGE OF PHARMACY

## BACHELOR OF SCIENCE IN PHARMACY

|                       |                      |
|-----------------------|----------------------|
| Frank Gilluly         | Charles Quay North   |
| Frances Edith Hindman | Hubert Ralph Ridgway |
| Josephine Johnson     | Bess Eliza Storch    |
| ( <i>cum laude</i> )  | Peter Thompson       |

## PHARMACEUTICAL CHEMIST

|                              |                            |
|------------------------------|----------------------------|
| Alice Augusta Ball           | Frank Erwin Jacquot        |
| Katherine Elizabeth Blum     | Mabel Bever Laizure        |
| Allen Crede Bonebrake        | Earl Milliron Platt        |
| Elsie Hawley Carr            | (as of the class of 1911). |
| Ray Bradford Conner          | Jennie Elizabeth Rogers    |
| Emma Christina Crogstad      | Guy Scace                  |
| Benjamin Franklin Eager, Jr. | Frederick George Sivear    |
| Richard Gillman Fryar        | Leroy Ellison Sligar       |
| Hazel Virginia Hillis        | Elwyn Benjamin Van Zandt   |



## **GRADUATE DEGREES**

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### **GRADUATE SCHOOL**

#### **MASTER OF ARTS**

- Raymond Nims Ashmun,  
A. B., University of Washington
- Guy Vernon Bennett,  
A. B., University of Kansas, 1901
- Grace Martha Boyd,  
A. B., Hastings College, 1902
- Blanche Gertrude Jackson,  
A. B., University of Washington
- Enoch Karrer,  
A. B., University of Washington
- Horace Hardy Lester,  
A. B., University of Minnesota
- Herbert Henry Lewis,  
A. B., University of Washington
- Earl Leroy Packard,  
A. B., University of Washington
- Otto Emil Plath,  
A. B., Northwestern College
- Lloyd Leroy Small,  
A. B., University of Washington
- Gertrude Inez Streater,  
A. B., University of Washington, 1909
- Mekkin Sveinson  
A. B., University of Washington
- Frederick Johann Wettrick,  
A. B., Valpariso College  
(as of the class of 1906)

#### **MASTER OF SCIENCE**

(in Forestry)

- Robert Walter Douglas,  
A. B., University of Michigan
- Samuel Alexander Stamm,  
B. S. in C. E., Ohio Northern University

## **SCHOLARSHIPS AND PRIZES AWARDED**

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The following awards of prizes and scholarships were made for 1913:

- The John Walter Ackerson Prize for Women of \$100.00  
Louise L. Smith
- The Women's League Scholarship of \$100.00  
Blanche M. Thorpe
- The Judge Alfred Battle Debating Prize of \$75.00  
Reuben Hilen     John Bovingdon
- The Philo Sherman Bennett Essay Prize of \$25.00  
Charles McKinley
- The E. F. Blaine Oratorical Prize of \$100.00  
Reuben Hilen
- The Judge Thomas Burke French Prize of \$30.00  
Annah L. Shelton
- The Judge Thomas Burke German Prize of \$30.00  
Louise Smith
- The Judge Thomas Burke Latin Prize of \$60.00  
Imogene B. Platt
- The Vivian W. Carkeek Law Essay Prize of \$25.00  
Arthur Edward Nafe
- A Scholarship in Chemistry (Anonymous) of \$150.00  
Dean Waynick
- The L. J. Corkery Oratorical Prize of \$15.00  
John Bovingdon
- The Jacob Furth Electrical Engineering Prize of \$100.00  
Wendell M. Nelson
- The Kerl Industrial Chemistry Essay Prize of \$100.00  
George H. Stillson     David Levin
- The Andrew Lanquist Swedish Scholarship Prize of \$25  
Victoria Anderson
- The Norwegian National League Scholarship Prize of \$25.00  
Mrs. Margaret Murray Botten
- The Danish-American Scholarship  
First Prize of \$25.00, Hilding Anderson  
Second Prize of \$10.00, Harry B. Nelson

# REGISTER OF STUDENTS

## GRADUATE SCHOOL

| Name of Student   | Home Address.    |
|---|------------------|
| ✓ Anderson, Lillian Eugenie.....                          | Seattle          |
| A. B., University of Nebraska, 1906.                      |                  |
| Ashton, Fred W. ....                                      | Seattle          |
| A. B., University of Washington, 1912. M. S., Chemistry.  |                  |
| ✓ Athen, Luna Pearl .....                                 | Seattle          |
| A. B., University of Washington, 1912 M. A., Mathematics. |                  |
| Ault, Elll .....  | Enterprise, Ore. |
| A. B., Baylor College, 1912. M. A., History.              |                  |
| Awoki, Monroe Tetsugi .....                               | Ogaki, Japan     |
| B. S., in Mines, University of Washington, 1912           |                  |
| M. S., Geology.   |                  |
| Ayers, Jessie C. ....                                     | Seattle          |
| A. B., University of Washington, 1912 M. A., Botany.      |                  |
| ✓ Ballard, Jessie Alma .....                              | Willamina, Ore.  |
| A. B., Nebraska Wesleyan University, 1910.                |                  |
| ✓ Bardell, Ethel Mary .....                               | Seattle          |
| A. B., University of Washington, 1912. M. A., Botany.     |                  |
| ✓ Bass, Emma Alice .....                                  | Bellevue         |
| A. B., University of Washington, 1911. M. A., Philosophy. |                  |
| ✓ Beers, Berthadell .....                                 | Seattle          |
| A. B., Northwestern University, 1908.                     |                  |
| ✓ Bell, Elsie Adelaide .....                              | Seattle          |
| Ph. B., University of Wisconsin.                          |                  |
| Benson, Perry H. ....                                     | Portland, Ore.   |
| A. B., University of Iowa, 1910.                          |                  |
| Bonham, Almira Kelshaw .....                              | Seattle          |
| B. L., University of California, 1901. M. A., Spanish.    |                  |
| ✓ Brown, Lulu Albia .....                                 | Seattle          |
| A. B., University of Washington, 1912. M. A., English.    |                  |
| Burns, Omar A. ....                                       | Seattle          |
| A. B., Greenville College.                                |                  |
| M. A., University of Washington, 1906.                    |                  |
| ✓ Clark, Beatrice Virginia .....                          | Seattle          |
| A. B., University of Nebraska, 1907.                      |                  |
| ✓ Culmer, Myrtle Asbury .....                             | Seattle          |
| A. B., Ohio Wesleyan University, 1902. M. A., Botany.     |                  |

- ✓ Cummins, Robert Alexander .....Tacoma  
 B. S., Illinois Wesleyan University, 1909.  
 M. A., University of Illinois, 1910.
- ✓ Curtis, Leslie Forrest .....Seattle  
 B. S., Tufts College, 1910.
- ✓ Darrin, Marc de Lepine.....Bellingham  
 B. S., University of Washington, 1912.  
 M. S. in Chem. Engineering.
- Davis, Mrs. Georgia MacDougall.....East Seattle  
 A. B., University of Washington, 1911.
- Davis, Mrs. S. Irene Hunt.....Olga  
 A. B., University of Washington, 1903.
- ✓ Denny, F. William .....Seattle  
 A. B., University of Washington, 1909.
- Drake, Dorothy E. ....Seattle  
 A. B., University of Washington, 1911.
- Drake, Nellie G. ....Seattle  
 A. B., University of Washington, 1912.
- Duby, Marie Caroline .....Seattle  
 A. B., Stanford University, 1906.
- ✓ Dunkle, Robert Eugene .....Carrollton, Missouri  
 B. S. in Elec. Engineering, University of Missouri, 1910.
- Edson, Lucia Eola.....Rutland, Vermont  
 A. B., Mt. Holyoke College, 1909.      M. A., Zoology.
- Eisentrant, Dora .....Sioux City, Iowa  
 A. B., Morningside College, 1896.
- ✓ Ericson, Oliver F. ....Seattle  
 A. B., Bethany College, Kansas, 1910.      M. S. in Forestry.
- Estby, Marie .....Seattle  
 B. S., Washington State College, 1903.
- ✓ Farnham, Frances Elva .....Ellensburg  
 A. B., University of Washington, 1912.      M. A., German.
- Fay, Dorothy Wheaton .....Seattle  
 A. B., Vassar College, 1912.      M. A., English.
- Fischer, Adelaide D. ....Seattle  
 A. B., University of Washington, 1909.      M. A., German.
- Flett, Mrs. Clara Baker.....Seattle  
 A. B., University of Wisconsin, 1884.      M. A., Political Science.
- Gandolfo, Florence Catherine .....Seattle  
 A. B., Stanford University, 1910.
- ✓ Giblin, Chester Earl .....Hoquiam  
 A. B., University of Colorado, 1906.      M. A., Physics.

- Gleason, Mabel .....Seattle  
A. B., University of Washington, 1909.
- ✓ Golisch, Edward Herman .....Seattle  
Ph. B., Simpson College, 1907. M. A., Education.
- ✓ Gowen, Vincent Herbert .....Seattle  
A. B., University of Washington, 1912.
- Hannan, Ethel Elizabeth .....Seattle  
A. B., University of Washington, 1911.
- Harris, Marjorie .....Seattle  
A. B., University of Washington, 1912. M. A., French.
- ✓ Hartman, Frank A. ....Seattle  
A. B., University of Kansas, 1905.  
M. A., University of Kansas, 1909. Ph. D., Chemistry.
- Hartsook, Ina .....Seattle  
A. B., Drake University, 1910.  
B. Ed., Drake University, 1910.
- Henson, Alice Pace .....Seattle  
A. B., University of Washington, 1912. M. A., English.
- ✓ Herring, John P. ....Seattle  
A. B., Brown University, 1904.
- ✓ Hill, Harry H. ....Carrollton, Ohio  
A. B., University of Wyoming, 1911. M. A., Chemistry.
- ✓ Hilton, Edmund Wilbur .....Seattle  
A. B., University of Washington, 1912. M. A., Latin.
- Hindman, Frances Edith .....Baker, Oregon  
B. S. in Pharmacy, University of Washington.  
M. S. in Pharmacy.
- Hoepfner, Josephine .....Seattle  
B. S., Washington State College, 1902.  
M. A., Washington State College, 1908. Ph. D. German.
- Holmes, Mary Edith .....Seattle  
A. B., University of Michigan, 1903.  
M. A., Columbia University, 1911.
- ✓ Hultgren, Claes Leonard .....Seattle  
B. S., Ohio Wesleyan University, 1903. M. A., Political Science.
- ✓ Hunt, George McMonies .....Berkeley, California  
B. S., University of California, 1911.
- ✓ Jeffers, John Robinson .....Seattle  
A. B., Occidental College, 1905.
- Jenks, Gracia L. ....Seattle  
B. L., Carleton College, 1895.
- Johnson, Josephine .....Seattle  
B. S. in Pharmacy, University of Washington, 1912.  
M. S. in Pharmacy.

- Jones, Evelyn .....Seattle  
A. B., Northwestern University, 1908. M. A., Education.
- ✓ Jones, Leo .....Seattle  
A. B., University of Washington, 1912. M. A., Political Science.
- Kahan, Rose .....Seattle  
A. B., University of Washington, 1908.
- Kahan, Sarah Edna .....Seattle  
A. B., University of Washington, 1906.  
M. A., University of Washington, 1907.
- ✓ Karlstram, Otto Reinhold .....Seattle  
A. B., Augustana College, 1909.
- ✓ Karrer, Sebastian .....Roslyn  
A. B., University of Washington, 1911. M. A., Physics.
- ✓ Kastman, Frans Erik Wilhelm .....Seattle  
A. B., Augustana College, 1907.
- Kirkwood, Elizabeth Timanus .....Seattle  
A. B., University of Kansas, 1906.
- Kirkwood, Louise Laura .....Seattle  
Ph. B., College of Emporia, 1903.  
M. A., College of Emporia, 1904.
- Knapp, Gertrude Allene .....Seattle  
M. A., Albin College, 1885.
- ✓ Kniseley, J. Mitchell .....Seattle  
A. B., University of Washington, 1912. M. A., Education.
- Korstad, Mrs. Mary Green .....Seattle  
A. B., University of Washington, 1911. M. A., Zoology.
- Kruse, Mrs. Alice Manney .....Seattle  
A. B., State University of Iowa, 1909.
- ✓ Kruse, Paul J. .....Seattle  
A. B., State University of Iowa, 1906. M. A., Education.
- Kuster, Mrs. Una C. .....Seattle  
A. B., University of California, 1908.  
M. A., University of Southern California, 1910.
- ✓ Lacey, Allen M. .....Seattle  
A. B., University of Washington, 1912.
- ✓ Langdell, Louis Charles .....Milford, New Hampshire  
A. B., Dartmouth College, 1910. M. S. in Forestry.
- ✓ Langdon, Seth C. .....Bosler, Wyoming  
B. S., Northwestern University, 1911. Ph. D. in Chemistry.
- ✓ Laube, Frank Joseph .....Tacoma  
B. L., University of Wisconsin, 1899. M. A., Political Science.
- Loring, Mildred West .....Seattle  
A. B., University of Washington, 1912. M. A., Philosophy.

- McCarney, Margaret ..... Seattle  
     A. B., University of Washington, 1909.  
     M. A., University of Washington, 1911.
- McCutcheon, Lydia May ..... Seattle  
     A. B., State University of Iowa, 1902.
- MacLachlan, Margaret Mae ..... Sedro-Woolley  
     B. S. in Pharmacy, University of Washington, 1908.
- Marston, C. May ..... Seattle  
     A. B., Greenville College, 1902.
- Mathieu, Edward ..... Brockton, Mass.  
     A. B., Harvard University, 1910.                      M. A., French.
- Mathieu, Mae ..... Seattle  
     A. B., University of Washington, 1910.
- Millican, Alfred Clay ..... Seattle  
     A. B., University of Washington, 1911. M. A., Political Science.
- Mills, Minnie B. .... Aberdeen  
     B. L., Olivet College, 1893.
- Newton, Earl Burdette ..... Norwich, New York  
     A. B., University of Washington, 1907.            M. A., Zoology.
- Osborne, Maud ..... Los Angeles, Calif.  
     B. L. S., University of Illinois, 1911.
- Pearce, Stella E. .... Seattle  
     A. B., University of Washington, 1912.
- Pelton, Anna May ..... Milton Junction, Wisconsin  
     B. L., University of Wisconsin, 1903.            M. A., German.
- Phillips, Mary Lemmon ..... Walnut, Illinois  
     Ph. B., University of Chicago, 1910.
- Pugsley, Harriet May ..... Seattle  
     A. B., University of Washington, 1907.
- Reichen, John E. .... Seattle  
     A. B., University of Washington, 1908.            M. A., Education.
- Rice, Stuart Arthur ..... Seattle  
     A. B., University of Washington, 1912. M. A., Political Science.
- Richards, Vera M. .... Tacoma  
     A. B., University of Washington, 1912.
- Roberts, Helen Waldron ..... Seattle  
     A. B., Grinnell College, 1911.
- Roberts, Milnora de Beelen ..... Seattle  
     A. B., Stanford University, 1912.
- Sauter, Marie ..... Seattle  
     A. B., University of Washington, 1912.

15 F. 5 M.

- Schmidt, Marie Caroline.....Hillsboro, Oregon  
A. B., Willamette University, 1911. M. A., English.
- ✓ Schneider, Hugo Henry.....Seattle  
A. B., University of Washington, 1912. M. A., Physics.
- ✓ Schumacher, Herman J. ....Humphrey, Nebr.  
A. B., University of Colorado, 1912. M. A., Political Science.
- Shellenberger, Mrs. Emma White.....Seattle  
Ph. B., State University of Iowa, 1900.  
M. A., University of Minnesota, 1908.
- Shepard, Mabel .....Seattle  
A. B., University of Washington, 1902.
- Skirls, Ethel .....Seattle  
A. B., University of Washington, 1911.
- Slyfield, Mrs. Louisa Latchem.....Seattle  
A. B., State University of Iowa, 1907.
- ✓ Smith, Heman Hale .....Seattle  
A. B., State University of Iowa, 1909.
- Steinberger, Lillian Blanche.....Victoria, B. C.  
M. A., Trinity College, Dublin, Ireland, 1910.
- ✓ Stetson, Fred Lea.....Seattle  
A. B., University of Washington, 1911. M. A., Education.
- ✓ Stilwell, Edward Matthewson.....Seattle  
A. B., University of Washington, 1910.
- ✓ Strandberg, Edwin L. ....Seattle  
B. S. in Civil Engineering, University of Washington, 1912.
- Streator, Gertrude I. ....Seattle  
A. B., University of Washington, 1909. M. A., English.
- ✓ Stuen, Ole .....Seattle  
A. B., University of Washington, 1912. M. A., German.
- ✓ Takeshima, Keiich .....Japan  
B. Lit., University of Waseda, Japan, 1906.
- Templeton, Rosetta E. ....Portland, Oregon  
A. B., University of Oregon, 1898.
- ✓ Therkelson, Eric .....Seattle  
B. S., University of Washington, 1911.  
M. S. in Electrical Engineering.
- Wagoner, Lovisa C. ....Seattle  
A. B., University of Washington, 1910. M. A., Education.
- ✓ Walter, Carl H. ....Seattle  
B. S., Carthage College, Ill., 1909. M. A., Chemistry.
- ✓ Weesner, Oliver .....Seattle  
B. S., Earlham College, 1909. M. A., Mathematics.
- ✓ Whitmore, John .....Seattle  
Ph. D., Yale University, 1902.
- ✓ Williams, Thomas A. F. ....Clinton, Tenn.  
A. B., Maryville College, Tenn., 1910. M. A., Mathematics.
- ✓ Zeller, Sanford M. ....Seattle  
B. S., Greenville College, 1909. M. A., Botany.



## COLLEGE OF ARTS AND SCIENCES

## ABBREVIATIONS

## CLASSES

'13 Senior.  
'14 Junior.'15 Sophomore.  
'16 Freshman.

| <i>Name of Student and Rank</i>         | <i>Home Address.</i> |
|---|----------------------|
| ✓ Adams, Edwin E., '16.....             | Seattle              |
| ✓ Agnew, Anne E., '16.....              | Seattle              |
| ✓ Ake, Lall, '16.....                   | Mountain Home, Idaho |
| ✓ Ake, Mary Frances, '13.....           | Mountain Home, Idaho |
| ✓ Alben, Ellen G., '16.....             | Vancouver            |
| ✓ Alben, Nellie E., '15.....            | Vancouver            |
| ✓ Albitz, Alice B., '13.....            | Seattle              |
| ✓ Alderman, M. Gertrude, '16.....       | Seattle              |
| ✓ Alexander, Marlon, '16.....           | Seattle              |
| ✓ Allan, Beryl B., '16.....             | Seattle              |
| ✓ Allason, Daisy C., '15.....           | Orting               |
| ✓ Allen, Harold B., '16.....            | Seattle              |
| ✓ Alverson, Vida O., '16.....           | Seattle              |
| ✓ Amick, M. Helen, '16.....             | Seattle              |
| ✓ Amidon, Mabel J., '14.....            | Seattle              |
| ✓ Anasawa, Seichi, '16.....             | Seattle              |
| ✓ Anderson, Ada C., '13.....            | Seattle              |
| ✓ Anderson, Alice O., '15.....          | Bellingham           |
| ✓ Anderson, Clarence R., '16.....       | Spokane              |
| ✓ Anderson, Enoch W., '16.....          | Bellingham           |
| ✓ Anderson, Grace Boyce, '15.....       | Seattle              |
| ✓ Anderson, Helen M., '16.....          | Seattle              |
| ✓ Anderson, Herman C., '15.....         | Mt. Vernon           |
| ✓ Anderson, Hilding Cornelius, '15..... | Mt. Vernon           |
| ✓ Anderson, Lydia Cecilia, '16.....     | Seattle              |
| ✓ Anderson, Stanley Bernard, '16.....   | Seattle              |
| ✓ Anderson, Victoria, '14.....          | Renville, Minn.      |
| ✓ Andrews, Etta, '16.....               | Newberg, Oregon      |
| ✓ Armstrong, Irene M., '16.....         | Tacoma               |
| ✓ Arnold, John A., '16.....             | Tacoma               |
| ✓ Arthun, Mabel V., '15.....            | Seattle              |
| ✓ Aspinwall, Mabel G., '14.....         | Seattle              |
| ✓ Astel, George B., '16.....            | Stanwood             |
| ✓ Autzen, Alice Anne, '16.....          | Portland, Ore.       |
| ✓ Auzias-Turenne, Aimar, '13.....       | Seattle              |
| ✓ Axtell, Ruth C., '14.....             | Bellingham           |
| ✓ Babcock, Grace E., '15.....           | Port Angeles         |
| ✓ Bachman, Amelia Helen, '16.....       | Seattle              |
| ✓ Bagley, Walter E., '14.....           | Seattle              |
| ✓ Bailey, Frank H., '14.....            | Snohomish            |
| ✓ Bain, Helen Russell, '16.....         | Seattle              |
| ✓ Baker, Anna Leland, '16.....          | Seattle              |

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14m.

|  |                       |
|--|-----------------------|
| ✓ Baker, Roy L., '16.....                | Hoquiam               |
| Baldwin, Elizabeth, '16.....             | Elephant Butte, N. M. |
| Baldwin, Mabel, '16.....                 | Elephant Butte, N. M. |
| ✓ Balkema, Richard R., '13.....          | Seattle               |
| Bull, Florence, '14.....                 | Seattle               |
| Ballard, Bethel Pearl, '13.....          | Willamina, Ore.       |
| Banker, Iphigene C., '16.....            | Seattle               |
| Banks, Bertha, '13.....                  | Seattle               |
| ✓ Banta, Glenn Irvin, '16.....           | Selah                 |
| ✓ Barash, Leah, '15.....                 | Seattle               |
| Barber, Ruth R., '15.....                | Seattle               |
| ✓ Bardell, Duane Benjamin, '16.....      | Seattle               |
| ✓ Bardin, Galva J., '16.....             | Seattle               |
| Bardshar, Ruth, '16.....                 | Seattle               |
| Barnes, Llellwyn V., '15.....            | Waterman              |
| Barnes, Mildred, '16.....                | Seattle               |
| Barnum, Gertrude, '16.....               | Seattle               |
| Barr, Rosalind, M., '14.....             | Spokane               |
| Barrett, Phillip E., '15.....            | Tacoma                |
| ✓ Barron, Ralph W., '16.....             | Sumner                |
| Barstad, A. Verna, '16.....              | Spokane               |
| Barter, Etta, '16.....                   | Seattle               |
| ✓ Barto, Thomas C., '15.....             | Seattle               |
| Bash, Mary I., '14.....                  | Seattle               |
| Baskowski, Mary, '15.....                | Anaconda, Mont.       |
| ✓ Batcheller, Elva L., '15.....          | Seattle               |
| Baxter, Catherine C., '116.....          | Seattle               |
| Bexter, Kirk S., '16.....                | Seattle               |
| Beaven, Grace May, '15.....              | Seattle               |
| Bechen, Carrie I., '14.....              | Hillsboro, Ore.       |
| ✓ Beck, J. Dillard, '16.....             | Seattle               |
| Beckman Leona M., '15.....               | Seattle               |
| Bedell, Mary E., '14.....                | Seattle               |
| Beeler, Hazel M., '13.....               | Seattle               |
| Begg, Ruth, '15.....                     | Seattle               |
| Bell, Beauna B., '16.....                | Tacoma                |
| Belmont, Bessie-Lucille, '16.....        | Seattle               |
| Bemis, Mrs. Katherine Prescott, '15..... | Seattle               |
| ✓ Benjamin, Ralph J., '14.....           | Seattle               |
| Bentley, Amelia A., '16.....             | Seattle               |
| ✓ Benz, Fritz R., '16.....               | Toppenish             |
| ✓ Berge, James H., '13.....              | Davenport             |
| Bertch, Amy L., '14.....                 | Seattle               |
| Bickford, Ethel M., '14.....             | Portland, Ore.        |
| ✓ Bird, Byron M., '15.....               | Seattle               |
| Bjorklund, Irene E., '16.....            | Seattle               |
| Black, Marguerite Alexandria, '16.....   | Bellingham            |
| ✓ Blake, O. Marion, '16.....             | Seattle               |
| ✓ Blakiston, John, '16.....              | Tacoma                |
| Blough, Allie, '14.....                  | Seattle               |
| Boddy, Eva May, '15.....                 | Seattle               |
| Boeshar, Helen, '16.....                 | Everett               |

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|                                     |                   |
|-------------------------------------|-------------------|
| ✓ Bond, Sidney G., '15.....         | Chehalis          |
| Bonney, Catherine A., '15.....      | Seattle           |
| Bonsall, Opal I., '14.....          | Spokane           |
| Bonsall, Vera V., '13.....          | Spokane           |
| Botten, Mrs. Margaret C., '15.....  | Seattle           |
| ✓ Boucher, Jessie L., '15.....      | Kent              |
| Bouck, Ada E., '16.....             | Sedro-Woolley     |
| ✓ Bouillon, Victor J., '13.....     | Seattle           |
| Bouillon, Victorine M., '15.....    | Seattle           |
| ✓ Bouton, William Carlton, '16..... | Vancouver         |
| Bowdoin, Blanche Virginia, '16..... | Bremerton         |
| ✓ Bowers, Marion R., '15.....       | Spokane           |
| ✓ Bowman, Blaine, '15.....          | Tacoma            |
| Bowman, Claire, '13.....            | Seattle           |
| Boyd, Leola, '15.....               | Seattle           |
| Boyd, Louise B., '14.....           | Portland, Ore.    |
| ✓ Boyle, Kenneth, '16.....          | Tacoma            |
| Brace, Mary Winifred, '16.....      | Seattle           |
| Brace, Maude, '16.....              | Seattle           |
| Brackett, Edith Loraine, '16.....   | Edmonds           |
| Brackett, Bertha, '16.....          | Seattle           |
| Bradner, Esther, '16.....           | Seattle           |
| Brainerd, Donna, '15.....           | Seattle           |
| Breck, Margaret, '16.....           | Seattle           |
| ✓ Brinck, Stephen M., '14.....      | Anacortes         |
| ✓ Bronson, Deming, '15.....         | Seattle           |
| Bronson, Doris, '15.....            | Seattle           |
| Brown, Ethel M., '14.....           | Seattle           |
| ✓ Brown, Harold Clair, '16.....     | Shelton           |
| Brown, Laura E., '14.....           | Los Angeles, Cal. |
| ✓ Brown, Leland P., '16.....        | Auburn            |
| Brown, Marion Dora, '16.....        | Seattle           |
| ✓ Brown, William Clyde, '16.....    | Seattle           |
| ✓ Browne, Beryl, '15.....           | Edmonds           |
| Bruce, Harriet L., '14.....         | Seattle           |
| Bryan, Goldie A., '16.....          | Seattle           |
| Bryan, Helen A., '15.....           | Seattle           |
| ✓ Bryant, Clarence W., '16.....     | Seattle           |
| ✓ Bryant, Willis R., '15.....       | Seattle           |
| Bucher, Neva, '16.....              | Spokane           |
| Budden, Agnes M., '13.....          | Seattle           |
| ✓ Bull, Leland, '16.....            | Ellensburg        |
| Bunnell, A. Esther, '14.....        | Seattle           |
| ✓ Burdick, Harrold P., '16.....     | Tacoma            |
| Burke, May E., '16.....             | Seattle           |
| Burkheimer, Florence, '15.....      | Seattle           |
| ✓ Burnett, Meyer, '14.....          | Seattle           |
| Burns, Anna E., '14.....            | Seattle           |
| ✓ Burns, Josepha B., '14.....       | Seattle           |
| ✓ Burson, Charles W., '16.....      | Seattle           |
| Bustrack, Martha, '15.....          | Olympia           |
| Buzzelle, Mary C., '13.....         | Anacortes         |

|                                      |                 |
|--------------------------------------|-----------------|
| Byler, Charles Archibald, '16.....   | Shelton         |
| Byrd, Carroll F., '16.....           | Spokane         |
| Cadwell, Clytie L., '15.....         | Seattle         |
| Cady, Osman H., '16.....             | Seattle         |
| Caffrey, Genevieve E., '16.....      | Duwamish        |
| Cairns, Marjorie, '16.....           | Seattle         |
| Calkins, Frances M., '16.....        | Seattle         |
| Callow, Russell S., '15.....         | Shelton         |
| Cameron, Anne B., '15.....           | Hillsdale, Ore. |
| Campbell, Archibald, '14.....        | Seattle         |
| Campbell, S. Blanche, '16.....       | Seattle         |
| Campbell, Howard O., '15.....        | Port Angeles    |
| Campbell, Pansy E., '15.....         | Seattle         |
| Cardie, Maynard M., '14.....         | Everett         |
| Carey, Harold D., '13.....           | Medford, Ore.   |
| Carey, G. Evelyn, '16.....           | Medford, Ore.   |
| Carkeek, Amalie, '16.....            | Seattle         |
| Carlander, Juliana G., '15.....      | Seattle         |
| Carlberg, Edward F., '15.....        | Wenatchee       |
| Carpenter, Beatrice H., '16.....     | Seattle         |
| Carpenter, Hazel, '15.....           | Seattle         |
| Carroll, Emmett Robert, '16.....     | Butte, Mont.    |
| Carse, Elta, '15.....                | East Sound      |
| Carufel, Edward James, '16.....      | Seattle         |
| Case, Edith, '16.....                | Seattle         |
| Casey, Ralph D., '14.....            | Seattle         |
| Caskin, Ivanilla, '13.....           | Seattle         |
| Cavalline, Marie J., '16.....        | Portland, Ore.  |
| Catlin, Claude, '14.....             | Ellensburg      |
| Chabot, Edward F., '13.....          | Seattle         |
| Chaffee, Horace B., '16.....         | Seattle         |
| Chandler, Gertrude V., '15.....      | Baker, Ore.     |
| Chapman, Myers G., '16.....          | Kirkland        |
| Chase, Mrs. Mary M., '14.....        | Seattle         |
| Child, Pauline P., '15.....          | Sprague         |
| Chisholm, T. Blanche, '15.....       | Seattle         |
| Christianson, Dwight Fitch, '16..... | Seattle         |
| Christensen, Hans, '16.....          | Olympia         |
| Christofferson, Olaf Harry, '15..... | Tacoma          |
| Clancy, Frank J., '16.....           | Seattle         |
| Clare, Ethel R., '15.....            | Selleck         |
| Clark, Earl F., '16.....             | Everett         |
| Clark, J. Earle, '14.....            | Seattle         |
| Clarke, Florence Roberta, '16.....   | Olympia         |
| Clausen, Anna, '16.....              | Seattle         |
| Clay, Sallie A., '16.....            | Seattle         |
| Clifford, Earl V., '14.....          | Tacoma          |
| Clift, Ruby M., '14.....             | Selah           |
| Gline, Esther, '13.....              | Seattle         |
| Clinton, Myron B., '16.....          | Seattle         |
| Clyde, Paul D., '16.....             | Seattle         |
| Gobb, Tina Marie, '14.....           | Seattle         |

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|   |                        |
|---|------------------------|
| ✓ Cochran, Lloyd Thomas, '16.....           | Seattle                |
| Coffin, Dorothy, '16.....                   | North Yakima           |
| Coffman, Edith M., '15.....                 | Chehalis               |
| ✓ Coffman, Willow, '16.....                 | Seattle                |
| ✓ Cohrs, Theodore, '15.....                 | Seattle                |
| Cole, Eva M., '16.....                      | Seattle                |
| Coleman, R. Esther, '16.....                | Tacoma                 |
| Collier, Ira L., '13.....                   | Olympia                |
| Collins, Lillian E., '14.....               | Seattle                |
| Collins, Opal H., '16.....                  | Seattle                |
| Combs, Ethel M., '16.....                   | Seattle                |
| Condron, Lou Alice, '16.....                | Los Angeles, Cal.      |
| ✓ Conger, William Wellington, Jr., '16..... | Seattle                |
| Conner, Hazel, '15.....                     | Olympia                |
| Conner, Helen M., '16.....                  | Seattle                |
| ✓ Conner, Lewis C., '16.....                | Everett                |
| Connor, Marcia M., '15.....                 | New Westminster, B. C. |
| ✓ Cook, J. Geraldine, '15.....              | Seattle                |
| ✓ Cook, Jessie Gordon, '14.....             | Vancouver              |
| ✓ Cook, Inez C., '14.....                   | Bellingham             |
| ✓ Cook, E. Marguerite, '16.....             | Aberdeen               |
| ✓ Cook, Proctor, '16.....                   | Tacoma                 |
| ✓ Cooper, Frank H., '16.....                | Pateros                |
| ✓ Copper, John Harris, '16.....             | Hood River, Ore.       |
| ✓ Corgiat, John J., '16.....                | Berkeley, Cal.         |
| Corlett, Ruth E., '14.....                  | Seattle                |
| ✓ Cornelius, Phillip A., '14.....           | Mt. Vernon             |
| Cornett, Rita P., '16.....                  | North Yakima           |
| Corwin, Hazel I., '15.....                  | Seattle                |
| ✓ Coryell, George Jr., '13.....             | Seattle                |
| Costello, Mary C., '15.....                 | Spokane                |
| ✓ Cotter, Edward John, '16.....             | Seattle                |
| Covington, Dorothy Elizabeth, '16.....      | Seattle                |
| ✓ Cowley, William M., Jr., '15.....         | Seattle                |
| ✓ Cox, Lolo L., '13.....                    | Zillah                 |
| ✓ Cram, L. Alberta, '15.....                | Seattle                |
| ✓ Crawford, Edward I., '16.....             | Seattle                |
| ✓ Crawford, Irby Z., '16.....               | Seattle                |
| ✓ Cremer, Henry, '15.....                   | Seattle                |
| ✓ Crippen, Inez, '16.....                   | Seattle                |
| ✓ Croson, Franklin R., '16.....             | Seattle                |
| ✓ Crowley, Alberta C., '15.....             | Vancouver              |
| Culbertson, M. Josephine, '14.....          | Dayton                 |
| Culton, Helen I., '15.....                  | Seattle                |
| ✓ Currey, Mauryce L., '14.....              | Olympia                |
| ✓ Curtis, Estella M., '16.....              | Seattle                |
| ✓ Cutter, Evelyn T., '16.....               | Seattle                |
| ✓ Dabney, Elmer S., '15.....                | Seattle                |
| ✓ Dabney, Helen, '15.....                   | Seattle                |
| ✓ Dallam, Kate B., '13.....                 | Oroville               |
| ✓ Daly, Ben H., '15.....                    | Seattle                |
| ✓ Darrin, Dorothy, '16.....                 | Bellingham             |

|   |                                   |                 |
|---|-----------------------------------|-----------------|
| ✓ | Davenport, Noah C., '14.....      | Bellingham      |
|   | David, Pearl L., '16.....         | Seattle         |
|   | Davidson, Katherine, '16.....     | Seattle         |
|   | Davidson, Sadie D., '13.....      | Seattle         |
| ✓ | Davis, Leslie, '16.....           | Tacoma          |
| ✓ | Davis, Peter Stuart, '16.....     | Chinook         |
|   | Davis, Ruth G., '16.....          | Tacoma          |
|   | Davison, Dorothy, '16.....        | Seattle         |
|   | Dawson, Ruth Louise, '15.....     | Seattle         |
|   | Day, Florence A., '14.....        | Seattle         |
| ✓ | Day, Walter J., '16.....          | Seattle         |
| ✓ | Dean, Ralph C., '16.....          | Seattle         |
| ✓ | deCrane, May C. P., '14.....      | Lakebay         |
| ✓ | Deering, Tam, '13.....            | Seattle         |
| ✓ | deLaBarthe, Suzanne, '13.....     | Seaside, Ore.   |
| ✓ | DeMerchant, Leo A., '16.....      | Oroville        |
|   | Denny, Madge D., '16.....         | Seattle         |
|   | dePledge, Ruth G., '13.....       | Colfax          |
| ✓ | deTourville, Audrey, '13.....     | Seattle         |
| ✓ | Devine, Richard D., '16.....      | Pendleton, Ore. |
| ✓ | deWitt, Julia B., '16.....        | Spokane         |
| ✓ | Dewhurst, J. Frederic, '16.....   | Seattle         |
|   | Diamond, Rose E., '13.....        | Columbus, Mont. |
| ✓ | Dickson, L. Florence, '16.....    | Spokane         |
| ✓ | Dickson, Gordon H., '14.....      | Seattle         |
| ✓ | Diether, Ray O., '15.....         | Wapato          |
| ✓ | Dill, M. Beryl, '13.....          | Chico           |
| ✓ | Dill, D. George, '16.....         | Mt. Vernon      |
| ✓ | Dobbs, Beryl, '16.....            | Seattle         |
| ✓ | Donahoe, Henry T., '16.....       | Seattle         |
|   | Donald, Mary L., '16.....         | Tacoma          |
|   | Donaldson, Jeannette T., '14..... | Spokane         |
|   | Donaldson, Mildred, '14.....      | Seattle         |
|   | Donovan, Catherine, '16.....      | Raymond         |
|   | Doragh, Elsie Wilburn, '16.....   | Olympia         |
|   | Doran, Eunice Wilma, '16.....     | Mt. Vernon      |
|   | Dorgan, Mary, '16.....            | Seattle         |
|   | Dorgan, Mildred E., '16.....      | Edmonds         |
| ✓ | Doty, Walter, '16.....            | Seattle         |
| ✓ | Dougherty, Dola M., '15.....      | Seattle         |
| ✓ | Douglas, Clinton Robert, '15..... | Seattle         |
| ✓ | Doust, Walter, '16.....           | Spokane         |
| ✓ | Dow, Adrian Jay, '14.....         | Seattle         |
| ✓ | Dew, Neal, '16.....               | Seattle         |
| ✓ | Doxy, W. Irving, '15.....         | North Yakima    |
| ✓ | Drake, Ethel M., '13.....         | Seattle         |
| ✓ | Draper, Edgar Marian, '16.....    | Ontario, Ore.   |
| ✓ | Drips, William E., '15.....       | Olympia         |
| ✓ | Driver, S. Marlon, '15.....       | Wamic, Ore.     |
| ✓ | Drum, Dorothy, '14.....           | Seattle         |
| ✓ | Drum, Rachel, '15.....            | Seattle         |
| ✓ | Drummond, Jessie, '14.....        | Tacoma          |

REGISTER OF STUDENTS

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|   |                                       |                    |
|---|---------------------------------------|--------------------|
| / | Dull, John S., '16.....               | North Yakima       |
|   | Dunbar, Camilla K., '16.....          | North Yakima       |
| / | Fenton, Wayne D., '16.....            | Spokane            |
| / | Dysart, Lloyd B., '15.....            | Centralia          |
| / | Eagleson, James M., '16.....          | Seattle            |
| / | Easton, Martin H., '15.....           | Bellingham         |
| / | Eaton, Mary M., '16.....              | Endicott           |
| / | Eberle, Sidney S., '14.....           | Vancouver          |
| / | Ebright, Carroll M., '16.....         | Seattle            |
| / | Eddy, Beula L., '15.....              | Sumner             |
| / | Eddy, Carrie M., '16.....             | Seattle            |
| / | Edgerton, Floyd W., '14.....          | Puyallup           |
| / | Edmonds, Rupert O., '15.....          | Mt. Vernon         |
| / | Edris, Ned C., '15.....               | Spokane            |
| / | Eggleston, Gertrude, '16.....         | Seattle            |
| / | Eggers, Rose K., '16.....             | Grafton, N. Dakota |
| / | Eisenbeis, Josephine O., '16.....     | Port Townsend      |
| / | Eldred, Andrew J., '13.....           | Seattle            |
| / | Elliott, Annabelle, '13.....          | Seattle            |
| / | Elliott, Bertram R., '16.....         | Vernon, B. C.      |
| / | Elliott, Jean S., '14.....            | Seattle            |
| / | Ellis, J. Ruth, '16.....              | Seattle            |
| / | Ellis, Russell D., '13.....           | Seattle            |
| / | Ellsperman, Winifred Louise, '14..... | Blaine             |
| / | Ely, H. Bernice, '16.....             | Kelso              |
| / | Emerson, Frances M., '16.....         | Corbin, Mont.      |
| / | Emery, Ethel A., '15.....             | Seattle            |
| / | Emmett, Helene E., '14.....           | Kirkland           |
| / | Engren, Helen, '16.....               | Seattle            |
| / | English, Elsie, '15.....              | Seattle            |
| / | Entz, Ruth, '16.....                  | Seattle            |
| / | Epler, W. Leslie, '16.....            | Twin Falls, Idaho  |
| / | Erspamer, Frank A., '16.....          | Tacoma             |
| / | Essberg, David, '16.....              | Gothenburg, Sweden |
| / | Esterly, Katherine, '15.....          | Seattle            |
| / | Evans, Frank S., '16.....             | Seattle            |
| / | Everest, Harold Phillip, '16.....     | Kirkland           |
| / | Everett, Lillian, '15.....            | Seattle            |
| / | Farmer, Paul C., '16.....             | Seattle            |
| / | Farrell, Maurice A., '16.....         | Seattle            |
| / | Faubert, Corrine, '16.....            | Seattle            |
| / | Fay, Doris Isabel, '16.....           | Kent               |
| / | Feinberg, Jullus, '16.....            | Seattle            |
| / | Felder, Herman A., '14.....           | Toppenish          |
| / | Fettke, Margaret E., '14.....         | Tacoma             |
| / | Finck, Herbert W., '16.....           | Seattle            |
| / | Firth, Mildred, '14.....              | Seattle            |
| / | Fisher, C. Lucile, '15.....           | Spokane            |
| / | Fisher, David M., '15.....            | Seattle            |
| / | Fitts, Isabel, '16.....               | Seattle            |
| / | Fisken, M. Carolyn, '15.....          | Spokane            |
| / | Fleming, F. Esther, '15.....          | Seattle            |

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|   |                                     |                    |
|---|-------------------------------------|--------------------|
|   | Fleming, Florence E., '13.....      | Seattle            |
|   | Fletcher, Gladys M., '15.....       | Seattle            |
| / | Flood, George E., '16.....          | Chehalis           |
|   | Floyd, Ruth M., '16.....            | Spokane            |
|   | Forbes, Ethel, '15.....             | Seattle            |
| / | Fowler, J. Chilton, '16.....        | Bellingham         |
| / | Fowler, Louise H., '15.....         | Seattle            |
| / | Frame, Paul W., '15.....            | Seattle            |
| / | Frank, Ruth A., '15.....            | Seattle            |
| / | Franklin, Edward Stafford, '15..... | Seattle            |
|   | Fredson, Dora E., '15.....          | Shelton            |
|   | Freeburn, Louise C., '15.....       | Tacoma             |
|   | Freaser, Laura L., '14.....         | Twodot, Mont.      |
| / | Frenger, Eugene A., '16.....        | Clarksville, Ohio  |
| / | Fretwell, M. Folsie, '14.....       | Seattle            |
| / | Freyd, Bernard, '15.....            | Seattle            |
| / | Friant, Josephine, '15.....         | Seattle            |
| / | Friedman, Harry J., '15.....        | Seattle            |
| / | Fritz, Chester W., '14.....         | Seattle            |
| / | Fujitomi, Egi, '15.....             | Seattle            |
| / | Fulton, Orra Stella, '15.....       | Quilcene           |
|   | Gabbert, Gertrude M., '16.....      | Seattle            |
|   | Gabel, Marie, '14.....              | Seattle            |
|   | Galley, Helen, '16.....             | Seattle            |
|   | Gale, Hazel, '16.....               | Sedro-Woolley      |
| / | Galehouse, Edith I., '15.....       | Seattle            |
| / | Gallagher, George H., Jr., '16..... | Spokane            |
| / | Garland, Martha May, '15.....       | Seattle            |
| / | Garrett, Hazel L., '14.....         | Spokane            |
| / | Garrison, Glen George, '16.....     | Seattle            |
| / | Garvey, Erma C., '14.....           | Seattle            |
| / | Gay, Ruth E., '14.....              | Seattle            |
| / | Gerhardt, Celia, '16.....           | Seattle            |
| / | Gellatly, Florence E., '15.....     | Wenatchee          |
| / | George, Blanche V., '15.....        | Sunnyside          |
| / | Getz, Carl H., '13.....             | Tacoma             |
| / | Gibson, Clayton E., '14.....        | Seattle            |
| / | Gibson, Grant M., '13.....          | Issaquah           |
| / | Girdner, Dave, '16.....             | Twin Falls, Idaho  |
| / | Githens, Nellie S., '15.....        | Decatur City, Iowa |
| / | Gladden, Orvis C., '15.....         | Seattle            |
| / | Gleason, Ruth, '16.....             | Seattle            |
| / | Glencross, Marie F., '16.....       | Seattle            |
| / | Glockler, George, '16.....          | Seattle            |
| / | Goble, Grace E., '14.....           | Sunnyside          |
| / | Goble, Lucy E., '16.....            | Sunnyside          |
| / | Goodell, Percy E., '16.....         | Chehalis           |
| / | Goodheart, Geraldine, '16.....      | Bellingham         |
| / | Goodman, Leo, '16.....              | Chehalis           |
| / | Goodnow, Marion, '13.....           | Seattle            |
| / | Goodro, Katherine J., '16.....      | Olympia            |
| / | Gottfeld, Alice, '16.....           | Olympia            |



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| Gottlieb, Ruth Anna, '14.....       | Seattle            |
| Gourman, David Z., '14.....         | Seattle            |
| Graham, George H., '16.....         | Seattle            |
| Grant, Henry M., '16.....           | Orillia            |
| Gray, C. Harrold, '13.....          | Seattle            |
| Gray, Clarence Hubert, '15.....     | Wenatchee          |
| Gray, Isabel Martin, '16.....       | Spokane            |
| Gray, Virginia, '16.....            | Tacoma             |
| Greenwood, Lyle A., '15.....        | Bellingham         |
| Greffoz, Hortense Ferrine, '16..... | Portland, Ore.     |
| Gresham, Marie C., '16.....         | Seattle            |
| Grier, Gladys C., '14.....          | Spokane            |
| Griffin, Hazel B., '14.....         | Seattle            |
| Griffin, Margaret E., '16.....      | Astoria, Ore.      |
| Griffith, Ruth H., '13.....         | Seattle            |
| Griffith, Vance, '16.....           | Seattle            |
| Griffiths, Burke M., '16.....       | Seattle            |
| Griffiths, Thomas E., '15.....      | Seattle            |
| Grimstead, George, '16.....         | Kristiania, Norway |
| Groves, Mary Luella, '14.....       | Seattle            |
| Guild, Grace, '14.....              | Seattle            |
| Guitteau, Robert, '16.....          | Seattle            |
| Gulliksen, Edna L., '14.....        | Seattle            |
| Gwilym, Gertrude, '14.....          | Seattle            |
| Halferdahl, Alice, '14.....         | Seattle            |
| Hall, W. Athol, '15.....            | Sprague            |
| Hall, Ethel E., '14.....            | Seattle            |
| Hall, Eva R., '15.....              | Seattle            |
| Hall, George T., '16.....           | Seattle            |
| Hall, L. Merle, '16.....            | Seattle            |
| Hamilton, Gladys G., '15.....       | Seattle            |
| Hamilton, Juanita, '15.....         | Seattle            |
| Hammer, Mary, '16.....              | Sedro-Woolley      |
| Hammond, Esther, '16.....           | Tacoma             |
| Hanley, Charlotte, J., '14.....     | Tacoma             |
| Hansen, Harry P., '16.....          | Tacoma             |
| Hanson, Mathea, '14.....            | Seattle            |
| Hara, Naonobu, '16.....             | Nara, Japan        |
| Harkins, Marjorie, '13.....         | Seattle            |
| Harris, John J., '14.....           | Seattle            |
| Harris, Laura, '15.....             | Seattle            |
| Harris, Olive M., '16.....          | Seattle            |
| Harrison, A. Myrtle, '15.....       | Astoria, Ore.      |
| Harrison, Frank, '15.....           | Seattle            |
| Hartill, Myrtle A., '16.....        | Seattle            |
| Hassett, Bessie Mae, '16.....       | Seattle            |
| Havens, Mareta, '14.....            | Seattle            |
| Hayden, Marion Lamont, '15.....     | Spokane            |
| Hayes, James C., '16.....           | Seattle            |
| Haynes, Rhea, '16.....              | Mukilteo           |
| Hays, Blendine, '16.....            | Olympia            |
| Headrick, Grace M., '14.....        | Bellingham         |

|                                   |              |
|-----------------------------------|--------------|
| Hedges, Birdie, '16.....          | Seattle      |
| Heermans, Jerome T., '16.....     | Olympia      |
| Heermans, Joseph F., '16.....     | Olympia      |
| Henderson, Harold Hayes, '15..... | Seattle      |
| Henderson, Phil A., '16.....      | Chehalis     |
| Henderson, Lloyd P., '16.....     | Seattle      |
| Hendricks, Carl Herbert, '16..... | Seattle      |
| Hendricks, Mrs. Ford, '15.....    | Seattle      |
| Henry, Charles Verne, '15.....    | Seattle      |
| Hensel, Emilie T., '13.....       | Seattle      |
| Herrett, Vernon T., '16.....      | Everett      |
| Herrick, C. Barrett, '16.....     | Seattle      |
| Hess, Dorothy Ann, '16.....       | Seattle      |
| Hess, Gladys F., '15.....         | Seattle      |
| Heyes, Lucy J., '15.....          | Seattle      |
| Higgins, Hubert G., '15.....      | Vancouver    |
| Higgins, Nellie L., '13.....      | Vancouver    |
| Hile, Edith E., '14.....          | Seattle      |
| Hill, Elizabeth, '14.....         | Tacoma       |
| Hill, Grace A., '13.....          | Seattle      |
| Hill, Mathew W., '16.....         | Lester       |
| Hilstrom, Theresa A., '15.....    | Vancouver    |
| Hipkoe, George A., '13.....       | Seattle      |
| Hishikawa, Seichi, '14.....       | Osaka, Japan |
| Hoard, Mary G., '15.....          | Seattle      |
| Höbi, Agnes L., '15.....          | Aberdeen     |
| Hodge, Alma, '16.....             | Tacoma       |
| Hoffard, Harrold Otto, '16.....   | Chinook      |
| Hofmeister, Lillie M., '16.....   | Seattle      |
| Hogg, Sophie M., '16.....         | Seattle      |
| Holcomb, Philip M., '14.....      | Seattle      |
| Holland, Kathleen, '16.....       | Davenport    |
| Holmes, Anna S., '16.....         | Edmonds      |
| Hooper, Mary V., '16.....         | Seattle      |
| Horsley, Will H., '13.....        | North Yakima |
| Horton, Persis Margaret, '16..... | Seattle      |
| Hoseley, Rex, '16.....            | Boise, Ida.  |
| Hosom, Desmond, '15.....          | Seattle      |
| Hostrawser, Ethel, '16.....       | Seattle      |
| Horton, Russell B., '16.....      | Seattle      |
| Houlahan, A. Elleen, '13.....     | Seattle      |
| Houser, March H., '15.....        | Asotin       |
| Howard, Alma B., '15.....         | Seattle      |
| Howell, Helen C., '16.....        | Pomeroy      |
| Hoxsey, Maurice Y., '14.....      | Spokane      |
| Hoxie, Olive-Grace, '13.....      | Seattle      |
| Hull, Margaret Maree, '16.....    | Kelso        |
| Hunt, Jean M., '15.....           | Seattle      |
| Hunter, Gordon C., '15.....       | Edmonds      |
| Hunter, Arthur Wilmont, '16.....  | Hoquiam      |
| Huntington, Imo, '13.....         | Kirkland     |
| Huntington, Roma, '15.....        | Seattle      |

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|                                    |                  |
|------------------------------------|------------------|
| Hurd, Annie May, '15.....          | Seattle          |
| Hurd, Laura A., '14.....           | Mt. Vernon       |
| Huston, Helen Harriet, '16.....    | Seattle          |
| Hutchinson, Pearl I., '15.....     | Seattle          |
| Ikeda, Choichi, '14.....           | Kurayoshi, Japan |
| Ingersoll, Louise J., '14.....     | Seattle          |
| Ingram, Leroy R., '16.....         | Seattle          |
| Ireland, Will N., '16.....         | Seattle          |
| Irvine, Ethel M., '16.....         | Seattle          |
| Irvine, Marguerite I., '15.....    | Seattle          |
| Ivey, Ethel, '16.....              | Seattle          |
| Iwamura, Shimataro, '16.....       | Seattle          |
| Jaadan, Nels, '13.....             | Seattle          |
| Jack, Myrna, '16.....              | Seattle          |
| Jacobs, Claude V., '14.....        | Puyallup         |
| Jacobson, Julia A., '16.....       | Seattle          |
| Jacobson, Rose E., '16.....        | Seattle          |
| Jacobus, Margaret E., '14.....     | Tacoma           |
| Jamieson, Ida M., '15.....         | Spokane          |
| Janeck, Frances E., '16.....       | North Yakima     |
| Jarvis, Melville B., '15.....      | Davenport        |
| Jeldness, Randie, '16.....         | Spokane          |
| Jensen, Alvin L., '15.....         | Spokane          |
| Johanson, Edna Theresa, '15.....   | Tacoma           |
| Johnson, Agnes V., '13.....        | Seattle          |
| Johnson, Abbie F., '14.....        | Centralia        |
| Johnson, Anna H., '15.....         | Seattle          |
| Johnson, Clyde L., '15.....        | Spokane          |
| Johnson, Geneva A., '14.....       | Centralia        |
| Johnson, Irene, '14.....           | Spokane          |
| Johnson, Oscar F., '15.....        | Mt. Vernon       |
| Johnson, Ruth F., '15.....         | North Yakima     |
| Johnson, Sydney E., '14.....       | Oroville         |
| Johnson, Winifred J., '14.....     | Seattle          |
| Johnston, Rolland B., '15.....     | Seattle          |
| Johnston, Vera E., '16.....        | Aberdeen         |
| Johnstone, Margery R., '15.....    | Seattle          |
| Jones, Carter Brooks, '16.....     | Seattle          |
| Jones, Frank M., '15.....          | Ritzville        |
| Jones, S. Grace, '16.....          | Malta, Mont.     |
| Jones, Hazel Emma, '16.....        | Seattle          |
| Jones, Margaret, '16.....          | Seattle          |
| Jones, Minabell, '15.....          | Pendleton, Ore.  |
| Jones, Ray Williams, Jr., '16..... | Seattle          |
| Jones, Stacy, '16.....             | Tacoma           |
| Jones, Zola M., '14.....           | Bremerton        |
| Jorgensen, Peter W., '15.....      | Seattle          |
| Joubert, Lloyd P., '15.....        | Eunmclaw         |
| Karrer, Clara B., '14.....         | Roslyn           |
| Karrer, Joanne L., '15.....        | Roslyn           |
| Kaufman, Edith R., '16.....        | Bellingham       |
| Kawai, Soichi, '14.....            | Yanai, Japan     |

|                                      |                     |
|--------------------------------------|---------------------|
| Kear, Fay M., '15.....               | Unity, Ore.         |
| Keene, Gertrude B., '15.....         | Seattle             |
| Kellogg, Lottie Estelle, '16.....    | Tacoma              |
| Kendall, Winifred M. V., '16.....    | Port Orchard        |
| Kennedy, Grace Edith, '16.....       | Skamokawa           |
| Kenward, Hazel D., '14.....          | Seattle             |
| Kerr, Lelah B., '14.....             | Seattle             |
| Kiddle, Netta Marie, '13.....        | Island City, Ore.   |
| Kiehl, Laura A., '16.....            | Seattle             |
| Kilkoren, Mrs. O. Beatrice, '13..... | Seattle             |
| Kimball, Bessie R., '15.....         | Larimae, N. Dakota  |
| Kincaid, Airdrie L., '16.....        | Seattle             |
| Kincaid, Frederick M., '16.....      | Palouse             |
| Kingo, Abe, '16.....                 | Nagooka, Japan      |
| Kinne, Verle, '14.....               | Seattle             |
| Kirschner, Karl K., '16.....         | Seattle             |
| Kittilsby, Alma O., '15.....         | Seattle             |
| Klaeboe, Olga, '15.....              | Seattle             |
| Knapp, Dora E., '15.....             | Everett             |
| Knapp, Ellen M., '14.....            | Seattle             |
| Knapp, Ralph R., '14.....            | Seattle             |
| Knapton, Lillian B., '16.....        | Seattle             |
| Knapton, Mary Alice, '15.....        | Seattle             |
| Knight, J. Ernest, '15.....          | Port San Luis, Cal. |
| Knox, Harry L., '15.....             | Olympia             |
| Kobayashi, Nuinosuke, '16.....       | Seattle             |
| Kohler, Liela M., '14.....           | Seattle             |
| Kortemeyer, Clara D., '16.....       | Mabton              |
| Kozlowski, Frances J., '16.....      | Seattle             |
| Kraus, Ethel M., '16.....            | Seattle             |
| Kriegor, Blanche I., '16.....        | Seattle             |
| Kuehner, Louise Marguerite, '16..... | South Bend          |
| Kumm, Ward C., '16.....              | Seattle             |
| Kunath, Clara I., '16.....           | Everett             |
| Laird, Kelly, '16.....               | Seattle             |
| Laird, Zora, '15.....                | Seattle             |
| Lamberty, A. Margaret, '14.....      | Seattle             |
| Lancaster, Ella Potts, '16.....      | Seattle             |
| Langford, Nola S., '16.....          | Tacoma              |
| Larimer, Lena M., '16.....           | Phelps City, Mo.    |
| Larsen, Loui K., '13.....            | Tacoma              |
| Lathe, Helen R., '16.....            | Seattle             |
| Laughlin, James, '15.....            | Mt. Vernon          |
| LaViolette, E. Josephine, '16.....   | Seattle             |
| Lawatschek, Elly W., '14.....        | Seattle             |
| Leach, Mildred O., '16.....          | Tacoma              |
| Leader, Edwin O., '15.....           | Portland, Ore.      |
| Leader, Elmer W., '15.....           | Portland, Ore.      |
| Learned, Aleen Hazel, '13.....       | Port Townsend       |
| Legg, Emmett J., '16.....            | Seattle             |
| Leonard, T. Edmond, '16.....         | Seattle             |
| Leutweirr, Anna, '16.....            | Seattle             |

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| ✓ Lewis, J. Crawford, '16.....      | Seattle           |
| ✓ Lewis, Florence K., '14.....      | Wenatchee         |
| ✓ Lewis, Jessie M., '15.....        | Wenatchee         |
| ✓ Lilliequist, Lillie C., '16.....  | Spokane           |
| ✓ Lilly, M. Blake, '16.....         | Vancouver, B. C.  |
| ✓ Lincoln, Mattie J., '15.....      | Seattle           |
| ✓ Lind, Fred A., '16.....           | Seattle           |
| ✓ Lind, Ralph R., '16.....          | Seattle           |
| ✓ Lindberg, Arthur R., '16.....     | Polk, Nebr.       |
| ✓ Lindborg, Arthur E., '14.....     | Portland, Ore.    |
| ✓ Lindburg, Earl R., '15.....       | Seattle           |
| ✓ Linder, Muriel, '16.....          | Seattle           |
| ✓ Lindsay, Irma, '16.....           | Seattle           |
| ✓ Linne, Harvey E., '16.....        | Seattle           |
| ✓ Liska, Olga, '16.....             | Seattle           |
| ✓ Littell, Helen H., '15.....       | Seattle           |
| ✓ Lively, John William, '14.....    | Seattle           |
| ✓ Livingston, Carl D., '14.....     | Seattle           |
| ✓ Loeb, Sidney Samuel, '16.....     | Seattle           |
| ✓ Lohman, M. Loretto, '16.....      | Chinook, Mont.    |
| ✓ Long, Ruby O., '14.....           | Cashmere          |
| ✓ Lovejoy, Herbert C., '15.....     | Seattle           |
| ✓ Lovejoy, Lorna J., '13.....       | Seattle           |
| ✓ Low, Ethel M., '16.....           | Odessa            |
| ✓ Lund, Mabel A., '13.....          | Seattle           |
| ✓ Lungreen, Edith C., '16.....      | St. Charles, Ill. |
| ✓ Lunn, Willma, '16.....            | Auburn            |
| ✓ Lyon, D. Dee, '14.....            | Weiser, Idaho     |
| ✓ McArdle, Alice, '15.....          | Quilcene          |
| ✓ McBride, Lois, '16.....           | Seattle           |
| ✓ MacCallum, Howard G., '16.....    | Seattle           |
| ✓ MacCallum, A. Ruth, '15.....      | Seattle           |
| ✓ McCann, Richard J., '14.....      | Seattle           |
| ✓ McClarren, Mabel L., '15.....     | Seattle           |
| ✓ McClellan, Helena Rilla, '16..... | Seattle           |
| ✓ McClelland, George Z., '15.....   | Seattle           |
| ✓ McClelland, Paul H., '15.....     | Seattle           |
| ✓ McClure, Mary Elizabeth, '14..... | Seattle           |
| ✓ McCready, Norman Merkle, '16..... | Snohomish         |
| ✓ McCulloch, H. Margaret, '15.....  | Seattle           |
| ✓ MacDougall, J. Bruce, '16.....    | Seattle           |
| ✓ McDowell, Sadie B., '15.....      | Bellevue          |
| ✓ McEvoy, James P., '15.....        | Skykomish         |
| ✓ McFee, John, '16.....             | Seattle           |
| ✓ McGee, Eva, '13.....              | Seattle           |
| ✓ McGee, Helen A., '16.....         | St. Maries, Idaho |
| ✓ McGinnis, Elizabeth R., '16.....  | Waterville        |
| ✓ McGlauffin, Kathryn, '16.....     | Hoquiam           |
| ✓ McGlauffin, March, '15.....       | Hoquiam           |
| ✓ McGranahan, Chester, '15.....     | Ellensburg        |
| ✓ McHugh, Edward, '16.....          | Creosote          |
| ✓ McIntire, Doris H., '16.....      | Auburn            |

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|--------------------------------------|-------------------|
| ✓ McIntyre, Enola, '16.....          | Tacoma            |
| ✓ McJannet, Roscoe, '16.....         | Seattle           |
| ✓ McKay, Iva V., '16.....            | Seattle           |
| ✓ McKay, Mabel A., '15.....          | Arlington         |
| ✓ McKee, Mary E., '16.....           | Everett           |
| ✓ McKillican, Anna, '16.....         | Edmonds           |
| ✓ McKillican, Ethel, '16.....        | Edmonds           |
| ✓ McKinley, Charles, '13.....        | Seattle           |
| ✓ McKittrick, Homer Earl, '16.....   | Seattle           |
| ✓ McLean, Berenice, '13.....         | Seattle           |
| ✓ McLean, Blanche L., '15.....       | Seattle           |
| ✓ McLean, Dollie L., '13.....        | Seattle           |
| ✓ McLean, Murray D., '14.....        | Seattle           |
| ✓ McLean, Victoria, '15.....         | Seattle           |
| ✓ McMillen, Mabel, '15.....          | Arlington         |
| ✓ McMurray, Fred A., '15.....        | Seattle           |
| ✓ McNamara, Eugene J., '14.....      | Seattle           |
| ✓ MacNey, Walter E., '16.....        | Vera              |
| ✓ McPhee, A. Sophia, '16.....        | Seattle           |
| ✓ MacPherson, William, '15.....      | Cashmere          |
| ✓ McQuigg, Harry Martin, '13.....    | Los Angeles, Cal. |
| ✓ McRae, J. Everett, '16.....        | Everett           |
| ✓ Macaulay, Margaret, '15.....       | Deming            |
| ✓ Madigan, Gladys, '15.....          | Seattle           |
| ✓ Magillicuddy, Martha, '15.....     | Seattle           |
| ✓ Maginnis, Arthur I., '16.....      | Seattle           |
| ✓ Maginnis, Frank, '16.....          | Seattle           |
| ✓ Mahler, Eva E., '13.....           | Seattle           |
| ✓ Major, Archie M., '13.....         | Seattle           |
| ✓ Malik, Ghulam Mohamed, '16.....    | Lahore, India     |
| ✓ Malloy, Frank B., '16.....         | Waterville        |
| ✓ Malloy, Ralph W., '16.....         | Seattle           |
| ✓ Malmo, Clarence, '16.....          | Seattle           |
| ✓ Maloney, Catherine A., '16.....    | Seattle           |
| ✓ Maney, Richard Sylvester, '14..... | Seattle           |
| ✓ Mann, Jerome S., '15.....          | Linnton, Ore.     |
| ✓ Mantz, Helen O., '15.....          | Seattle           |
| ✓ Marlon, Helen, '16.....            | North Yakima      |
| ✓ Maris, Angeline, '16.....          | Butte, Mont.      |
| ✓ Maris, Harland R., '16.....        | Seattle           |
| ✓ Markey, Frances, '15.....          | Seattle           |
| ✓ Marsh, Olivemay, '13.....          | Seattle           |
| ✓ Marston, Laura E., '16.....        | Arlington         |
| ✓ Martin, Phillip L., '16.....       | Castle Rock       |
| ✓ Mason, Elizabeth, '13.....         | Seattle           |
| ✓ Mathieu, George Eugene, '13.....   | Seattle           |
| ✓ Matthew, M. Lucille, '15.....      | Seattle           |
| ✓ Matzger, Manford, '16.....         | Seattle           |
| ✓ Maxham, Marion, '16.....           | Tacoma            |
| ✓ Meacham, Kate, '16.....            | Seattle           |
| ✓ Meacham, Orpha H., '16.....        | Seattle           |
| ✓ Meany, Margaret, '15.....          | Seattle           |

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| Meerscheidt, Erna, '16.....           | East Seattle    |
| Meissner, Laurentine Bertha, '13..... | Seattle         |
| Mercer, Beatrice, '16.....            | Seattle         |
| Merling, Ruth E., '16.....            | Spokane         |
| Mier, T. Clark, '16.....              | Seattle         |
| Milburn, Roszelle, '15.....           | Spokane         |
| Miles, Florence E., '13.....          | Alberni, B. C.  |
| Millay, Francis E., '13.....          | Chewelah        |
| Millay, Lottie E., '14.....           | Chewelah        |
| Miller, Alice, '16.....               | Seattle         |
| Miller, Cedric, '16.....              | Vancouver       |
| Miller, Elvena, '15.....              | Bellingham      |
| Miller, J. Merrill, '16.....          | Seattle         |
| Miller, Leah, '14.....                | Seattle         |
| Miller, Ruth, '15.....                | Seattle         |
| Minnis, Marjorie E., '15.....         | Seattle         |
| Miner, Grace E., '16.....             | Colville        |
| Mingis, Royall W., '16.....           | Seattle         |
| Minnis, Wesley, '16.....              | Seattle         |
| Misrow, Jogesh C., '13.....           | Calcutta, India |
| Mitchell, Edith B., '13.....          | Seattle         |
| Mitchell, Marie, '15.....             | Seattle         |
| Mitchell, Ruby, '15.....              | Seattle         |
| Miura, Y. Mataji, '16.....            | Japan           |
| Mohn, Esther, '13.....                | Bothell         |
| Mohr, George Joseph, '15.....         | Seattle         |
| Momb, James P., '15.....              | Roslyn          |
| Moody, Frank, '16.....                | Portland, Ore.  |
| Moody, Miriam I., '16.....            | Seattle         |
| Moore, Harrold, '16.....              | Seattle         |
| Moore, Helen S., '15.....             | Seattle         |
| Moore, Helene, '15.....               | Seattle         |
| Moore, Elsie Virginia, '13.....       | Seattle         |
| Morehead, Elizabeth, '15.....         | Nahcotta        |
| Morgan, M. Evan, '15.....             | Seattle         |
| Morgan, Mona Margaret, '16.....       | Marysville      |
| Morgenstern, Therese, '16.....        | Seattle         |
| Morris, Gladys, '16.....              | Seattle         |
| Morrison, Bessie M., '15.....         | Seattle         |
| Moulton, William R., '16.....         | Aberdeen        |
| Mourant, Ethel, '14.....              | Hoquiam         |
| Mower, Lulu I., '15.....              | Blaine          |
| Moyer, Lillian A., '15.....           | Seattle         |
| Muenz, Grace Patricia, '15.....       | Seattle         |
| Mullen, Maurice, '16.....             | Seattle         |
| Mullis, Frances F., '16.....          | Friday Harbor   |
| Murchison, M. Kathleen, '15.....      | Seattle         |
| Murphy, Bertha R., '16.....           | Burns, Ore.     |
| Murphy, Mark V., '16.....             | Seattle         |
| Mussen, Kittle, '16.....              | Wenatchee       |
| Myer, Bernice, '15.....               | Seattle         |
| Myers, Margaret, '14.....             | Seattle         |

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|---------------------------------------|--------------------|
| Naimy, Mitchell Joseph, '16.....      | Walla Walla        |
| Nakal, Gentok, '16.....               | Seattle            |
| Nakao, Yoshihito, '13.....            | Seattle            |
| Neill, Frank W., '14.....             | Seattle            |
| Neill, Paul, '16.....                 | Spokane            |
| Neill, Mabel I., '15.....             | Anaconda, Mont.    |
| Nelson, Arthur Emil Laurent, '13..... | Seattle            |
| Nelson, Benjamin Franklin, '16.....   | Mt. Vernon         |
| Nelson, Clara E., '15.....            | Indianapolis, Ind. |
| Nelson, Elizabeth K., '14.....        | Seattle            |
| Nelson, Eva, '14.....                 | Seattle            |
| Neuman, Frances H., '14.....          | Seattle            |
| Newell, Albert Coal, '16.....         | Kirkland           |
| Newell, P. Clover, '16.....           | Kirkland           |
| Newton, Cornelia E., '15.....         | Seattle            |
| Nichols, Robert, '15.....             | Tacoma             |
| Nickerson, John H., '14.....          | Seattle            |
| Nieder, Mandel, Jr., '15.....         | Seattle            |
| Noble, G. Bernard, '14.....           | Oregon City, Ore.  |
| Noderer, Ruth L., '16.....            | Seattle            |
| Nolan, W. Joseph, '16.....            | Seattle            |
| Nord, Andrea, '14.....                | Arlington          |
| Nordberg, Erika, '14.....             | Everett            |
| Northrup, Layton L., '16.....         | Chicago, Ill.      |
| Norton, John E., '15.....             | Tacoma             |
| Norton, William X., '16.....          | Renton             |
| Nunn, Frances A., '16.....            | Seattle            |
| O'Connell, Agnes E., '16.....         | Tacoma             |
| O'Connor, Bernard Leo, '14.....       | Philadelphia, Pa.  |
| O'Connor, J. Mathew, '16.....         | Seattle            |
| Ohlson, David, '13.....               | Seattle            |
| Oldfield, Helen, '14.....             | Tacoma             |
| O'Leary, Mary C., '16.....            | Seattle            |
| Oleson, Alfred C., '16.....           | Seattle            |
| Oleson, Carrie E., '16.....           | Seattle            |
| Olsen, Fletcher, '16.....             | Seattle            |
| Olsen, Ruby I., '14.....              | Corvallis, Ore.    |
| Olson, J. Almeda, '15.....            | Seattle            |
| Olschewsky, Laura Henrietta, '16..... | Seattle            |
| O'Meara, Frances, '16.....            | Seattle            |
| O'Neill, J. Phillip, '16.....         | Seattle            |
| Orndoff, Irene S., '15.....           | Thorp              |
| Orner, Pearl L., '14.....             | Seattle            |
| Osborn, Florence, '16.....            | Seattle            |
| Ostrander, Raymond E., '16.....       | The Dalles, Ore.   |
| Ottesen, May S., '16.....             | Juneau, Alaska     |
| Otto, L. Marguerite, '16.....         | Everett            |
| Ovens, Alexander C., '16.....         | Seattle            |
| Owen, Neva E., '14.....               | Sultan             |
| Paige, Caroline T., '16.....          | Portland, Ore.     |
| Palmer, Ben B., '14.....              | Seattle            |
| Palmer, Esther R., '15.....           | Seattle            |



|                                    |                   |
|------------------------------------|-------------------|
| ✓ Palmerton, Donald F., '16.....   | Seattle           |
| ✓ Palmerton, Halle, '15.....       | Seattle           |
| ✓ Parish, W. Frank, '13.....       | Seattle           |
| ✓ Parker, Catherine A., '16.....   | Seattle           |
| ✓ Parker, Leila, '15.....          | Seattle           |
| ✓ Parker, Roscoe S., '15.....      | Seattle           |
| ✓ Parks, George S., '15.....       | Seattle           |
| ✓ Parlin, Hazel Emma, '15.....     | Concrete          |
| ✓ Parr, Marie F., '16.....         | Seattle           |
| ✓ Parrott, J. Clifford, '16.....   | Twin Falls, Idaho |
| ✓ Paton, M. Margaret, '16.....     | Cashmere          |
| ✓ Patterson, H. Drue, '16.....     | Seattle           |
| ✓ Pauley, Linna L., '14.....       | Seattle           |
| ✓ Peck, Clarence R., '16.....      | Seattle           |
| ✓ Pelz, Victor H., '16.....        | Seattle           |
| ✓ Pennell, Elisabetha C., '16..... | Seattle           |
| ✓ Pennell, Louise F., '15.....     | Seattle           |
| ✓ Perine, Esther S., '16.....      | Seattle           |
| ✓ Pepper, Ruth Angie, '16.....     | Seattle           |
| ✓ Perry, Janette Elsie, '15.....   | Puyallup          |
| ✓ Perry, Howard J., '16.....       | Auburn            |
| ✓ Peters, Harold E., '13.....      | South Bend        |
| ✓ Peters, Ruth M., '16.....        | Seattle           |
| ✓ Peterson, Carolyn L., '16.....   | Seattle           |
| ✓ Peterson, Elinor B., '13.....    | Boise, Idaho      |
| ✓ Peterson, Geneva V., '16.....    | Seattle           |
| ✓ Peterson, Lawrence W., '16.....  | Seattle           |
| ✓ Peterson, Reuben J., '15.....    | Seattle           |
| ✓ Peterson, Rolland, '16.....      | Seattle           |
| ✓ Pettibone, L. Anita, '15.....    | Seattle           |
| ✓ Pettit, Minnie, '16.....         | Hoquiam           |
| ✓ Phillips, Alan A., '15.....      | Prosser           |
| ✓ Pierson, Beatrice, '16.....      | Seattle           |
| ✓ Pierson, Carolyn, '15.....       | Seattle           |
| ✓ Pinkerton, Helen M., '13.....    | Tacoma            |
| ✓ Platner, Goldie, '16.....        | Seattle           |
| ✓ Platner, E. Idessa, '16.....     | Seattle           |
| ✓ Platt, Imogene B., '14.....      | Seattle           |
| ✓ Poole, Jessie Lee, '16.....      | North Yakima      |
| ✓ Porter, Helen, '16.....          | Seattle           |
| ✓ Porter, Jean, '16.....           | Seattle           |
| ✓ Porter, John M., '16.....        | Auburn            |
| ✓ Porter, Margaret Alice, '14..... | Columbus, Mont.   |
| ✓ Potter, Mabel I., '16.....       | Blaine            |
| ✓ Powell, Charles J., '15.....     | Seattle           |
| ✓ Powers, James M., '14.....       | Seattle           |
| ✓ Pratt, Randall S., '16.....      | Dover             |
| ✓ Price, Frances M., '16.....      | Sifton            |
| ✓ Price, William K., '14.....      | Outlook           |
| ✓ Pritchard, J. Gordon, '16.....   | Tekoa             |
| ✓ Props, Nellie H., '16.....       | Fall City         |
| ✓ Prothero, Kate J., '15.....      | Seattle           |

|                                      |                 |
|--------------------------------------|-----------------|
| Proulx, Camillia E., '13.....        | Seattle         |
| Proulx, Erminia O., '14.....         | Seattle         |
| ✓ Pryde, Joel J., '16.....           | Aberdeen        |
| Purdy, Florence W., '15.....         | Tacoma          |
| Pusey, Edna M., '15.....             | Seattle         |
| ✓ Pyle, Lucy L., '16.....            | Seattle         |
| ✓ Radford, Marlon A., '13.....       | Seattle         |
| Ramage, Muriel, '15.....             | Spokane         |
| Randall, Bernice H., '14.....        | Marysville      |
| Randell, Laura, '13.....             | Seattle         |
| Randolph, Hazel, '15.....            | Seattle         |
| Ratcliffe, Ruth E., '15.....         | Cheney          |
| ✓ Rawson, Ralph F., '15.....         | Seattle         |
| Read, Helen L., '16.....             | Seattle         |
| Reavis, Nan P., '16.....             | Seattle         |
| Reding, Eugenia, '13.....            | Spokane         |
| ✓ Reed, Ernest, '16.....             | Seattle         |
| ✓ Reed, Paul Marlon, '15.....        | Seattle         |
| Reid, Deskin, '16.....               | Seattle         |
| Reekie, Martha E., '13.....          | Seattle         |
| Reeves, Zelma, '13.....              | Wenatchee       |
| ✓ Rehmke, Antoinette Maria, '16..... | Port Orchard    |
| ✓ Rehorn, Henry William, '16.....    | Walla Walla     |
| Reid, Elizabeth, '15.....            | Estacada, Ore.  |
| ✓ Reilly, William Newland, '16.....  | Bellingham      |
| Remsberg, Mabel F., '16.....         | Seattle         |
| ✓ Rhodes, Abbi G., '16.....          | Centralia       |
| ✓ Rich, Wilson A., '16.....          | Port Townsend   |
| ✓ Richards, John Stewart, '16.....   | North Yakima    |
| Richardson, Elizabeth, '16.....      | Spokane         |
| Richardson, June L., '16.....        | Seattle         |
| ✓ Rickles, P. Allen, '16.....        | Seattle         |
| ✓ Riddle, Helen J., '15.....         | Seattle         |
| ✓ Ringer, Frances C., '14.....       | Seattle         |
| ✓ Riordan, Jerry, '14.....           | Seattle         |
| ✓ Ripley, Margaret G., '16.....      | Portland, Ore.  |
| ✓ Robbins, John Talmage, '16.....    | Lewiston, Idaho |
| ✓ Roberts, George W., '16.....       | Walla Walla     |
| Robertson, Katherine C., '13.....    | Seattle         |
| Robertson, J. Muriel, '16.....       | Bellingham      |
| ✓ Robinson, Ralph, '16.....          | Spokane         |
| Rochester, Lettie Lee, '16.....      | Seattle         |
| ✓ Rochford, Hope, '16.....           | Seattle         |
| Rodgers, Irene C., '16.....          | Bothell         |
| Roe, N. Virginia, '14.....           | Monroe          |
| ✓ Rogers, Fred B., '16.....          | Seattle         |
| ✓ Rogers, Jennie E., '14.....        | Waterville      |
| ✓ Rohwer, Chris J., '16.....         | Spangle         |
| Rosaaen, Evelyn H., '14.....         | Seattle         |
| ✓ Rose, Claudine, '16.....           | Salem, Ore.     |
| ✓ Rose, Clyde B., '16.....           | Seattle         |
| ✓ Rose, Gertrude, '16.....           | Seattle         |

|                                      |                      |
|--------------------------------------|----------------------|
| Rosenberg, Edith, '16.....           | Seattle              |
| Rosenstein, Julia, '16.....          | Genesee, Idaho       |
| Ross, Edith Marie, '16.....          | Bellingham           |
| Rough, Charles Arthur, '16.....      | Seattle              |
| Rounds, Ethelyn B., '16.....         | Seattle              |
| Rounds, Philo H., '15.....           | Walla Walla          |
| Rude, Myrtle A., '16.....            | Seattle              |
| Rupert, Rhea, '15.....               | Aberdeen             |
| Russell, Beulah H., '16.....         | Seattle              |
| Ruttle, Corinne R., '16.....         | Seattle              |
| Ryan, Hal D., '16.....               | Seattle              |
| Sallberg, Millicent C., '13.....     | Seattle              |
| Sample, Earle, '16.....              | Roslyn               |
| Sargent, Margaret E., '15.....       | Winlock              |
| Sargent, Noel, '16.....              | Seattle              |
| Satterthwaite, Hugh Sumner, '15..... | Iron Mountain, Mont. |
| Saunders, Lucille, '16.....          | Seattle              |
| Saunderson, Laura, '15.....          | Seattle              |
| Saunderson, Ruth, '13.....           | Seattle              |
| Sauter, Jean, '16.....               | Seattle              |
| Savage, Anthony, '15.....            | Roslyn               |
| Savage, Lloyd R., '16.....           | Seattle              |
| Sax, Paul, '16.....                  | Colville             |
| Scarff, Lestina M., '13.....         | Seattle              |
| Schar, Robert Samuel, '13.....       | East Liverpool, Ohio |
| Schmitz, Emma, '15.....              | Seattle              |
| Schollmeyer, Herman, '16.....        | Nehalem, Ore.        |
| Schulz, B. Max, Jr., '16.....        | Seattle              |
| Schumacher, Wilhelmina, '14.....     | Santa Ana, Cal.      |
| Schumaker, Elizabeth, '16.....       | Seattle              |
| Schwaegler, Viola M., '16.....       | Selah                |
| Schwartz, George L., '15.....        | Seattle              |
| Schwellenbach, Lewis B., '16.....    | Spokane              |
| Scott, Oma B., '15.....              | Seattle              |
| Scott, Winfield, '16.....            | Camas                |
| Seagrave, Louis H., '16.....         | Spokane              |
| Seal, Irene M., '16.....             | Colville             |
| Seibert, Marjorie D., '16.....       | Seattle              |
| Salig, Isabel, '16.....              | Seattle              |
| Semmen, Florence, '14.....           | Aberdeen             |
| Serley, Oscar M., '15.....           | Lewiston, Idaho      |
| Severns, Edwin Ellsworth, '16.....   | Chehalis             |
| Sexton, Lawrence E., '15.....        | Everett              |
| Seydell, Grace, '14.....             | Seattle              |
| Shackleford, Charlotte, '14.....     | Tacoma               |
| Shadinger, Ac, '16.....              | Snohomish            |
| Shafer, Walter C., '16.....          | Tacoma               |
| Shaff, Louise, '14.....              | Lewiston             |
| Shannon, Clarence W., '16.....       | Seattle              |
| Shawler, Florence, '15.....          | Spokane              |
| Shearer, Preston B., '16.....        | Toppenish            |
| Sheehan, M. Madeline, '16.....       | Walla Walla          |

|    |                                   |                  |
|----|-----------------------------------|------------------|
|    | Shelton, Annah L., '13.....       | Seattle          |
|    | Sherwood, Glenara, '16.....       | Bellingham       |
|    | Shields, Muriel J. R., '16.....   | Bellingham       |
| /  | Shiel, Walter P., '16.....        | Spokane          |
|    | Shipley, Ethelyn, '15.....        | Seattle          |
| /  | Shivvers, Clarence H., '16.....   | Tacoma           |
|    | Siemens, Margaret, '14.....       | Seattle          |
|    | Sifton, Edith, '15.....           | Seattle          |
|    | Silverstone, Libbie, '16.....     | Seattle          |
|    | Simson, Lillian L., '16.....      | Nome, Alaska     |
|    | Skinner, Helen B., '16.....       | Tacoma           |
| // | Slater, Glen J., '16.....         | Ferndale         |
|    | Slater, Ronald B., '16.....       | Colville         |
|    | Sleicher, R. Ruth, '13.....       | Chehalis         |
|    | Smith, Alice W., '16.....         | Seattle          |
|    | Smith, Amy C., '16.....           | Seattle          |
|    | Smith, Bess, '14.....             | Seattle          |
|    | Smith, A. Earlita, '16.....       | Seattle          |
|    | Smith, Harriet, '16.....          | Tacoma           |
|    | Smith, Lindabel, '16.....         | Seattle          |
|    | Smith, L. Louise, '13.....        | Seattle          |
| /  | Smith, Milton, '16.....           | Portland, Ore.   |
|    | Smith, Olive M., '14.....         | Manette          |
| /  | Smith, Ralph A., '16.....         | Auburn           |
|    | Smithson, Martha Jane, '16.....   | Vancouver, B. C. |
|    | Snow, Myra L., '14.....           | Seattle          |
|    | Solid, Minda R., '16.....         | Coupeville       |
|    | SoRelle, Vivian, '15.....         | Seattle          |
|    | Sorensen, Beatrice M., '13.....   | Everett          |
| /  | Sorley, Frank Mitchell, '16.....  | Wenatchee        |
|    | Souder, Bessie, '16.....          | Seattle          |
| /  | Soule, Kenneth J., '16.....       | Seattle          |
| /  | Southard, Frances, '16.....       | Seattle          |
| /  | Southard, Marion, '16.....        | Seattle          |
|    | Sowerby, Mina, '14.....           | Juneau, Alaska   |
| /  | Sowers, Joe M., '16.....          | Seattle          |
|    | Spaulding, Helen E., '16.....     | Seattle          |
| /  | Sparks, Percy Spencer, '16.....   | Mentesano        |
| /  | Spelger, F. Marian, '16.....      | Seattle          |
|    | Spencer, Edith, '16.....          | Seattle          |
|    | Spencer, Eunice A., '16.....      | Seattle          |
| /  | Springer, Earl V., '16.....       | Aberdeen         |
|    | Springer, Mabel, '15.....         | Olympia          |
| /  | Squire, Clark, '16.....           | Seattle          |
|    | Stacy, Eloise, '13.....           | North Yakima     |
|    | Stahl, Eleanor E., '14.....       | Seattle          |
| /  | Statler, Gladys G., '13.....      | Seattle          |
| /  | Stauffer, J. Cassius, '15.....    | Spokane          |
|    | Staup, Mrs. Minnie G., '13.....   | Seattle          |
| /  | Steelman, Albert J., '16.....     | Seattle          |
| /  | Steendahl, Anna S., '16.....      | Seattle          |
| /  | Steinke, Christoph Fred, '16..... | Seattle          |

|                                       |                 |
|---------------------------------------|-----------------|
| Stephens, Eleanor S., '14.....        | Spokane         |
| ✓ Stegner, Guy Trent, '16.....        | Spokane         |
| ✓ Sterling, Leanore F., '15.....      | North Yakima    |
| ✓ Stetson, Virgil Calvin, '16.....    | Savanna         |
| ✓ Stewart, May A., '16.....           | Tacoma          |
| ✓ Stewart, Wade A., '16.....          | Seattle         |
| ✓ St. John, Lewis H., '14.....        | Snohomish       |
| Stone, Elizabeth S., '16.....         | Spokane         |
| Stone, Ella Gertrude, '15.....        | Seattle         |
| Strange, Fern, '16.....               | Seattle         |
| ✓ Strase, Anna E., '13.....           | Seattle         |
| ✓ Street, Frank W., '16.....          | Seattle         |
| ✓ Strong, Clara A., '14.....          | Seattle         |
| ✓ Stuart, George P., '14.....         | Monroe          |
| ✓ Stuart, Philip A., '15.....         | Seattle         |
| ✓ Studebaker, Herbert E., '14.....    | Castlerock      |
| ✓ Sturgis, Cyrus C., '13.....         | Pendleton, Ore. |
| Sullivan, Kathleen, '15.....          | Butte, Mont.    |
| Sully, Bernice A., '14.....           | Seattle         |
| Summers, S. Leola, '16.....           | Seattle         |
| ✓ Sutherland, D'Loss, '16.....        | Spokane         |
| ✓ Sutherland, Starr Shelley, '16..... | Bellingham      |
| ✓ Sutter, Pearl Etta, '16.....        | Seattle         |
| ✓ Sutton, Wayne Campbell, '15.....    | Seattle         |
| ✓ Swan, James H., '16.....            | Canton, China   |
| ✓ Sweet, Elsie S., '14.....           | Bellingham      |
| ✓ Swope, Helen, '16.....              | Seattle         |
| Tachell, Maud, '16.....               | Renton          |
| ✓ Talbott, M. Lucile, '16.....        | Seattle         |
| ✓ Talcott, G. Noyes, '16.....         | Olympia         |
| ✓ Tamura, Teijiro, '14.....           | Shiga, Japan    |
| ✓ Tanner, Beth E., '13.....           | Seattle         |
| ✓ Tarp, Vera D., '16.....             | Seattle         |
| ✓ Taylor, Elizabeth M., '14.....      | Seattle         |
| ✓ Taylor, Harold B., '14.....         | Seattle         |
| ✓ Taylor, Marion O., '14.....         | Tacoma          |
| ✓ Taylor, Martha S., '15.....         | Seattle         |
| ✓ Taylor, Ralph T., '16.....          | Seattle         |
| ✓ Taylor, William D., '16.....        | Seattle         |
| ✓ Terry, Clayton A., '16.....         | Tacoma          |
| ✓ Thaanum, Margaret G., '14.....      | Seattle         |
| ✓ Thomas, J. Earl, '16.....           | Seattle         |
| ✓ Thomas, Gezina, '16.....            | Seattle         |
| ✓ Thomas, Lucile, '16.....            | Seattle         |
| ✓ Thompson, A. Genevieve, '16.....    | Wapato          |
| ✓ Thompson, Leonard Ramsay, '16.....  | Everett         |
| ✓ Thompson, Lucille W., '13.....      | Tacoma          |
| ✓ Thompsom, Luciole M., '15.....      | Seattle         |
| ✓ Thompson, Nellie C., '13.....       | Everett         |
| ✓ Thompson, Ruth, '16.....            | Seattle         |
| ✓ Thompson, William Guy, '16.....     | Seattle         |
| ✓ Thorn, Walker M., '16.....          | Ashland, Ore.   |

|                                    |                   |
|------------------------------------|-------------------|
| Thorpe, Blanche M., '13.....       | Ellsworth, Kas.   |
| Thurber, H. Raymond, '16.....      | Hoquiam           |
| Tibbits, Edna M., '13.....         | Seattle           |
| Tilton, Gertrude A., '16.....      | Seattle           |
| Todd, Mary Catherine, '16.....     | Seattle           |
| Tolhurst, Bessie, '13.....         | Livingston, Mont. |
| Tolman, Leland I., '15.....        | Spokane           |
| Tomlinson, Margaret, '14.....      | Seattle           |
| Trenholm, Howard A., '16.....      | Seattle           |
| Trenholme, Lottie A., '14.....     | Seattle           |
| Tretheway, Bessie L., '15.....     | Butte, Mont.      |
| Tronsrud, Anna C., '15.....        | Kirkland          |
| Truesdell, John C., '16.....       | Malden            |
| Turnbull, George S., '15.....      | Seattle           |
| Turner, Ruth, '15.....             | Seattle           |
| Tvete, Raymond W., '16.....        | Seattle           |
| VanDevanter, Louise M., '16.....   | Orillia           |
| VanDevanter, Rachel O., '16.....   | Orillia           |
| Van Horn, Edward William, '16..... | Hood River, Ore.  |
| Van Kirk, Viola M., '16.....       | Corona, Cal.      |
| Van Riper, Agnes A., '16.....      | Seattle           |
| Vermillion, Gladys, '16.....       | Portland, Ore.    |
| Vincent, Ruth V., '15.....         | Seattle           |
| VonLosson, Pauline, '16.....       | Auburn            |
| Votaw, Aimee V., '16.....          | Tekoa             |
| Wade, Dorothy, '16.....            | Seattle           |
| Wagner, Katherine B., '16.....     | Seattle           |
| Wagoner, Ruth M., '14.....         | Seattle           |
| Waits, Netta Marguerite, '15.....  | Seattle           |
| Wakefield, Georgia E., '16.....    | Seattle           |
| Wakelee, Eva E., '15.....          | Ellensburg        |
| Waldrip, Sarah P., '14.....        | Seattle           |
| Wallace, Adeline M., '13.....      | Bellingham        |
| Wallace, Mary A., '15.....         | Seattle           |
| Wallace, Howard S., '14.....       | Ellensburg        |
| Wallin, Mary E., '16.....          | Naches            |
| Walsh, Mamie Catherine, '15.....   | Wenatchee         |
| Walske, Max C., '15.....           | Auburn            |
| Walter, Ernest R., '16.....        | Denver, Col.      |
| Walters, Hazel B., '15.....        | Los Angeles, Cal. |
| Wand, Thomas H., '13.....          | Seattle           |
| Wapato, Louie C., '16.....         | Chelan            |
| Ward, Ama, '15.....                | Tacoma            |
| Ward, Mary A., '16.....            | Seattle           |
| Ward, May D., '16.....             | Seattle           |
| Warren, Elgine J., '14.....        | Davenport         |
| Watson, Elmer Gordon, '16.....     | Spokane           |
| Watson, Virginia G., '16.....      | Aberdeen          |
| Watters, Aimee A., '16.....        | Spokane           |
| Waynick, Dean, '14.....            | Spokane           |
| Webb, H. Fay, '15.....             | Tacoma            |
| Webster, Harry Watson, '16.....    | North Yakima      |

|                                  |                           |
|----------------------------------|---------------------------|
| Weeks, Harold T., '16.....       | Seattle                   |
| Wegener, Raymond A., '15.....    | Tacoma                    |
| Welsfield, Leo, '14.....         | Seattle                   |
| Weiss, Phil J., '16.....         | Seattle                   |
| Welch, Julia R., '15.....        | Seattle                   |
| Welch, Edith Lindley, '13.....   | Kelso                     |
| Wells, Norma Mae, '14.....       | Seattle                   |
| Welton, Martha R., '14.....      | Seattle                   |
| West, Dorothy, '16.....          | Kimberly, Mont.           |
| West, Irene, '14.....            | Seattle                   |
| Wescott, Maud Alvina, '14.....   | Bellingham                |
| Weston, Alvah T., '16.....       | Portland, Ore.            |
| Wharton, V. Marie, '13.....      | Everett                   |
| Wheeler, Mamie H., '16.....      | Seattle                   |
| Wheeler, Marjorie C., '16.....   | Seattle                   |
| White, Lena H., '15.....         | Whitehorse, Y. T., Canada |
| White, Marjorie, '16.....        | Seattle                   |
| White, May E., '15.....          | Seattle                   |
| White, Roydon W., '15.....       | Seattle                   |
| White, Willard D., '16.....      | Seattle                   |
| White, Vincent B., '16.....      | Spokane                   |
| Whitlock, Marion A., '16.....    | Tacoma                    |
| Wiburg, Martha R., '14.....      | Bellingham                |
| Wiester, Grace M., '15.....      | Wenatchee                 |
| Wilbur, Alvira W., '16.....      | Seattle                   |
| Wilcox, Lester A., '16.....      | Seattle                   |
| Wiley, Marian E., '16.....       | Waterville                |
| Wiley, Richard Evett, '16.....   | Hillsboro, Ore.           |
| Wilkie, Florence M., '15.....    | Seattle                   |
| Willard, Richard Carle, '15..... | Seattle                   |
| Williams, Anne J., '16.....      | Butte, Mont.              |
| Williams, W. Carlton, '16.....   | Seattle                   |
| Williams, Charlotte, '16.....    | Seattle                   |
| Williams, Louise, '15.....       | Seattle                   |
| Willson, Lovina, '13;.....       | Olympia                   |
| Wilsey, W. Ralph, '15.....       | Asotin                    |
| Wilson, T. Burl, '16.....        | Seattle                   |
| Wilson, Emma F., '15.....        | Seattle                   |
| Wilson, Isabel Mae, '15.....     | Seattle                   |
| Wilson, John Newton, '16.....    | Seattle                   |
| Wilson, Marie Helen, '14.....    | Seattle                   |
| Wilson, Stanley R., '14.....     | Ellensburg                |
| Wilton, G. Lawrence, '16.....    | Seattle                   |
| Windust, Marie, '13.....         | Dayton                    |
| Winter, H. Earle, '14.....       | Everett                   |
| Wise, Marion G., '16.....        | Spokane                   |
| Woelffen, Frederick A., '15..... | Lewiston, Idaho           |
| Wold, Mabel I., '16.....         | Edmonton, Can.            |
| Wold, H. P. A., '16.....         | Norway                    |
| Woods, Arra, '15.....            | Seattle                   |
| Woodward, Frances M., '15.....   | Seattle                   |
| Worsham, Edwin Hodge, '16.....   | Seattle                   |

|                                 |          |
|---------------------------------|----------|
| Worthington, Grace, '15.....    | Quilcene |
| Worthington, Mariette, '16..... | Quilcene |
| ✓ Wright, Frank T., '13.....    | Burton   |
| ✓ Wright, H. Garner, '14.....   | Seattle  |
| ✓ Wright, June M. O., '13.....  | Tacoma   |
| Wright, Mary A., '16.....       | Seattle  |
| ✓ Wright, Robert C., '15.....   | Seattle  |
| Yarrow, Irene, '16.....         | Seattle  |
| Yocum, Elizabeth, '16.....      | Tacoma   |
| ✓ York, Arthur F., '16.....     | Tacoma   |
| Young, Grace M., '13.....       | Aberdeen |
| Young, Gertrude M., '13.....    | Seattle  |
| ✓ Younger, J. Arthur, '15.....  | Kirkland |
| Zinkie, Marjorie J., '14.....   | Seattle  |

9 F.                      5 M.

## SPECIAL STUDENTS

| <i>Name of Student.</i>         | <i>Home Address.</i> |
|---------------------------------|----------------------|
| Akins, Catharine E. ....        | Seattle              |
| Arnold, Zelah .....             | Seattle              |
| Bachmann, Rose M. ....          | Seattle              |
| Barry, Mariette A. ....         | Seattle              |
| Becker, Mrs. Florence .....     | Seattle              |
| Benham, Bess .....              | Seattle              |
| Berrian, Mrs. Margaret .....    | Seattle              |
| ✓ Bicke, Edward .....           | Seattle              |
| ✓ Brennan, Edward M. ....       | Cle Elum             |
| Britten, Hazel Frances.....     | Seattle              |
| Brooke, Sallie .....            | Tacoma               |
| ✓ Brown, Arthur C. ....         | Seattle              |
| Bryan, Clara M. ....            | Montesano            |
| Burr, Margaret M. ....          | Atlantic, Iowa       |
| Burroughs, Hazel M. ....        | Seattle              |
| ✓ Buschmann, Leif C. ....       | Seattle              |
| Butchart, Fay Marjory.....      | Seattle              |
| Canney, Ella Mae .....          | Seattle              |
| Chase, Mrs. Mary F. ....        | Seattle              |
| ✓ Coats, Cecil Lynn .....       | Seattle              |
| ✓ Colwell, Harry J. ....        | Seattle              |
| Connors, E. Eliza .....         | Seattle              |
| Craven, Elsa .....              | Seattle              |
| ✓ Crider, Julia .....           | Seattle              |
| ✓ Croasdill, Joseph .....       | Seattle              |
| Davidson, Verle Bell .....      | Seattle              |
| de Lartigue, Adele .....        | Seattle              |
| ✓ Dennis, Matthew Stephen ..... | Seattle              |
| Dorfmen, Mrs. Lottie .....      | Seattle              |
| Doty, Mrs. Nell R. ....         | Seattle              |
| Downie, Mrs. Lou Chase .....    | Seattle              |
| Driver, Helen .....             | Racine, Wis.         |
| Duskin, Anna Lucile .....       | Seattle              |

25 F.                      8 M.



|                                     |                       |
|-------------------------------------|-----------------------|
| Fallis, Edythe Lorilla .....        | Spokane               |
| Fancher, Grace Genevieve .....      | Spokane               |
| ✓ Fancher, John Thomas .....        | Spokane               |
| Fraser, Mabel .....                 | Port Blakely          |
| Gearhart, Esther .....              | Astoria, Ore.         |
| Geddis, Lila May .....              | Vancouver, B. C.      |
| ✓ Gist, Arthur S. ....              | Cedar Falls, Iowa     |
| ✓ Goodell, Luther T. ....           | Seattle               |
| Gorham, Kathleen .....              | Seattle               |
| Greenwell, Mrs. Orline Myrtle ..... | Seattle               |
| ✓ Hansome, Marius .....             | Kongsmark, Germany    |
| ✓ Hartman, Harold H. ....           | Seattle               |
| Haynes, Dora .....                  | Seattle               |
| Haynes, Laura Belle .....           | Hoquiam               |
| ✓ Healy, LeRoy Clare .....          | Kalamazoo, Mich.      |
| Holmes, Marjorie .....              | Seattle               |
| Horr, Mrs. Buelah .....             | Seattle               |
| Huelsdonk, Mrs. Gertrude .....      | Seattle               |
| Hughes, Lucy M. ....                | Seattle               |
| ✓ Inonye, Daniel Y. ....            | Tokyo, Japan          |
| Jeffers, Lura Mira .....            | Seattle               |
| ✓ Jennings, Luman Arthur .....      | Marysville            |
| Jerdee, Inger Carolina .....        | Seattle               |
| Johnson, Margaret .....             | Spokane               |
| Karr, Surendra Nath .....           | Farispur, India       |
| ✓ Keen, Charles Yarnall .....       | Seattle               |
| Kendall, Elizabeth Louise .....     | New York, N. Y.       |
| ✓ Kennedy, Zoe .....                | Seattle               |
| Knudsen, Ragna .....                | Seattle               |
| ✓ Krikos, Alex .....                | Seattle               |
| ✓ Kumar, Gara Datta .....           | Ramalpendi, India     |
| Laing, Mrs. Percy T. ....           | Seattle               |
| ✓ Lord, Leah .....                  | Park River, N. Dakota |
| Lundquist, Jessie Claudia .....     | Seattle               |
| ✓ McClung, Ray .....                | Pomeroy               |
| McCollins, Clara .....              | Seattle               |
| ✓ McConahy, Burree .....            | Seattle               |
| McConnel, Mary E. ....              | Seattle               |
| McGinnis, Ida Plummer .....         | Seattle               |
| Megrath, Pearl Adams .....          | Seattle               |
| Mercer, Mrs. Ida B. ....            | Seattle               |
| ✓ Miller, George A. ....            | Snohomish             |
| Miller, Sidney Robert .....         | Seattle               |
| ✓ Misrow, Joseph C. ....            | Calcutta, India       |
| ✓ Morris, William Harry .....       | Seattle               |
| Mundstock, Mina .....               | Olympia               |
| Nelson, Mildred Eva .....           | Seattle               |
| ✓ Nitteberg, Albin .....            | Knowlton              |
| Norton, Lavella Parker .....        | Kingsfield, Me.       |
| Oakley, June .....                  | Seattle               |
| ✓ Ohinata, Chiyoji .....            | Nagano, Japan         |
| ✓ Painter, Painter .....            | Seattle               |

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|---------------------------------|-------------------|
| Palmer, Paul J. ....            | Seattle           |
| Panton, John, Jr. ....          | Seattle           |
| Paschall, Mary R. ....          | Chico             |
| Pinella, John B. ....           | Louisville, Ky.   |
| Pollock, William Gilchrist .... | Summerland, B. C. |
| Porter, Ethel May ....          | Seattle           |
| Pratt, Gertrude Anita ....      | Seattle           |
| Pritchard, Frank Alfred ....    | Seattle           |
| Randall, Vernon A. ....         | Tacoma            |
| Randles, Mrs. Cora M. ....      | Seattle           |
| Reed, Kathryn A. ....           | Seattle           |
| Rhoda, Ethel Sarah ....         | Oakland, Calif.   |
| Riley, Mrs. C. J. ....          | Seattle           |
| Robinson, Maude Isabel ....     | Seattle           |
| Saito, Fred ....                | Hirosaki, Japan   |
| Sands, Clifford William ....    | Mukelteo          |
| Schooling, George P., Jr. ....  | Warrensburg, Mo.  |
| Seymour, Charlotte ....         | Seattle           |
| Seymour, Almee H. ....          | Seattle           |
| Shaw, Harriet N. ....           | Chicago, Ill.     |
| Shohey, Sawamom ....            | Chicago, Ill.     |
| Singletary, Jaima M. ....       | Seattle           |
| Smalley, Bessie Marie ....      | Seattle           |
| Smalley, Robert Bell ....       | Seattle           |
| Smithson, Martha Jane ....      | Vancouver, B. C.  |
| Stanchfield, Harriet ....       | Seattle           |
| Swanson, Esther ....            | Custer            |
| Talcott, Anson Newell ....      | Seattle           |
| Thacker, Harriet C. ....        | Glenwood, Minn.   |
| Thomle, Magnus Gulbrand ....    | Stanwood          |
| Thompson, Mrs. Eva Mabel ....   | Seattle           |
| Trotter, Mrs. Katherine S. .... | Seattle           |
| Voelker, Anna Elizabeth ....    | Le Mars, Iowa     |
| Voerge, Lettie E. ....          | Seattle           |
| Wein, Clara G. ....             | Seattle           |
| Wente, Olive ....               | Manistee, Mich.   |
| Westlake, Thomas Hall ....      | Cleveland, Ohio   |
| Whipple, Auguste Steinat ....   | Seattle           |
| Whitham, Eva L. ....            | Seattle           |
| Williams, Rees Brongwyn ....    | Ilwaco            |
| Wilson, Cordelia ....           | Magnolia, Ill.    |
| Wilson, Florence Margaret ....  | Dallas, Texas     |
| Woodaman, Von M. ....           | Seattle           |
| Yamane, Masuo ....              | Kyoto, Japan      |
| Yockey, Mildred ....            | Watertown, S. D.  |
| Young, Marguerite Armour ....   | Seattle           |

285 18M.

## COLLEGE OF ENGINEERING

## ABBREVIATIONS

## CLASSES

|            |               |
|------------|---------------|
| '13 Senior | '15 Sophomore |
| '14 Junior | '16 Freshman  |

## COURSES

|                              |                              |
|------------------------------|------------------------------|
| C. E. Civil Engineering      | M. E. Mechanical Engineering |
| E. E. Electrical Engineering | Ch. E. Chemical Engineering  |

*Name of Student, Rank and Department**Home Address.*

|                                     |                     |
|-------------------------------------|---------------------|
| Abbott, Edson A., '16, C. E.        | Port Angeles        |
| Aldrich, Fred Clark, '16, E. E.     | Port Townsend       |
| Andersen, Edwin Charles, '13, C. E. | Seattle             |
| Anderson, Hans Ernst., '16, C. E.   | Fredrikstad, Norway |
| Anderson, Juanita., '14, C. E.      | Juneau, Alaska      |
| Andrus, Claude A., '16, E. E.       | Seattle             |
| Angove, Clarence V., '16, E. E.     | Seattle             |
| Archibald, Norman S., '16, C. E.    | Seattle             |
| Baer, Harold Eugene, '14, E. E.     | Seattle             |
| Bardin, Harry Melvin, '14, E. E.    | Seattle             |
| Barlow, Russell Calvin, '15, C. E.  | Tacoma              |
| Barnes, Clay Aaron, '16, C. E.      | Goldendale          |
| Bash, F. Edwin, '16, Ch. E.         | Seattle             |
| Batchelder, Harold S., '15, Ch. E.  | Spokane             |
| Bean, Ellis H., '15, C. E.          | Portland, Ore.      |
| Beisel, Rex B., '16, M. E.          | Cumberland          |
| Betterton, Cherrill R., '16, C. E.  | Seattle             |
| Bigelow, Paul T., '14, E. E.        | Edmonds             |
| Bissell, Addison G., '15, Ch. E.    | Seattle             |
| Blair, Harold William, '16, Ch. E.  | North Yakima        |
| Blair, Homer O., '13, E. E.         | Tacoma              |
| Bliss, J. B., '13, E. E.            | Seattle             |
| Bowen, Hiram, '13, E. E.            | Oroville            |
| Bradford, Alford J., '14, C. E.     | Seattle             |
| Brayton, W. Julius, '16, E. E.      | Bellingham          |
| Brokaw, Clyde W., '16, C. E.        | Stanwood            |
| Brown, Earl Theodore, '14, E. E.    | Centralia           |
| Brown, Herbert Edward, '15, E. E.   | Custer              |
| Brown, Paul H., '16, C. E.          | Seattle             |
| Brown, Robert Quixote, '16, E. E.   | Goldendale          |
| Bruce, James L., '16, M. E.         | Seattle             |
| Bullard, Robert Freeman, '15, C. E. | Tacoma              |
| Burbank, Sydney R., '15, E. E.      | Seattle             |
| Burns, Alfred A., '15, C. E.        | Seattle             |
| Cameron, James Fraser, '15, C. E.   | Seattle             |
| Canfield, Florian, '16, E. E.       | Seattle             |
| Carr, Ernst Clifford, '15, E. E.    | Seattle             |
| Carr, W. Gardner, '16, Ch. E.       | Pasadena, Cal.      |

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|--|--------------------|
| Cary, Miles E., '16, C. E.               | Edmonds            |
| Chapman, Asa B., '13, C. E.              | Seattle            |
| Charles, Perry L., '16, Ch. E.           | Seattle            |
| Chilberg, Laurence J., '15, E. E.        | Mt. Vernon         |
| Chin, Kee, '16, C. E.                    | Seattle            |
| Choulnard, William J., '13, C. E.        | Everett            |
| Churchel, Chas. H., '14, E. E.           | Friday Harbor      |
| Clarke, Daniel Edwin, '16, M. E.         | Lynden             |
| Cochran, Grant C., '16, E. E.            | Seattle            |
| Cochran, Elvin Perry, '15, C. E.         | Seattle            |
| Coffinberry, Clarence Milton, '16, M. E. | Seattle            |
| Cohron, Cicero, '16, E. E.               | Seattle            |
| Conley, Benjamin P., '16, Ch. E.         | Seattle            |
| Cook, Elias, '16, C. E.                  | Horse Heaven       |
| Cook, Ray Charles, '16, M. E.            | Portland, Ore.     |
| Corbitt, Hugh C., '13, Ch. E.            | Seattle            |
| Coy, Roy, '13, E. E.                     | Seattle            |
| Crawford, Raymond, '16, E. E.            | Seattle            |
| Crell, Julius Jacob, '14, C. E.          | Seattle            |
| Crites, Herbert Newton, '14, Ch. E.      | Bellingham         |
| Curtis, Burton Freeland, '16, M. E.      | Seattle            |
| Cushman, Thomas J., '16, M. E.           | Seattle            |
| Dakin, Walter John, '16, C. E.           | Ferndale           |
| Dana, Clyde A., '16, C. E.               | Seattle            |
| Dana, Forest C., '14, C. E.              | Seattle            |
| Darland, Alvin Franklin, '14, E. E.      | Tacoma             |
| Davis, John Patterson, '16, E. E.        | Seattle            |
| Davis, Lloyd Lincoln, '16, Ch. E.        | Bellingham         |
| Dean, Chester, '14, C. E.                | Hoquiam            |
| Dean, Ernest P., '16, M. E.              | Puyallup           |
| Deggeller, Martin Ney, '16, C. E.        | Chehalis           |
| De Moss, Sam, '14, C. E.                 | Seattle            |
| Dennis, Wolcott, '16, M. E.              | Seattle            |
| Derham, Peter, '16, E. E.                | Pocatello, Idaho   |
| Dessieux, E. Gorin, '16, E. E.           | Eugene, Ore.       |
| Dodd, Joseph, '16, C. E.                 | Seattle            |
| Dodds, John Milton, '16, E. E.           | Seattle            |
| Dow, Adrian Jay, '14, C. E.              | Seattle            |
| Draves, Carl Zeno, '16, Ch. E.           | Seattle            |
| Drips, Arthur N., '14, E. E.             | Olympia            |
| Driscoll, Thomas, Jr., '14, C. E.        | Bremerton          |
| Drummond, Wallace Gordon, '16, C. E.     | Seattle            |
| Eakins, Maxwell, '16, C. E.              | Seattle            |
| Eddy, Howard, '16, E. E.                 | Seattle            |
| Edson, Arthur Allen, '16, E. E.          | Bellingham         |
| Eernisse, James Guy, '13, M. E.          | Vashon             |
| Egtvedt, Clairemont L., '16, E. E.       | Seattle            |
| Ellison, Robert Waldemar, '15, Ch. E.    | Seattle            |
| Elmendorf, Hartwell Johnson, '16, M. E.  | Seattle            |
| Eshelman, Wallace Clair, '13, Ch. E.     | Seattle            |
| Faas, John Casper, '15, Ch. E.           | Silver Creek       |
| Fallis, Robert Marshall, '15, E. E.      | Spirit Lake, Idaho |

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|---|----------------------|
| Farmer, Albert M., '14, C. E.           | Seattle              |
| Faulkner, Ralph B., '15, M. E.          | Aberdeen             |
| Fehr, Harry L., '16, E. E.              | Seattle              |
| Finch, James Leslie, '16, M. E.         | Boise, Idaho         |
| Fleischauer, J. Harold, '15, C. E.      | Seattle              |
| Flodin, John, '14, M. E.                | Helsingfor, Finland  |
| Ford, Jack Lawrence, '16, E. E.         | Spokane              |
| Fotheringham, Stuart Gano, '16, C. E.   | Seattle              |
| Fowler, Newell, '16, M. E.              | Snohomish            |
| Fox, Franklin George, '14, C. E.        | Blackie, Canada      |
| Frankland, James, '16, C. E.            | Seattle              |
| Freeman, Joseph, '16, E. E.             | Seattle              |
| French, Boyd Edward, '13, E. E.         | Cashmere             |
| Galley, Walter Raymond, '16, Ch. E.     | Seattle              |
| Germain, Walter Adelbert, '16, E. E.    | Bellingham           |
| Gillette, Roswell S., '16, E. E.        | Spokane              |
| Goldsmith, Edward D., '13, Ch. E.       | Tacoma               |
| Goodfellow, William Forrest, '15, M. E. | Seattle              |
| Gordon, Claude P., '14, E. E.           | Bellevue             |
| Gareau, Joseph Rudolph, '16, C. E.      | Victoria, B. C.      |
| Grady, Roger Jones, '13, E. E.          | Oklahoma City, Okla. |
| Gray, Howard B., '16, C. E.             | Seattle              |
| Guha, Dakshira R., '15, M. E.           | India                |
| Gunn, George, '16, M. E.                | Tacoma               |
| Gustafson, Herman Milton, '16, C. E.    | Everett              |
| Hall, Jesse N., '16, E. E.              | Stanwood             |
| Hallan, Claude, '16, E. E.              | Monroe               |
| Handsaker, Willard Nelson, '15, C. E.   | Tacoma               |
| Hansen, Verne, '16, E. E.               | Everett              |
| Hart, Stadden S., '16, M. E.            | Seattle              |
| Hartson, Joseph Tracy, '14, C. E.       | Tacoma               |
| Hawthorn, George Edward, '14, C. E.     | Seattle              |
| Hazelet, Craig P., '14, C. E.           | Cordova, Alaska      |
| Hazelton, Harry Burton, '14, E. E.      | Bellingham           |
| Headlee, Colin D., '16, M. E.           | Seattle              |
| Hedlund, David Arthur, '13, C. E.       | Spokane              |
| Hedrick, L. Bruce, '16, Ch. E.          | Seattle              |
| Herrick, John Sidney, '14, Ch. E.       | Seattle              |
| Hill, Curtis L., '16, E. E.             | Tacoma               |
| Hill, Howard Norman, '15, C. E.         | Seattle              |
| Hopkins, Hubert, '15, Ch. E.            | Seattle              |
| Hopkins, Robert S., '16, C. E.          | Seattle              |
| Hopkins, Sheridan, '16, E. E.           | Olympia              |
| Hougen, Olav A., '15, Ch. E.            | Tacoma               |
| Howard, Henry Coburn, '13, Ch. E.       | Seattle              |
| Howard, Albert Leighton, '14, Ch. E.    | Bellevue             |
| Howe, William Bell, '15, M. E.          | Seattle              |
| Howell, Lewis Vern, '16, C. E.          | Fall City            |
| Huelsdonk, Adolph, '15, E. E.           | Seattle              |
| Huestis, Robert A., '15, C. E.          | Seattle              |
| Huff, Harry A., '16, E. E.              | Sumner               |
| Hunt, G. Elwood, '14, C. E.             | Seattle              |

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|---|------------------|
| Hunt, Raymond Corbin, '16, M. E. ....         | North Yakima     |
| Hunter, Stanley, '16, E. E. ....              | Seattle          |
| Hutton, James Ferdinand, '16, E. E. ....      | Portland, Ore.   |
| Hutton, William, '13, M. E. ....              | Portland, Ore.   |
| Izhuroff, Basil A., '13, E. E. ....           | Russia           |
| Izumi, Ichisahuro, '13, E. E. ....            | Seattle          |
| Jackson, Lee W., '16, C. E. ....              | Baker, Ore.      |
| Jarvis, Emil P., '16, C. E. ....              | Seattle          |
| Jaxtheimer, Don., '15, C. E. ....             | Everett          |
| Jeffs, George, '16, M. E. ....                | Seattle          |
| Jerbert, Arthur Rudolph, '16, Ch. E. ....     | Seattle          |
| Johnson, George Edward, '16, C. E. ....       | Seattle          |
| Johnson, Ruben E., '15, M. E. ....            | Tacoma           |
| Jolliffe, Russ, '16, C. E. ....               | Seattle          |
| Jones, Luther, '13, E. E. ....                | Seattle          |
| Joubert, Lloyd P., '15, E. E. ....            | Enumclaw         |
| Joubert, Stanley Smith, '16, M. E. ....       | Enumclaw         |
| Kallander, Carl Henry, '16, E. E. ....        | Nooksack         |
| Karlson, Gus Albert, '16, Ch. E. ....         | Spokane          |
| Kent, Byram Harding, '16, M. E. ....          | Payette, Idaho   |
| Kerry, Harold Edwin, '14, C. E. ....          | Seattle          |
| King, Herbert T., '16, C. E. ....             | Moline, Ill.     |
| Koren, Walter A., '13, M. E. ....             | Spokane          |
| Kuga, Kohel, '14, E. E. ....                  | Seattle          |
| Lamb, Earl F., '15, E. E. ....                | Toppenish        |
| Lamberty, John J., '14, E. E. ....            | Seattle          |
| Langdon, Robert Sylvester, '15, M. E. ....    | Sumner           |
| Larson, Victor, '15, E. E. ....               | South Bend       |
| Lee, George O., '14, C. E. ....               | Maltby           |
| Lee, Vaughn W., '16, E. E. ....               | Spokane          |
| Lew, Don G., '15, C. E. ....                  | Seattle          |
| Lewis, Isaac J., '13, Ch. E. ....             | Seattle          |
| Lieben, Howard C., '14, C. E. ....            | Seattle          |
| Lifvendahl, E. Gunnard, '16, E. E. ....       | Anacortes        |
| Linvog, Ole, '14, E. E. ....                  | Seabold          |
| Little, Horace S., '15, E. E. ....            | Vancouver, B. C. |
| Lord, William Clifford, '16, Ch. E. ....      | Bellingham       |
| McAbee, Ralph Booth, '15, C. E. ....          | Seattle          |
| McCaustland, Gwynne Gravelle, '15, C. E. .... | Seattle          |
| McCombs, John, '16, C. E. ....                | Seattle          |
| McCoy, Ray, '13, M. E. ....                   | Seattle          |
| McCracken, Ray, '16, M. E. ....               | Clarkston        |
| McDonald, Richard Vane, '16, E. E. ....       | Seattle          |
| McDougall, Clinton, '16, E. E. ....           | Seattle          |
| McJannet, Roscoe, '16, C. E. ....             | Seattle          |
| McIntyre, Harry J., '15, M. E. ....           | Metaline Falls   |
| McKeen, Ernest Edward, '16, E. E. ....        | Ridgefield       |
| McMorris, Alfred Williams, '16, C. E. ....    | Seattle          |
| McNeill, Kenneth B., '15, C. E. ....          | Montesano        |
| Mack, Friend D., '15, C. E. ....              | Menlo            |
| Manson, Harry E. P., '13, C. E. ....          | Dockton          |
| Marcy, Charles Goodell, '15, E. E. ....       | Montesano        |

|  |                    |
|--|--------------------|
| Marsh, Louis S., '15, M. E. ....           | Kirkland           |
| Martin, Walter G., '14, C. E. ....         | Wapato             |
| Maryatt, Roy, '15, E. E. ....              | Seattle            |
| Masko, Frank J., '15, C. E. ....           | Seattle            |
| Matson, Herman Albert, '14, M. E. ....     | Bellingham         |
| Mayer, Roland A. G., '16, M. E. ....       | Seattle            |
| Miller, Edmond Clarence, '14, E. E. ....   | Seattle            |
| Minahan, Cletus, '16, E. E. ....           | Seattle            |
| Mori, Nathaniel R., '15, E. E. ....        | Japan              |
| Moriarty, James, '16, C. E. ....           | Seattle            |
| Mullen, Maurice, '16, C. E. ....           | Seattle            |
| Murphy, J. C., '16, C. E. ....             | Nampa, Idaho       |
| Nakasawa, George K., '16, E. E. ....       | Japan              |
| Nelson, Victor, '15, Ch. E. ....           | Seattle            |
| Newberry, Arthur Percival, '13, E. E. .... | Kirkland           |
| Northcraft, Philip, '16, M. E. ....        | Olympia            |
| Olson, Oscar A., '13, C. E. ....           | Seattle            |
| O'Meara, John D., '16, C. E. ....          | Seattle            |
| O'Neill, Raymond Edward, '16, E. E. ....   | Seattle            |
| Osborne, Edward Glenn, '15, C. E. ....     | Bellingham         |
| Osterberg, Arnold Erwin, '15, C. E. ....   | Seattle            |
| Paine, Topliff Olin, '16, C. E. ....       | Everett            |
| Palmer, George S., '13, E. E. ....         | Ellensburg         |
| Park, Q. W., '13, M. E. ....               | Seattle            |
| Parker, T. William, '16, Ch. E. ....       | Woodinville        |
| Paul, Peter John, '16, E. E. ....          | Sheridan, Wyo.     |
| Pederson, Edward Albion, '14, E. E. ....   | Port Blakely       |
| Penhalegon, Harold, '16, E. E. ....        | Wenatchee          |
| Perry, Clifford, '16, E. E. ....           | Ridgefield         |
| Perry, Edgar Roland, '13, E. E. ....       | Seattle            |
| Peters, Frank William, '13, E. E. ....     | Seattle            |
| Pierce, Willis E., '16, C. E. ....         | Seattle            |
| Post, Frank B., '13, E. E. ....            | Seattle            |
| Powell, Edward Reed, '16, M. E. ....       | Seattle            |
| Pratt, Foster J., '14, C. E. ....          | Spokane            |
| Pyle, Carl W., '16, E. E. ....             | Wenatchee          |
| Range, Walker, '13, C. E. ....             | Seattle            |
| Read, Edwin M., '16, E. E. ....            | Seattle            |
| Reinhart, Carroll B., '16, M. E. ....      | Olympia            |
| Rengstorff, Erwin Henry, '16, E. E. ....   | Enumclaw           |
| Reynolds, Arnold C., '13, C. E. ....       | Seattle            |
| Rhodes, Amos, '16, C. E. ....              | Centralia          |
| Ricksecker, Harris, '15, C. E. ....        | Tacoma             |
| Ring, Russell B., '16, C. E. ....          | Seattle            |
| Roberts, Caesar Rodney, '13, C. E. ....    | Seattle            |
| Robinson, Ralph Conrad, '15, C. E. ....    | Richmond Highlands |
| Robinson, Wilber Hudson, '15, E. E. ....   | Spokane            |
| Rogers, Foy O., '13, E. E. ....            | Centralia          |
| Royal, James Millard, '14, M. E. ....      | Seattle            |
| Roys, Clinton Glenn, '16, E. E. ....       | Wenatchee          |
| Ruvican, Leslie, '16, C. E. ....           | Tacoma             |
| Ruggles, William Walker, '13, C. E. ....   | Seattle            |

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| Ryan, Roger William, '16, Ch. E. ....       | Auburn                 |
| Saito, Nochichiro, '14, Ch. E. ....         | Japan                  |
| Sakuma, Jiro, '16, E. E. ....               | Japan                  |
| Schively, Edward Dixon, '15, M. E. ....     | Olympia                |
| Schmitz, Helmuth W., '16, M. E. ....        | Seattle                |
| Schuchard, Leo W., '16, E. E. ....          | Seattle                |
| Schulze, Benjamin Franklin, '16, E. E. .... | Seattle                |
| Schumacher, Harold M., '16, E. E. ....      | Bellingham             |
| Schwabland, George A., '13, Ch. E. ....     | Seattle                |
| Scott, Earle W., '16, C. E. ....            | Seattle                |
| Servey, Mark J., '16, E. E. ....            | Bremerton              |
| Shanly, Walter Earl, '15, E. E. ....        | Bellingham             |
| Sharkey, Leo, '16, E. E. ....               | Kent                   |
| Shave, Samuel Richard, '13, E. E. ....      | Seattle                |
| Shaw, Melvin Cummings, '14, M. E. ....      | Arletta                |
| Sledenbaum, John Henry, '16, E. E. ....     | Port Townsend          |
| Simpson, Stewart L., '16, M. E. ....        | Kent                   |
| Small, Percy William, '16, E. E. ....       | New Westminster, B. C. |
| Smalley, George, '16, C. E. ....            | Seattle                |
| Smith, Frederick James, '16, E. E. ....     | Seattle                |
| Smith, George Sherman, '14, E. E. ....      | Centralia              |
| Smith, Howard E., '16, E. E. ....           | Blaine                 |
| Snoddy, Benjamin Luther, '15, E. E. ....    | Arlington              |
| Sorensen, Bert, '13, E. E. ....             | Bellingham             |
| Sorensen, Edgar P., '15, M. E. ....         | Bellingham             |
| Spannagel, Otto, '16, M. E. ....            | Spokane                |
| Sprague, Hollister T., '16, C. E. ....      | Seattle                |
| Stallard, Tully King, '16, C. E. ....       | Greenacres             |
| Stanwick, Charles Ames, '13, E. E. ....     | Seattle                |
| Starkey, Frank Willard, '15, E. E. ....     | Seattle                |
| Stasny, Felix, '16, C. E. ....              | Seattle                |
| Stetson, Virgil Calvin, '16, C. E. ....     | Illinois               |
| Studing, Paul H., '15, C. E. ....           | Walla Walla            |
| Stewart, Alex D., '15, C. E. ....           | Richmond Beach         |
| Stocking, Frank M., '15, C. E. ....         | Olympia                |
| Strandberg, Arthur M., '15, C. E. ....      | Seattle                |
| Suehiro, Matsumosuke, '14, C. E. ....       | Japan                  |
| Sutherland, Luther W., '16, C. E. ....      | Davis City, Iowa       |
| Swartz, Albert William, '13, C. E. ....     | Granite Falls          |
| Swartz, Leo, '13, C. E. ....                | Granite Falls          |
| Sylliaasen, Melvin Oliver, '13, C. E. ....  | Seattle                |
| Tanner, Bertrand M., '13, C. E. ....        | Idaho Falls, Idaho     |
| Tatsugami, Tetsutaro, '14, E. E. ....       | Japan                  |
| Taylor, Aubrey Daniel, '16, C. E. ....      | Leland                 |
| Tegtmeyer, Arthur Woodruff, '15, C. E. .... | Sunnyside              |
| Thomson, Alexander, '16, C. E. ....         | Seattle                |
| Thomson, James C., '16, M. E. ....          | North Yakima           |
| Thornton, Perry Foster, '16, E. E. ....     | Seattle                |
| Thwing, Edward Payson, '14, E. E. ....      | Seattle                |
| Tinkcom, Wilber Franklin, '16, C. E. ....   | Cody, Wyo.             |
| Tottory, Satoshi, '14, E. E. ....           | Japan                  |
| Toy, James, '16, C. E. ....                 | Portland, Ore.         |



|   |                 |
|---|-----------------|
| Tremper, Bailey, '15, Ch. E. ....             | Seattle         |
| Trenwith, James H., '15, E. E. ....           | Seattle         |
| Tripple, George, '13, E. E. ....              | Seattle         |
| Turnbull, B. Frank, '16, M. E. ....           | Everett         |
| Tuttle, Walter William, '16, E. E. ....       | Harper          |
| Tyra, Edmund George, '16, E. E. ....          | Spokane         |
| Upper, Ewart Steele, '15, E. E. ....          | Orillia         |
| Upton, William B., '13, C. E. ....            | Seattle         |
| Vaille, Frank W., '14, C. E. ....             | Seattle         |
| Vallentine, Wilbur Paul, '16, C. E. ....      | Seattle         |
| Van Horn, Robert B., '16, C. E. ....          | Seattle         |
| Van Valkenburg, Frank Victor, '16, M. E. .... | Sumas           |
| Viele, Morris Marshall, '13, C. E. ....       | Orillia         |
| Vierhus, Alex McK., '15, E. E. ....           | Everett         |
| Visser, Richard, '16, E. E. ....              | Seattle         |
| Walker, Fred S., '15, E. E. ....              | Seattle         |
| Waller, Harold H., '14, C. E. ....            | Seattle         |
| Watanuki, Toyoharu, '13, E. E. ....           | Japan           |
| Weaver, Ralph Bowen, '14, Ch. E. ....         | Tacoma          |
| Wehmoff, Byron Louis, '14, Ch. E. ....        | Tacoma          |
| Westaby, Charles Howe, '16, M. E. ....        | North Yakima    |
| Wheeler, Leon Herbert, '13, M. E. ....        | Ellensburg      |
| White, Frank E., '16, E. E. ....              | Seattle         |
| White, Noble W., '16, C. E. ....              | Goldendale      |
| Whiting, D. Lyn., '13, M. E. ....             | Seattle         |
| Willard, Alf Christian, '16, C. E. ....       | Stanwood        |
| Williams, Lawrence Johnson, '13, C. E. ....   | Seattle         |
| Williams, Lowell Eugene, '16, C. E. ....      | Seattle         |
| Williams, William Walter, '16, Ch. E. ....    | Seattle         |
| Winslow, Irving D., '15, E. E. ....           | Barneston       |
| Wolfgram, Irving Fred, '16, Ch. E. ....       | Cleveland, Ohio |
| Yamada, Fred T., '16, E. E. ....              | Seattle         |
| Yoshioka, Masa N., '15, E. E. ....            | Japan           |
| Young, Allan Thomas, '16, C. E. ....          | Seattle         |
| Young, Carl Ludwig, '16, E. E. ....           | Seattle         |
| Zimmerman, Henry E., '15, C. E. ....          | Everett         |

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## SPECIAL STUDENTS

|   |               |
|---|---------------|
| Agnew, Verne, M. E. ....                | Tacoma        |
| Ames, Jesse Edwards, M. E. ....         | Seattle       |
| Arges, Julia Eileen, C. E. ....         | Anacortes     |
| Ashe, James A., M. E. ....              | Granite Falls |
| Ball, Doric Triston Jamison, C. E. .... | Port Angeles  |
| Bergman, George Edwin, E. E. ....       | Seattle       |
| Carson, Charles V., M. E. ....          | Seattle       |
| Coombs, Donald, C. E. ....              | Tacoma        |
| Das, Niranjan, E. E. ....               | India         |
| Dearborn, Frank Wilbur, E. E. ....      | Seattle       |
| De Vine, Clyde, E. E. ....              | Seattle       |
| Elske, Michael Carl, E. E. ....         | Seattle       |
| Fowler, Harold D., C. E. ....           | Seattle       |

1 F.

13 M.

|                                   |                 |
|-----------------------------------|-----------------|
| Gooderham, John Wesley, E. E.     | Seattle         |
| Guha, Jatindra Natho, Ch. E.      | India           |
| Hartsuck, David G., M. E.         | Olympia         |
| Hellenthal, Joseph, E. E.         | Seattle         |
| Hendricks, Robert, C. E.          | Fossil, Ore.    |
| Jordan, Archie H., E. E.          | Seattle         |
| Kalin, Albert, E. E.              | Portland, Ore.  |
| Ketteonring, Louis Roy, E. E.     | Seattle         |
| Kloka, Hisataro, E. E.            | Japan           |
| LaChappelle, Oliver W., M. E.     | Mineral         |
| McRobbie, Henry William, E. E.    | Seattle         |
| Matsuda, Frank M., E. E.          | Seattle         |
| Moore, Edward J., M. E.           | Everett         |
| Mueller, W. H., C. E.             | Seattle         |
| Murray, Roscoe Ethelbert, C. E.   | Seattle         |
| Nakanishi, Shibaji, E. E.         | Seattle         |
| Nakamura, Masawo K., M. E.        | Japan           |
| Reed, William H., C. E.           | Tacoma          |
| Reynolds, George E., E. E.        | Seattle         |
| Rooney, Walter E., M. E.          | Bellingham      |
| Rose, Charles A., C. E.           | New York, N. Y. |
| Rothhoefer, Louis, E. E.          | Seattle         |
| Schwan, William Joseph, E. E.     | Seattle         |
| Smith, Theodore O., E. E.         | Seattle         |
| Spencer, Thomas James, E. E.      | Seattle         |
| Sugino, Shigeichi, E. E.          | Seattle         |
| Sylliaasen, Oscar, E. E.          | Seattle         |
| Vermillion, Lloyd Louis, M. E.    | Portland, Ore.  |
| Winter, Parker D., E. E.          | Seattle         |
| Wintermute, Harry Stinson, Ch. E. | Seattle         |
| Zilka, Henry James, C. E.         | Spokane         |

31M.

## COLLEGE OF FORESTRY

## ABBREVIATIONS

## CLASSES

|               |                            |
|---------------|----------------------------|
| '13 Senior    | '16 Freshman               |
| '14 Junior    | Sp. Special Student        |
| '15 Sophomore | S. C. Short Course Student |

| <i>Name of Student and Rank</i>           | <i>Home Address.</i> |
|---|----------------------|
| Bell, Cecil P., '14.....                  | Seattle              |
| Billingslea, James Howell, '14.....       | Westminster, Md.     |
| Bloom, Adolph, '16.....                   | Cromwell             |
| Bonney, Parker Samuel, '13.....           | Vancouver, B. C.     |
| Caywood, Noal F., '13.....                | Everett              |
| Clark, Ralph W. K., '15.....              | Seattle              |
| Cooper, James Gordon, '15.....            | Hoquiam              |
| Cunning, William McClintic, '16.....      | Baker, Ore.          |
| Darnell, Fred, '16.....                   | Seattle              |
| De Camp, Lee Roy, '15.....                | Seattle              |
| Dorman, Harry Stanton, '16.....           | Everett              |
| Durfee, Harold Atkinson, '16.....         | Hollywood, Cal.      |
| Erickson, Harry Herman, '16.....          | Hoquiam              |
| Escher, Wiley Emert, '14.....             | Seattle              |
| Evans, William Vincent, '14.....          | Livingston, Mont.    |
| Field, Newton, '14.....                   | Chelan               |
| Fifield, Elbridge Gerry, '16.....         | Everett              |
| Fish, Walter Harold, '16.....             | Seattle              |
| Foran, Harold George, '16.....            | Seattle              |
| Gilbert, George W., '13.....              | Seattle              |
| Graham, Paul Clinton, '13.....            | Alamosa, Colo.       |
| Greider, Claude E., '14.....              | Seattle              |
| Hancock, Virgil Kinney, '14.....          | Coupeville           |
| Hanson, Harley I., '16.....               | Grand Forks, N. D.   |
| Hazard, George Melvin, '16.....           | Stevenson            |
| Hutton, George William, '13.....          | Portland, Ore.       |
| Jaeger, Waldemar, '16.....                | Seattle              |
| Klobucher, Frank J., '14.....             | Spokane              |
| Laizure, Jerome, '16.....                 | Millers, Nevada      |
| Lee, Wilson K., '15.....                  | Seattle              |
| McGilllicuddy, Cornelius Oliver, '16..... | Aberdeen             |
| MacRitchie, John, '16.....                | Hillsdale, Mich.     |
| Macaulay, Gladstone Norman, '16.....      | Deming               |
| Madigan, Fred Howard, '16.....            | Seattle              |
| Martin, George Hamilton, '13.....         | Spokane              |
| Mercer, Bernard F., '14.....              | Seattle              |
| Monks, Howard I., '14.....                | Bonnors Ferry, Idaho |
| Morgan, Joseph G. G., '13.....            | Seattle              |
| Moulton, William Ray, '16.....            | Aberdeen             |
| Mueller, Moritz L., '14.....              | Seattle              |
| Murnen, Edgar John, '13.....              | Tacoma               |

|  |                   |
|--|-------------------|
| Negley, Charles La Zelle, '15.....     | Hagerstown, Md.   |
| Redman, Kenneth, '14.....              | Lexington, Mass.  |
| Renier, Earl S., '15.....              | Bremerton         |
| Schmaelzle, Karl Joseph, '15.....      | Seattle           |
| Schmitz, Henry, '15.....               | Seattle           |
| Schneider, Isaac, '14.....             | Seattle           |
| Schoeller, Jacob Diehl, '13.....       | Seattle           |
| Smith, H. Martin, '16.....             | Seattle           |
| Stephens, James T., '16.....           | Spokane           |
| Stinson, Henry Curtis, '14.....        | Seattle           |
| Stuart, Phillip A., '15.....           | Seattle           |
| Studley, James Donald, '16.....        | Seattle           |
| Van Dyke, Harry E., '16.....           | Ashland, Ore.     |
| Vetter, George Benjamin, '15.....      | Seattle           |
| Watson, Russell, '14.....              | St. Paul          |
| Wells, Harland Everett, '16.....       | Kalispell, Mont.  |
| Westerberg, Joshua Frederick, '16..... | Mill Valley, Cal. |
| Williams, J. L., '14.....              | Seattle           |
| Wright, Farnsworth, '14.....           | Seattle           |
| Wright, Newell Livingston, '13.....    | Bellingham        |
| Young, James Arthur, '16.....          | Camden, N. J.     |

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## UNCLASSIFIED

|                                    |                          |
|------------------------------------|--------------------------|
| Ahl, Dennie, S. C. ....            | Eldon                    |
| Bererley, Alexander J., Sp. ....   | Sedro-Woolley            |
| Brown, Thomas R., S. C. ....       | Portland, Ore.           |
| Clark, Donald Hathaway, Sp. ....   | Tacoma                   |
| Cook, Arthur Frederick, Sp. ....   | Seattle                  |
| Davidson, A. R., S. C. ....        | Calgary, Alberta, Canada |
| Flumerfelt, W. Ross, S. C. ....    | Vancouver, B. C.         |
| Gordon, Eric Henry, S. C. ....     | Victoria, B. C.          |
| Gorham, George C., Sp. ....        | Seattle                  |
| Hamell, William J., S. C. ....     | Orting                   |
| Jameson, Ernest, S. C. ....        | Okanogan                 |
| Jessup, John Mercator, Sp. ....    | Cooks                    |
| Jones, Munroe Franklin, Sp. ....   | Seattle                  |
| Kinnune, Charles E., S. C. ....    | Issaquah                 |
| Maggs, J. M., S. C. ....           | Seattle                  |
| Martin, Robert R., S. C. ....      | Glennville, Cal.         |
| Nordstrom, Carl J., S. C. ....     | Seattle                  |
| Parker, Arthur W., S. C. ....      | Anaconda, Mont.          |
| Root, H. O., S. C. ....            | Okanogan                 |
| Ruml, Frederick, S. C. ....        | Chicago, Ill.            |
| Schreiber, Henry, S. C. ....       | Oshkosh, Wis.            |
| Shorrock, A. J., S. C. ....        | Seattle                  |
| Stillwell, John Ernest, S. C. .... | Duncan, B. C.            |
| Waterhouse, Frank George, Sp. .... | Warrenton, Ore.          |
| Winegar, James E., S. C. ....      | Escanaba, Mich.          |

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## SCHOOL OF LAW

## ABBREVIATIONS

## CLASSES

|     |             |     |                 |
|-----|-------------|-----|-----------------|
| '15 | First Year  | Sp. | Special Student |
| '14 | Second Year | N.  | Night Student   |
| '13 | Third Year  |     |                 |

| <i>Name of Student and Rank</i>        | <i>Home Address.</i> |
|--|----------------------|
| Adams, John Andrew, '15.....           | Leavenworth          |
| Armstrong, Robert William, '14.....    | Seattle              |
| Arney, Charles E., '15.....            | Spokane              |
| Arney, J. Ward, '13.....               | Spokane              |
| Barnett, George Dolph, '14.....        | North Yakima         |
| Barto, Joseph Abel, '13.....           | Seattle              |
| Beltz, Frederick A., '14.....          | Seattle              |
| Bennett, Fred Stanley, '15.....        | Seattle              |
| Bozorth, Claude A., '13.....           | Woodland             |
| Brockett, Earl, M., '14.....           | Seattle              |
| Brooks, Z. Olds, '14.....              | Goldendale           |
| Bull, John A., '15.....                | Ellensburg           |
| Burford, W. E., '15.....               | Seattle              |
| Burkheimer, Clarke M., '13.....        | Seattle              |
| Burson, James W., '15.....             | Seattle              |
| Calderhead, Samuel J., '14.....        | Seattle              |
| Campbell, Arthur Clinton, '13.....     | Seattle              |
| Carrigan, Paul, '15.....               | Seattle              |
| Chambers, Clarence Conrad, '15.....    | Centralia            |
| Clifford, Raymond W., '15.....         | Tacoma               |
| Clise, Francis D., '15.....            | Seattle              |
| Cunningham, Glenn Eugene, '13.....     | Allerton, Ia.        |
| Cushing, Melzar H., '15.....           | Seattle              |
| Cushman, Arthur Wilhelm, '15.....      | Tacoma               |
| Cusick, Jack H., '15.....              | Richmond             |
| Dawson, Lewis R., '14.....             | Seattle              |
| Donley, Levi B., '13.....              | Seattle              |
| Douglas, Malcolm, '15.....             | Seattle              |
| Dowd, Van M., '13.....                 | Tacoma               |
| Dunbar, John Howard, '13.....          | Olympia              |
| Everly, Myra L., '13.....              | Seattle              |
| Fairbrook, Glenn Joseph, '14.....      | Seattle              |
| Fairburn, Orville Glenn, '15.....      | Fairbanks, Alaska    |
| Felt, Norris Elliott, N. ....          |                      |
| Fisher, Walter F., '14.....            | Lynden               |
| Fitzgerald, Charles Reynolds, '13..... | Salt Lake City, Utah |
| Forde, Mathias H., '14.....            | Seattle              |
| Frater, John A., '13.....              | Seattle              |
| Gamble, Lex., '14.....                 | Seattle              |
| Gates, James R., '13.....              | Manchester, Ia.      |

|                                       |                  |
|---------------------------------------|------------------|
| Geary, John J., '15.....              | Helmville, Mont. |
| Godsave, Alfred Viele, '14.....       | Ontario, Cal.    |
| Goodglick, Herman, '14.....           | Seattle          |
| Gore, Lester Otto, '14.....           | Kalama           |
| Greene, Helen M., '14.....            | Belvidere, N. J. |
| Griffin, Arthur Russell, '14.....     | Seattle          |
| Griffin, Tracy Edward, '15.....       | The Dalles, Ore. |
| Gutheil, Carl Hughes, '15.....        | Seattle          |
| Haight, James Augustus, Jr., '14..... | Seattle          |
| Halvorson, Alfred, '15.....           | Ridgeway, Ia.    |
| Hamilton, Fred Ellis, '13.....        | Seattle          |
| Hammer, Paul, '15.....                | Tacoma           |
| Hardy, M. Warren, '14.....            | Seattle          |
| Harris, William Herbert, '13.....     | Seattle          |
| Hayfield, Mark F., '15.....           | Spokane          |
| Hazen, Raymond C., '14.....           | Seattle          |
| Hendricks, Ford, '15.....             | Seattle          |
| Hoffman, Harry A., '15.....           | Ellensburg       |
| Hoffman, Edward William, '15.....     | Seattle          |
| Hughes, Charles D. T., '13.....       | Blaine           |
| Hurd, Charles Sumner, '14.....        | Mt. Vernon       |
| Hurn, Reba J., '15.....               | Spokane          |
| Johnson, James Edward, '14.....       | Seattle          |
| Jones, Ira Lynn, '15.....             | Seattle          |
| Keenan, Edmund Myers, '13.....        | Seattle          |
| Kennedy, Arthur Clarence, '14.....    | Puyallup         |
| Kenney, Samuel E., '14.....           | Bryn Mawr        |
| Kerr, William Z., '13.....            | Seattle          |
| Knapp, Clarence Edward, '15.....      | Seattle          |
| Langer, Frank, '15.....               | Casselton, N. D. |
| Lee, Carl Alphonso, '15.....          | Bellingham       |
| Lind, Arthur, '14.....                | Seattle          |
| Lonergan, Pierce A. F., '14.....      | Seattle          |
| Lybecker, Gus, '15.....               | Plaza            |
| McCallum, James David, '13.....       | Seattle          |
| McCammon, Edward Eugene, '15.....     | Seattle          |
| McCullough, Campbell G., '15.....     | Monroe, Pa.      |
| McFee, Joel N., '15.....              | Seattle          |
| Matzger, Nathan, '15.....             | Seattle          |
| Mills, Edward, '15.....               | Puyallup         |
| Montgomery, Victor, '13.....          | Seattle          |
| Murray, Ernest K., '13.....           | Roy              |
| Murray, Welwood G., '15.....          | Seattle          |
| Navarre, Guy F., '14.....             | Everett          |
| Nelson, Harry Bernard, '15.....       | Seattle          |
| Newton, Clifford Watson, '13.....     | Everett          |
| Niesz, Paul B., '14.....              | Seattle          |
| Norton, Joseph Edward, '15.....       | Mt. Vernon       |
| Ohnick, Benjamin Shannon, '13.....    | Seattle          |
| Ooghe, Arthur E., '15.....            | Seattle          |
| Parker, William Edward, '14.....      | North Yakima     |
| Patten, John Paul, '14.....           | Seattle          |

|                                    |                  |
|------------------------------------|------------------|
| Patterson, Tom S., '14.....        | Seattle          |
| Pierce, Ahira Edwin, '13.....      | Seattle          |
| Price, Arthur Ernest, '13.....     | Pullman          |
| Price, Chauncey J., '13.....       | Sifton           |
| Rains, Lester E., '15.....         | Tacoma           |
| Rauen, John P., '15.....           | Seattle          |
| Roberts, Vincent J., '14.....      | North Yakima     |
| Robinson, Mabel Bass, '14.....     | Seattle          |
| Roe, Charles Clarke, '15.....      | Seattle          |
| Rosaaen, James Douglas, '15.....   | Seattle          |
| Ross, Royal K., '14.....           | Puyallup         |
| Roudebush, Rex Scott, '13.....     | Seattle          |
| Shively, Hugh P., '13.....         | Olympia          |
| Scott, Irving H., '15.....         | Puyallup         |
| Severyns, Andrew, '13.....         | Prosser          |
| Shanedling, Joseph, '15.....       | Vancouver        |
| Sipprell, James Ernest, '14.....   | Edmonds, B. C.   |
| Skervis, Francis J., '14.....      | Tacoma           |
| Smith, Charles L., '15.....        | Auburn           |
| Soule, John Arthur, '15.....       | Kent             |
| Stevens, Durgert N., '15.....      | Crocket's Lake   |
| Stone, William Edward, '14.....    | Everett          |
| Swale, Thomas N., '13.....         | Everett          |
| Swartz, Albert William, '13.....   | Granite Falls    |
| Taylor, Edward R., '14.....        | Seattle          |
| Thompson, Claude S., '15.....      | Seattle          |
| Thompson, Ralph W., '13.....       | Tacoma           |
| Upper, Barrington Monroe, '15..... | Seattle          |
| Urqhart, William M., '14.....      | Chehalis         |
| Van Winter, Rex., '14.....         | Seattle          |
| Viele, William Arthur, '14.....    | Orillia          |
| Walsh, John Raphael, '14.....      | Wenatchee        |
| Ward, Arthur Hoyt, '14.....        | Centralia        |
| Watanabe, Harly S., '14.....       | Seattle          |
| Watters, Lisle T., '15.....        | Everett          |
| Welts, Robin Victor, '14.....      | Mt. Vernon       |
| Wetherby, Loren A., '15.....       | Tacoma           |
| Whitmore, James Lester, '13.....   | Buckley          |
| Williams, Warner E., '15.....      | Seattle          |
| Wilson, Harry, '15.....            | Vancouver, B. C. |
| Wilson, Horace Allen, '13.....     | Seattle          |
| Wingfield, Wallace L., '13.....    | Seattle          |
| Woodburn, Adelbert, '15.....       | Byron, Ill.      |
| Woodburn, Roy Morton, '15.....     | Byron, Ill.      |
| Young, George Elmer, '15.....      | Sumner           |
| Zech, Luke D., '14.....            | Auburn           |

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## UNCLASSIFIED STUDENTS

|  |                    |
|--|--------------------|
| Anderson, C. Andy, Sp. ....              | Montevideo, Minn.  |
| Ballinger, Edward B., N. ....            | Seattle            |
| Beebe, Eugene Harrison, Sp. ....         | Seattle            |
| Bergman, Edward E., Sp. ....             | Seattle            |
| Blaisdell, Christopher Carroll, Sp. .... | East Franklin, Me. |
| Blank, Jacob M., Sp. ....                | Canyon City, Ore.  |
| Bogardus, Irving C., N. ....             | Seattle            |
| Brisky, John William, N. ....            | Seattle            |
| Cahill, William S., N. ....              | Chicago, Ill.      |
| Capps, Robert Waldron, N. ....           | Seattle            |
| Carr, Arthur, Sp. ....                   | Seattle            |
| Christiansen, Christian M., N. ....      | Seattle            |
| Coffman, Robert Gates, N. ....           | Seattle            |
| Cole, Thomas Stevenson, Sp. ....         | Juneau, Alaska     |
| Converse, Jack, N. ....                  | Seattle            |
| Cook, Edward A., N. ....                 | Seattle            |
| Corbitt, Marsh M., N. ....               | Seattle            |
| Dworshack, Henry, Sp. ....               | Seattle            |
| Evans, Paul G., N. ....                  | Seattle            |
| Felt, Norris Elliott, N. ....            | Seattle            |
| Halls, Anton C., Sp. ....                | Hills, Minn.       |
| Hammond, Thomas, N. ....                 | Wellsville, Ohio   |
| Hansen, Ellor, Sp. ....                  | Tyler, Minn.       |
| Harmon, Claude B., Sp. ....              | Tacoma             |
| Hass, Karl F., N. ....                   | Seattle            |
| Hathaway, Howard, Sp. ....               | Everett            |
| Ingstad, Louie M., N. ....               | Seattle            |
| Johnston, James Alfred, N. ....          | Seattle            |
| Johnston, George Lee, N. ....            | Seattle            |
| Johnston, Richard, Sp. ....              | Seattle            |
| Jones, Charlotte Frederica, N. ....      | Seattle            |
| Kummer, Ernest, Jr., Sp. ....            | Waterville         |
| Lackey, Walter E., Sp. ....              | Seattle            |
| Long, Larry Wilson, Sp. ....             | Seattle            |
| McCabe, James, N. ....                   | Seattle            |
| McCarthy, Roy Wingfield, Sp. ....        | Seattle            |
| McMurtrey, Joseph P., N. ....            | Troy, Mont.        |
| March, John Peter, N. ....               | Seattle            |
| Martz, J. Earl, Sp. ....                 | Seattle            |
| Meacham, Eugene M., Sp. ....             | Seattle            |
| Mooney, Charles H., N. ....              | Seattle            |
| Morriss, Robert E., N. ....              | Seattle            |
| Morriss, Mrs. E. Robert E., N. ....      | Seattle            |
| Nakai, Kiyoshi, Sp. ....                 | Japan              |
| Nelson, William Howard, N. ....          | Seattle            |
| Nunn, Herschel Pillsbury, N. ....        | Seattle            |
| Owen, Thomas Coleman, N. ....            | Seattle            |
| Pierce, Frank R., N. ....                | Seattle            |
| Pixley, M. W., N. ....                   | Seattle            |

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|                                      |                 |
|--------------------------------------|-----------------|
| Riske, Otto A., N. ....              | Seattle         |
| Ross, Bert Clinton, Sp. ....         | Walla Walla     |
| Royce, Thompson Morton, Sp. ....     | Spokane         |
| Runner, Jesse, Sp. ....              | Seattle         |
| Saboe, Martin L., Sp. ....           | Cashmere        |
| Sanders, Claude Gree., Sp. ....      | Seattle         |
| Sandstedt, Bertell A., N. ....       | Seattle         |
| Scott, Harold T., N. ....            | Seattle         |
| Shucklin, Ike, N. ....               | Seattle         |
| Skogsbergh, Rudolph E., Sp. ....     | Seattle         |
| Smith, Simeon Burke, N. ....         | Seattle         |
| Smith, Mrs. Nettle Margaret, N. .... | Seattle         |
| Supplee, Almond Roy, N. ....         | Seattle         |
| Sweeney, Eugene S., N. ....          | Seattle         |
| Wellman, Homer Dudley, Sp. ....      | New York, N. Y. |
| Wells, Ernest F., N. ....            | Seattle         |
| Wright, Louis R., N. ....            | Seattle         |
| Wright, Sam A., Sp. ....             | Seattle         |

1 F 17 M.

## COLLEGE OF MINES

## ABBREVIATIONS

## CLASSES

|               |                            |
|---------------|----------------------------|
| '14 Junior    | '16 Freshman               |
| '15 Sophomore | Sp. Special Student        |
| '13 Senior    | S. C. Short Course Student |

| <i>Name of Student and Rank</i>          | <i>Home Address.</i>  |
|--|-----------------------|
| Baker, Fred C., '16.....                 | Seattle               |
| Barry, Alexander Grant, '16.....         | Astoria, Ore.         |
| Berg, J. Edward, '14.....                | Seattle               |
| Brandenthaler, Rudolph Richard, '16..... | Seattle               |
| Bridgman, Ethan A., '14.....             | Seattle               |
| Brown, Warren O., '16.....               | Seattle               |
| Burget, Wilbur C., '14.....              | Seattle               |
| Clark, George William, '15.....          | Sedro-Woolley         |
| Clulew, William Montgomery, '15.....     | Seattle               |
| Cogswell, Harold, '13.....               | Bellevue              |
| Cole, Charles Cecil, '15.....            | Seattle               |
| Covington, Claude W., '16.....           | Seattle               |
| Davis, Addison Jennings, '16.....        | Seattle               |
| DeChesne, Victor Charles, '13.....       | Seattle               |
| Dirkes, Frank Joseph, '16.....           | Perham, Minn.         |
| Drylie, Thomas Frame, '16.....           | Issaquah              |
| Flanley, Walter Fred, '16.....           | Seattle               |
| Fotheringham, Thomas Humber, '15.....    | Seattle               |
| Gerhardt, Louis G., '16.....             | Seattle               |
| Gleason, S. Irving, '16.....             | Seattle               |
| Godbe, Earl Thompson, '13.....           | Los Angeles, Cal.     |
| Gould, Robert E., '16.....               | Port Angeles          |
| Halferdahl, Arthur, '14.....             | Seattle               |
| Hall, Ralph Harold, '16.....             | Seattle               |
| Hallum, Odean T., '16.....               | Seattle               |
| Hastings, Harlow H. A., '15.....         | Seattle               |
| Haworth, Wallace F., '16.....            | San Francisco, Cal.   |
| Hazelet, Calvin C., '15.....             | Cordova, Alaska       |
| Hoff, Conrad Francis, '16.....           | Seattle               |
| Hoffstrom, Earl C., '16.....             | Seattle               |
| Johnson, John Dow, '15.....              | Pocatello, Idaho      |
| Lee, Robert Edward, '15.....             | Spokane               |
| Lockwood, Frank Ellsworth, '16.....      | Tacoma                |
| Long, Alfred, '16.....                   | Seattle               |
| McDonald, James M., '13.....             | Guysboro, Nova Scotia |
| McLeod, Donald Grant, '16.....           | Seattle               |
| Madigan, Walter, '16.....                | Seattle               |
| Madison, Tom Dunnington, '16.....        | Kent                  |
| Merrill, Levi Jasper, '16.....           | Blaine                |
| Mills, Will A., '16.....                 | Burlington            |

40 m.

|                                   |                  |
|-----------------------------------|------------------|
| Opperman, Conrad J., '15.....     | Tacoma           |
| Pape, Ted R., '15.....            | Seattle          |
| Peschl, August, '16.....          | Astoria, Ore.    |
| Petteys, Fred Elmer, '15.....     | Seattle          |
| Pilgrim, Earl, '16.....           | Seattle          |
| Porter, Fred S., '14.....         | Seattle          |
| Presley, Be Van, '15.....         | Seattle          |
| Schofield, George, '16.....       | Seattle          |
| Schug, Granville Elwood, '15..... | Northampton, Pa. |
| Scovel, Harold, '16.....          | Seattle          |
| Searing, Oliver P., '13.....      | Seattle          |
| Sheedy, Warren, '16.....          | Seattle          |
| Sherman, Albert R., '13.....      | Seattle          |
| Sims, Arthur, '16.....            | Seattle          |
| Swart, Arthur W. D., '15.....     | Richmond Beach   |
| Sweeney, Edward, '15.....         | Tacoma           |
| Wilcox, E. Roscoe, '15.....       | Seattle          |
| Will, E. Clark, '15.....          | Seattle          |
| Wilson, Alfred S. R., '13.....    | Seattle          |
| Wright, Lawrence B., '15.....     | Snohomish        |

## UNCLASSIFIED

20M.

|  |                         |
|--|-------------------------|
| Boyle, Joseph Whiteside, S. C. ....    | Dawson City, Yukon Ter. |
| Chamberlin, Lewis J., S. C. ....       | Seattle                 |
| Dally, J. N., S. C. ....               | Seattle                 |
| Davis, Thomas J., S. C. ....           | Boise, Idaho            |
| Eyderdam, Walter, S. C. ....           | Seattle                 |
| Flynn, Austin A., Sp. ....             | Wilkes Barre, Pa.       |
| Gargett, Clyde L., S. C. ....          | Sumas                   |
| Goodell, Luther T., Sp. ....           | Seattle                 |
| Knauff, Lester H., S. C. ....          | Seattle                 |
| Krippaehue, William August, S. C. .... | Seattle                 |
| Loewenherz, Leo, Sp. ....              | Seattle                 |
| Lund, Christian, S. C. ....            | Roland, Norway          |
| McMillan, Marshall J., S. C. ....      | Prescott                |
| Messenger, F. V., S. C. ....           | Seattle                 |
| O'Brien, John O., S. C. ....           | Seattle                 |
| Simenstad, Charles, Sp. ....           | Seattle                 |
| Van Buren, Henry, S. C. ....           | Seattle                 |

17m.

## COLLEGE OF PHARMACY

## ABBREVIATIONS

## CLASSES

|            |               |
|------------|---------------|
| '13 Senior | '15 Sophomore |
| '14 Junior | '16 Freshman  |

| <i>Name of Students and Rank</i>    | <i>Home Address</i> |
|-------------------------------------|---------------------|
| Ball, Alice A., '14.....            | Seattle             |
| Beardslee, Alva D., '16.....        | Montesano           |
| Boatman, Willis William, '16.....   | Orting              |
| Bock, Elfrieda Charlotte, '16.....  | Seattle             |
| Bonebrake, Crede, '14.....          | Goldendale          |
| Carlson, Elena, '15.....            | Seattle             |
| Carr, Kirk, '16.....                | Seattle             |
| Carroll, Burdine H., '16.....       | Colville            |
| Carroll, Ruth, '16.....             | Seattle             |
| Christoe, David Henry, '14.....     | Treadwell, Alaska   |
| Culver, Sheldon E., '15.....        | Milan, Mich.        |
| Curry, Mark Elmore, '16.....        | Tacoma              |
| Divine, Earl Leroy, '15.....        | Vancouver           |
| Epstein, George, '16.....           | Walla Walla         |
| Gannon, Bertha, '15.....            | Seattle             |
| Gilbertson, Louis Steven, '13.....  | Snohomish           |
| Goodrich, Forest Jackson, '14.....  | Seattle             |
| Gregg, Raleigh Alfred, '16.....     | Sumner              |
| Hannon, Robert Roger, '16.....      | Seattle             |
| Henderson, H. Edward, '15.....      | Tacoma              |
| Hicks, Claude E., '15.....          | Tacoma              |
| Hofacker, Edwin Paul, '16.....      | Ellensburg          |
| Jacquot, Frank E., '14.....         | Tacoma              |
| Johnson, Marinus C., '16.....       | Seattle             |
| Kinne, Seward B., '16.....          | Selah               |
| Levin, David, '14.....              | Seattle             |
| Lew, Soun H., '16.....              | Seattle             |
| Lieser, Ralph Lester, '15.....      | Vancouver           |
| Ludwig, William H., '16.....        | Tacoma              |
| McNerthney, Henrietta, '16.....     | Tacoma              |
| Mansfield, Walter William, '15..... | Monroe              |
| Manson, Marcus, W., '15.....        | Puyallup            |
| Meyer, Edmund T., '15.....          | Seattle             |
| Miller, Elmer Carl, '15.....        | Spokane             |
| Mitchell, Hugh Carlin, '16.....     | Moscow, Idaho       |
| Palmer, James Clarence, '16.....    | Everett             |
| Patton, Gerald S., '14.....         | Seattle             |
| Platt, Earl M., '14.....            | Seattle             |
| Race, Harry R., '16.....            | Coupeville          |
| Richey, Charles, '14.....           | Seattle             |

G F. 34m.

|                                    |                 |
|------------------------------------|-----------------|
| Roach, Edna Winnifred, '15.....    | Lyman           |
| Schreuder, Otis B., '15.....       | Seattle         |
| Sewell, Glenn Omer, '15.....       | Seattle         |
| Sewell, Hugh Finis, '16.....       | Suffield, Alta. |
| Siegel, Harry, '13.....            | Seattle         |
| Skarston, Sigmund, '15.....        | Tacoma          |
| Umbarger, Bessie, '16.....         | Burlington      |
| Umbarger, Ellsworth Carl, '16..... | Burlington      |
| Veldee, Milton Victor, '13.....    | Bremerton       |
| Vitous, Lumir G., '15.....         | Puyallup        |
| Vitous, Walter J., '15.....        | Puyallup        |
| Webb, Theodore T., '16.....        | Cheney          |
| Woodcock, William, '16.....        | Seattle         |
| Yount, Glenn, '15.....             | Wilbur          |

2 F. 12 m.  
SPECIAL STUDENTS

|                               |               |
|-------------------------------|---------------|
| Bloomer, Andrew W. ....       | Carrollton    |
| Brophy, James B. ....         | Seattle       |
| Carter, Harvey Garfield ..... | Seattle       |
| Ciallella, Constantino .....  | Seattle       |
| Cozzetto, Tony .....          | Seattle       |
| Donahue, Charles David .....  | Dayton        |
| Evenden, John S. ....         | Seattle       |
| Filz, Milton H. ....          | Seattle       |
| Harmeling, Philip .....       | Seattle       |
| Hayes, Helen .....            | Seattle       |
| Hendricks, William E. ....    | Ellensburg    |
| Hultgren, Lorentz .....       | Tacoma        |
| Jewell, Lee A. ....           | Tacoma        |
| Kinee, T. Edmund .....        | Seattle       |
| Kreidel, Harold W .....       | Ellensburg    |
| Mastoras, Alcibiades .....    | Seattle       |
| Miller, H. Lloyd .....        | Palouse       |
| Millett, Verne H. ....        | Seattle       |
| Moore, Harry J. ....          | Seattle       |
| Smith, Edgar N. ....          | Edmonds       |
| Sauer, Leonard Frank .....    | Leavenworth   |
| Stanley, William Homer .....  | Waterville    |
| Stevenson, Blanche .....      | Seattle       |
| Swart, Dennis S. ....         | Woodland      |
| Walker, Robert M. ....        | Renton        |
| Webb, Elmer .....             | Sedro-Woolley |
| Wegert, Albro W. ....         | Seattle       |
| Wyllys, Donn J. ....          | Puyallup      |

1 F. 27 m.

## SUMMARY OF ENROLLMENT

## BY COLLEGES AND SCHOOLS

|   |             |
|---|-------------|
| Graduate School .....                               | 116         |
| College of Arts and Sciences.....                   | 1321        |
| College of Engineering.....                         | 384         |
| Chemical Engineering .....                          | 40          |
| Civil Engineering .....                             | 135         |
| Electrical Engineering .....                        | 147         |
| Mechanical Engineering .....                        | 63          |
| College of Forestry .....                           | 74          |
| School of Law .....                                 | 212         |
| College of Mines .....                              | 67          |
| College of Pharmacy.....                            | 84          |
| Foresters' Short Course (three-months' course)..... | 19          |
| Miners' Short Course (three-months' course).....    | 15          |
| <b>Total.....</b>                                   | <b>2292</b> |

## BY CLASSES

|   |             |
|---|-------------|
| Graduate Students .....                               | 116         |
| Seniors and Third Year Law.....                       | 222         |
| Juniors and Second Year Law.....                      | 321         |
| Sophomores and First Year Law.....                    | 464         |
| Freshmen .....  | 846         |
| Special, Arts and Sciences.....                       | 126         |
| Special, Engineering .....                            | 44          |
| Special, Forestry .....                               | 7           |
| Special, Law .....                                    | 72          |
| Special, Mining .....                                 | 7           |
| Special, Pharmacy .....                               | 33          |
| Foresters' Short Course.....                          | 19          |
| Miners' Short Course.....                             | 15          |
|   | 2292        |
| Summer Session of 1912.....                           | 482         |
|   | 2774        |
| Deduct Summer Students now attending University.....  | 94          |
| <b>Total Number of Students in Residence.....</b>     | <b>2680</b> |
| Extension Students working for University Credit..... | 165         |
| Deduct Summer Session duplicates.....                 | 21          |
| <b>Total Enrollment.....</b>                          | <b>2845</b> |

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