1-1-1913

1913-1914 Course Catalog

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Bulletins for 1913-1914
University Extension
School of Law
School of Pharmacy
Home Economics
School of Music
Commerce and Accounting
Annual Catalogue and Register
School of Forestry
Woman’s Bulletin
Correspondence Study
Graduate Department
Preliminary Announcement of Summer School
Complete Announcement of Summer School
Short Course in Forestry
Eleventh Annual Interscholastic Meet
THE NINETEENTH
REGISTER
OF THE
University of Montana
1913-14

ANNOUNCEMENTS
FOR 1914-15

MISSOULA, MONTANA
### CALENDAR FOR 1914

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<th>JANUARY</th>
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### CALENDAR FOR 1915

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UNIVERSITY CALENDAR
1914-1915

SUMMER SESSION.

1914—
June 8, Monday ........................................ Registration day
June 9, Tuesday ........................................ Instruction begins
July 17, Friday .......................................... Instruction ends

FIRST SEMESTER.

1914—
September 8, Tuesday ................................ Registration day
September 9, Wednesday ................................ Instruction begins
November 25, Wednesday, 12:30 p. m.
           to November 30, Monday, 8:30 a. m. ................................ Thanksgiving recess
December 18, Friday, 4:00 p. m.
               to January 4, Monday, 8:30 a. m. ................................ Christmas holidays
January 29, Friday, 4:00 p. m. ................................ First semester ends

SECOND SEMESTER.

1915—
February 2, Tuesday ................................ Registration day
February 3, Wednesday, 8:30 a. m. ................ Instruction begins
February 19, Friday ...................................... Charter day
March 3, Wednesday ..................................... Buckley oratorical contest
May 11, Tuesday, 8:00 p. m. ......................... Final debate, High School League
May 11, 12, 13, 14, 15, Tuesday, Wednesday,
       Thursday, Friday, Saturday ......................... Interscholastic meet
May 27, Thursday, 4:00 p. m. ................................ Instruction ends
May 30, Sunday ......................................... Baccalaureate day
May 31, Monday, 8:30 p. m. ......................... Annual music recital
June 1, Tuesday, 8:00 p. m. ................................ University play
June 2, Wednesday, 10:30 a. m. ....................... Class day exercises
June 2, Wednesday, 7:00 p. m. ...................... Alumni annual dinner
June 3, Thursday, 10:30 a. m. ...................... Commencement exercises
MONTANA STATE BOARD OF EDUCATION

EX-OFFICIO.

GOVERNOR SAMUEL V. STEWART, President.
D. M. KELLY, Attorney General.
H. A. DAVEE, Supt. Pub. Instruction, Secretary.

APPOINTED.

<table>
<thead>
<tr>
<th>Name</th>
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<tr>
<td>S. D. LARGENT</td>
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<td>W. S. HARTMAN</td>
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<td>JOHN DIETRICH</td>
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<td>J. C. SMITH</td>
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<td>J. BRUCE KREMER</td>
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<td>C. H. HALL</td>
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<td>O. W. McCONNELL</td>
<td>1, 1915</td>
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<td>W. H. NYE</td>
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<td>H. A. DAVEE</td>
<td>Clerk of the Board</td>
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EXECUTIVE BOARD OF UNIVERSITY.

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<tr>
<td>E. B. CRAIGHEAD</td>
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<td>J. H. T. RYMAN, Treasurer</td>
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<td>J. D. DUNLOP</td>
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THE FACULTY

EDWIN BOONE CRAIGHEAD, LL. D., D. C. L. 661 University Avenue

President.

A. M. Central College, 1883; teacher, Neosho Collegiate Institute, 1884; graduate student, Vanderbilt University, 1884-86; graduate student, University of Leipzig, 1887; graduate student, University of Paris, 1888; Professor of Latin, Emory and Henry College, 1889; Principal Pryor Institute, 1890; Professor of Greek, Wofford College, 1890-93; President, South Carolina Agricultural and Mechanical College and Director Experiment Station, 1893-97; President Central College, 1897-1901; LL. D., University of Missouri, 1898; President State Normal School, Warrensburg, 1901-1904; President Tulane University, 1904-1912; D. C. L., University of the South, 1907; President University of Montana since August 15, 1912.

W. M. ABER, A. B. . . . . . . . 402 Eddy Street

Professor of Latin and Greek.

Graduate from Normal School at Oswego, N. Y., 1872, and from Yale in 1878; Graduate student at Johns Hopkins, Cornell and University of Chicago; Instructor in Oswego Normal School; Professor of Latin and Greek, University of Utah, 1890-94; Professor of Latin and Greek, University of Montana, since 1895.

FREDERICK C. SCHEUCH, M. E., A. C. 319 South Fifth Street West

Professor of Modern Languages.

Attended Public Schools, Barcelona, Spain, 1874-1882; Graduate, Gymnasium, Frankfort on the Main, Germany, 1888; Graduate, Colegio Santo Tomas, Barcelona, Spain, 1889; Secretary, U. S. Consulate, Barcelona, 1888-89; M. E., Purdue University, 1893; A. C., same 1894; Instructor in French, same, 1893-94; Secretary of the Faculty, University of Montana, 1895-1899; Professor of Mechanical Engineering, University of Montana, 1895-1897; Professor of Modern Languages, University of Montana, since 1895.

MORTON JOHN ELROD, Ph. D. . . . 205 S. Fifth St. East

Professor of Biology.

B. A., Simpson, 1887; M. A., Simpson, 1890; M. S. Simpson, 1898; Ph. D., Illinois Wesleyan University, 1906; Adjunct Professor of Science, Illinois Wesleyan University, 1888-89; Professor of Biology and Physics, Illinois Wesleyan University, 1889-97; Director, University of Montana Biological Station, since 1899; Professor of Biology, University of Montana, since 1897. Fellow, A. A. A. S.; Associate, A. O. U.; Member American Bison Society, American Society of Zoologists, American Forestry Association, National Geographical Society; Author of The Butterflies of Montana; Biological Reconnaissance in the Vicinity of Flathead Lake, etc.; Contributor to Science, Encyclopedia Americana, American Microscopical Journal, Youth's Companion, Nautilus, Recreation, Journal of Applied Microscopy, etc.; Editor Inter-Mountain Educator.
FRANCES CORBIN, B. L. . . . 128 S. Fourth St. West

Professor of Literature.

B. L., Ohio College, 1902; Student in Harvard Summer School, 1904; Teacher of Literature, and Principal Butte High School, 1893-1900; Professor of Literature, University of Montana, since 1900.

JESSE PERRY ROWE, Ph. D. . . . 341 University Avenue

Professor of Geology.

B. S., University of Nebraska, 1897; M. A., 1903; Ph. D. 1906; Student University of Oregon, 1892; Graduate Student, University of California, summer, 1901; Graduate Student, Chicago University, summer, 1905; Assistant in Geology, University of Nebraska, 1894-97, Fellow and Instructor, 1897-98; Assistant Principal, High School, Butte, 1898-99; Principal Lincoln School, Butte, 1899-1900; Instructor in Physics and Geology, University of Montana, 1900-01; Director, University of Montana Geological Survey, since 1902; Assistant, United States Geological Survey, 1906; Professor of Physics and Geology, University of Montana, 1901-10; Professor of Geology, since 1910; Member, American Institute of Mining Engineers, Fellow Geological Society of America, Fellow American Association for the Advancement of Science, National Geographic Society; Field Geologist, U. S. Geological Survey, 1906 and 1907; President, Montana State Teachers' Association, 1908; Author of Practical Mineralogy Simplified, Elements of Mineralogy, Geography and Geology of Montana (in preparation), Practical Petrology (in preparation), Volcanic Ash Beds of Montana, Montana Coal and Lignite Deposits, Some Economic Geology of Montana; contributor to American Geologist, American Journal of Science, Science, Engineering and Mining Journal, Mines and Minerals, Mining World, etc.

*JOSEPH HARDING UNDERWOOD, Ph. D., LL. D.

Professor of History and Economics.

B. A., Western College, 1902; M. A., State University of Iowa, 1904; Ph. D., Columbia University, 1907; LL. D., Otterbein University, 1910; Graduate Scholar in Economics, State University of Iowa, 1902-03; Fellow in Economics, State University of Iowa, 1903-04; University Fellow in Sociology, Columbia University, 1904-05; Student, University of Chicago, 1906; Instructor in English and History, Nora Springs (Iowa) Seminary, 1905-06; Professor of History and Political Science, Leander Clark College, 1906-07; Professor of History and Economics, University of Montana, since 1907; Member, American Economics' Association, American Academy of Political and Social Science; Author of Distribution of Ownership, Taxation of Inheritances, (in preparation) Homestead Exemption, Social Distribution of Wealth.

*Absent on leave, 1913-1914.
JOSEPH EDWARD KIRKWOOD, A. M., Ph. D.  319 University Avenue

Professor of Botany.

A. B., Pacific University, 1898; A. M., Princeton University, 1902; Ph. D., Columbia University, 1903; Fellow in Biology, Princeton University, 1898-99; New York Botanical Garden, 1899-1901; Assistant in Botany, Columbia, University Summer School, 1900; Assistant in Biology, Teachers' College, 1900-01; Instructor in Botany, Syracuse University, 1901-03; Associate Professor of Botany, 1903-07, and Professor of Botany, 1907; Assistant Botanist, Department of Investigation, Continental-Mexican Rubber Co., 1907-08; Carnegie Institution, Desert Laboratory, Tucson, 1908-09; Assistant Professor of Botany and Forestry, University of Montana, 1909-10; Professor of Botany and Forestry, 1910-1914; Professor of Botany, 1914; Fellow of the American Association for the Advancement of Science, Member of the Society of the Sigma Xi, Botanical Society of America, Torrey Botanical Club, American Nature Study Society, School Garden Association (Chairman for Montana), Columbia University Biochemical Association, American Forestry Association, American Geographical Society, National Education Association, Association of the Doctors of Philosophy of Columbia University; Author of The Comparative Embryology of the Cucurbitaceae, The Forests of Montana (in preparation), American Forest Tree Seedlings (in preparation), Lessons in Forest Botany (in preparation), Contributor to Bulletin of the New York Botanical Garden, Bulletin of the Torrey Botanical Club, Torreya, School Science, Nature Study Review, Bulletin of the New York Educational Department, Plant World, American Review of Tropical Agriculture, Science, Popular Science Monthly, American Forestry, Inter-Mountain Educator, Scientific American, The Timberman, American Lumberman, etc.

GEORGE FULLMER REYNOLDS, Ph. D.  .  .  .  1122 Higgins Avenue

Professor of English and Rhetoric.

Ph. B., Lawrence College, 1898; Ph. D., University of Chicago, 1905; Fellow in English, University of Chicago, 1901-02; head of the department of English, Shattuck School, 1902-09; Assistant Professor in English and Rhetoric, University of Montana, 1909-10; Professor of English and Rhetoric since September 1, 1910; Director of Summer School, University of Montana, 1912; Director of University Extension, 1913; Instructor in Literature, University of Minnesota (Summer Session), 1914; Member of Modern Language Association; Phi Beta Kappa; Author of Some Principles of Elizabethan Staging; Why Go to College; (in preparation) The Art of Playreading; contributor to Modern Philology, Education, The Drama, Modern Language Notes, etc.


Acting Dean and Professor of Law.

A. B. University of Kentucky, 1906; A. M. ibid, 1908; Principal Caldwell High School, Richmond, Ky., 1906; Instructor in English and Assistant in Academy, Uni-
rends of Kentucky, 1906-08; LL.B. Harvard Law
School, 1911; Member Kentucky Bar, 1909; Member
Montana Bar since 1911; Assistant Professor of Law,
University of Montana, 1911-12; Professor of Law,
1912-13; Acting Dean and Professor of Law since Sep-
tember, 1913.

CHARLES MELVIN NEFF, LL. B. . . . 526 East Front St.
Professor of Law.
Ph. B., University of Rochester, N. Y., 1899; LL. B.,
Columbia University, 1902; Practicing Lawyer, New
York City, 1902-05; Practicing Lawyer, Colorado, 1905-
12; Professor of Law, University of Montana, since
September 1, 1912.

JOHN BERTRAND CLAYBERG, LL. B. . . San Francisco, Cal.
Non-Resident Lecturer on Mining and Irrigation Law
and Consulting Dean.
LL. B., University of Michigan, 1875; Attorney General
of Montana, 1899; Commissioner, Supreme Court of
Montana, 1903-05; Non-Resident Lecturer on Mining
and Irrigation Law, University of Michigan; Columbia
University and Montana School of Mines; Honorary
Dean of Law School, Professor of Mining and Irrigation
Law and Montana Code Practice, University of Montana,
1911-12; Non-Resident Lecturer on Mining and Irriga-
tion Law and Consulting Dean, since September, 1912.

WILLIAM WEBB KEMP, Ph. D. . . . . . 419 Eddy
Professor of Education.
A. B., Leland Stanford Junior University, 1898; Ph. D.,
Columbia University, 1912; Graduate Student, Stanford
University, 1904-05; University of California, 1905-06;
Scholar, Teachers' College, Columbia, 1910-11; Fellow,
Teachers' College, Columbia, 1911-12; Foreign Research
Scholar, Teachers' College, Columbia, Summer of 1911;
Instructor in History, Holt's School, California; Princi-
pal of Schools, Alameda, California, 1903-05; Head
Department of Education and Director of the Training
School, State Normal School, San Diego, California,
1906-10; Bibliographer, Educational Department, New
York Public Library, 1910; author of "The Support of
Schools in Colonial New York by the Society for the
Propagation of the Gospel in Foreign Parts"; contribu-
tor, Cyclopedia of Education (Paul Monroe, editor);
Professor of Education, University of Montana, since
1912.

THADDEUS L. BOLTON, Ph. D.
Professor of Psychology.
A. B., University of Michigan; Ph. D., Clark University,
1894; Psychological Specialist and Teacher in Worcester,
Mass., Normal School, 1893-1896; Teacher of Psychology
in San Jose Normal School, 1896-97; Professor of Philosophy and Education, University of Washington, 1897-98; Student at Berlin, Leipzig and Heidelberg, 1898-99; Instructor and Junior Professor of Psychology; University of Nebraska, 1899-1910; Director of Training School and Professor of Psychology and Education, Tempe Normal and Agricultural School of Arizona, 1910-13; Professor of Psychology, University of Kansas Summer School, 1911, 1912 and 1913; and Professor of Psychology, University of Montana, since September, 1912; Member American Association for the Advancement of Science, American Psychological Association, Western Philosophical Society, Sigma Xi; Contributor to American Journal of Psychology, Psychological Review, Journal of Pedagogy, Educational Review, Journal of Nervous and Mental Diseases; Editor Nebraska University Studies and Arizona Journal of Education.

RICHARD HENRY JESSE, Jr., Ph. D. . . 539 University Avenue

Professor of Chemistry.

A. B., University of Missouri, 1902; A. M., Harvard University, 1907; Ph. D., Harvard University, 1909; with Mallinckrodt Chemical Works, St. Louis, 1904; Austin Teaching Fellow in Chemistry, Harvard University, 1907-08; Thayer Scholar and Carnegie Research Assistant, Harvard University, 1908-09; Instructor in Applied Chemistry, University of Illinois, 1909-11; Associate in Chemistry, University of Illinois, 1911-12; Professor of Chemistry, University of Montana, since September 1, 1912; Contributor to Journal of the American Chemical Society, Proceedings of the American Academy of Arts and Sciences, Publications of the Carnegie Institution, Journal of Industrial and Engineering Chemistry, etc.

CHARLES E. F. MOLLET, Ph. C. . . 523 Woodford St.

Professor of Pharmacy.

Ph. C., University of Kansas, 1904; Kansas State Normal School, 1896-99, and teacher in grade schools for five terms. Instructor and Head of the Department of Pharmacy, Montana State College, Oct., 1907; Assistant Professor, 1909; Professor, 1911; Professor of Pharmacy, University of Montana, July 17, 1913. Student, University of Chicago, summer 1910; Postgraduate student, University of Kansas, summer 1911. Licensed Pharmacist by examination in Missouri, 1904. Pharmaceutical Chemist and Prescriptionist for W. D. Webb; Pharmacist, St. Joseph, Mo., until 1906. Member of the office force of C. D. Smith, Wholesale Drug and Manufacturing Co., St. Joseph, Mo., until March, 1907. Licensed Pharmacist in Montana in 1907. Employed by the Gallatin Drug Co., Bozeman, April-December, 1907. Member of the American Pharmaceutical Association and of the Montana Pharmaceutical Association.

LESLIE JAMES AYER, B. S., J. D. . 317 South Sixth Street East

Professor of Law.

B. S., Upper Iowa University, 1899; Graduate Student in English and History, University of Chicago, Summer
Quarters, 1899-1901; J. D., University of Chicago Law School, 1906; Assistant Instructor in Biology, Upper Iowa University, 1898-1899; Principal of Waucoma Public Schools, Waucoma, Iowa, 1899-1901; Superintendent of City Schools, West Union, Iowa, 1901-1903; Instructor Teachers' Institutes, Fayette County, Iowa, 1902-1903; Admitted to Practice in Illinois, 1906; Practicing Law, Chicago, 1906-1913; Professor of Law, University of Montana, since September 1, 1913; Admitted to Practice in Montana, 1914.

C. W. LEAPHART, A. M., LL. B. 515 McLeod Avenue

Professor of Law.

A. B., University of Missouri, 1905; A. M., University of Missouri, 1906; Assistant Professor of Greek and Latin, Kentucky State University, 1907-08; LL.B., Harvard University, 1913; Professor of Law, University of Montana, since September 1, 1913.

STEPHEN I. LANGMAID, A. M., LL. B. 530 McLeod Avenue

Professor of Law.

A. B., Harvard University, 1906; A. M., Harvard University, 1907; LL.B., Harvard, 1911; Practicing Law in San Francisco and Oakland, California, 1911-1913; Professor of Law, University of Montana, since September 1, 1913.

N. J. LENNES, Ph. D. 507 Blaine Street

Professor of Mathematics.

B. S., University of Chicago, 1898; M. S., ibid, 1903; Ph. D., ibid, 1907; Teacher in Chicago High Schools, 1898-1907; Fellow in Mathematics, University of Chicago, 1904-1905; Instructor in Mathematics, University of Chicago, Summer Quarters, 1906-1907; Instructor in Mathematics, Massachusetts Institute of Technology, 1907-1910; Instructor in Mathematics, Columbia University, 1910-1913; Head of the Department of Mathematics, Chautauqua Summer Schools, Chautauqua, N. Y., since 1908; Professor of Mathematics, University of Montana, since September 1, 1913; Member of the American Mathematical Society; Author with H. E. Slaught of Elementary Algebra; Advanced Algebra; First Principles of Algebra; Plane Geometry; Solid Geometry; Author with Oswald Peebles of Infinitesimal Analysis; Books in preparation: Elements of Projective Geometry; A Synoptic Course in Mathematics for College Freshmen; The Theory of Sets of Points; Contributor to Transactions of the American Mathematical Society; Bulletin of the American Mathematical Society; American Journal of Mathematics; Annals of Mathematics; School Science and Mathematics; The Chautauquan, The Educational Review.

DE LOSS SMITH Evans Avenue

Head of the School of Music and Professor of Voice.

Attended Eureka College, Ill., 1892-1903; Graduated from Music Department, Campbell University, Kansas, 1895;
Attended Metropolitan School of Music, Indianapolis, 1896-1897; Director of Music and Teacher of Voice, Western Normal College, Ill., 1898-1899; Studied voice under Professor L. A. Phelps of Chicago, 1903-1905; with Mr. and Mrs. Mehan, New York, 1908-1913; Teacher of tone production and interpretation, Summer School, Columbia University, since 1911; Professor of Voice, University of Montana, since September, 1913; Compiler of “Songs of the King,” “Solos for the Average Man.”

DORR SKEELS, Logging Engineer . . . 606 Woodford Ave.

Dean of College of Forestry.

Special Student in Engineering and Forestry, Michigan Agricultural College, 1900-1903; Assistant Forest Expert, United States Forest Service, 1904; Student Assistant United States Bureau of Forestry, 1903; State Forester of Michigan, 1905-06; Special Student Graduate School of Forestry, University of Michigan, 1904-06; Forest Assistant, United States Forest Service, 1906-08; Acting Forest Supervisor, Coeur d’Alene National Forest, 1908; Forest Examiner in Timber Sales, District 6, United States Forest Service, 1908-09; Forest Supervisor, Kootenai National Forest, 1909-13; Logging Engineer, Districts 1 and 3, United States Forest Service, 1913-14; Special Lecturer in Lumbering, University of Montana, 1911-12; Dean of College of Forestry, University of Montana, 1914.

HARRISON ANTHONY TREXLER, Ph. B. . . 601 Daly Ave.

Acting Professor of Economics.

Ph. B., Bellevue College, 1906; Graduate Student University of Chicago, 1906-07, 1910; Professor of History and Economics, Hardin College, 1907-09; Graduate Student University of Missouri, 1907-08; University of Bonn, 1909-10; Acting Professor of History and Economics, Allegheny College, 1910-11; Graduate Student, Johns Hopkins University, 1911-12; University Fellow and Instructor Johns Hopkins University, 1912-13; Acting Professor of Economics, University of Montana, since 1913. Author “The Slavery System of Missouri.” Contributions to the Missouri Historical Review. Member American Historical Association; Mississippi Valley Historical Association; The State Historical Society of Missouri.

JAMES DENTON DUNLOP . . . . 304 S. Sixth St. East

Registrar.

ROBERT NEAL THOMPSON, B. S. . . . 322 Blaine St.

Assistant Professor of Physics.

B. S., University of Nashville, 1905; Grammar Principal, Montgomery Bell Academy, Nashville, 1903-06; Assistant in Biology, University of Nashville, Summer, 1906; Student, University of Chicago, 1906-09; Acting Associate Professor of Physics, Oberlin College, 1908; Instructor in Physics, Chicago University High School, 1908; Instructor in Physics, University of Montana, 1909-10; Assistant Professor of Physics, since September 1, 1910; Member of American Association for Advancement of Science.
ELOISE KNOWLES, Ph. M.  . . .  South Second St. West

Assistant Professor of Fine Arts.
Boston Art School, 1892-93; Ph. B., University of Montana, 1898; Chase Art School, Shinnecock Hills, 1899; School of Education, University of Chicago, 1904; Art Institute, Chicago, 1904; Columbia University, 1909; Ph. M., University of Chicago, 1910; abroad, summers of 1903, 1906 and 1910; Instructor in Drawing, University of Montana, 1888-1910; Instructor in Fine Arts, 1910-1913; Assistant Professor of Fine Arts, since September, 1913.

EUGENE F. A. CAREY, B. S.  . . .  120 Burlington Ave.

Assistant Professor of Mathematics.
B. S., University of California, 1905; Graduate Student, University of California, 1905-09; Assistant in Physics, ibid, 1905-07; Instructor in Matriculation Physics, Summer Session, ibid, 1907; Assistant in Mathematics, ibid; 1907-09; Instructor in Mathematics, University of Montana, 1908-13; Assistant Professor of Mathematics, since 1913; member of the American Mathematical Society.

PAUL CHRISLER PHILLIPS, Ph. D.  . . .  122 Burlington Avenue

Assistant Professor of History.

WILLIAM GEORGE BATEMAN, A. M.  .  814 Hastings Avenue

Assistant Professor of Chemistry.
A. B., Stanford University, 1907; A. M., Stanford University, 1909; Assistant in Chemistry, Stanford University, 1906-1908; Instructor, 1908-1910; Professor of Chemistry, Imperial Pei-Yang University, Tientsin, China, 1910-12; Acting Professor of Chemistry, University of Montana, Summer Session 1912 and 1913; Instructor in Chemistry, University of Montana, 1912-1913; Assistant Professor in Chemistry, since September, 1913; Member, Sigma Xi, Phi Beta Kappa, American Chemical Society; author of Toxic Properties of Thallium, General Inorganic Chemistry, Laboratory Manual of Qualitative Analysis; contributor to Educational Psychology.
HENRY HAXO, Ph. D. 319 University Avenue
Assistant Professor of Romanic Languages.
A. B., Leland Stanford Junior University, 1910; A. M.,
Leland Stanford Junior University, 1911; Ph. D., Uni-
versity of Chicago, 1913; Teacher of French, Pommeret
Sprach Schule, Berlin, 1901-1902; Berlitz School of
Languages, San Francisco, 1902-1907; student, Univer-
sity of California, summer 1908-1909; assistant in French
and Spanish, Leland Stanford Junior University, 1910;
fellow in Romanic Languages, University of Chicago,
1911-1913. Author of "Denis Pyramus, La Vie Seint
Edmunt."

CARL HOLLIDAY, M. A. Johnson Flats
Assistant Professor of English and Head of the Department
of Journalism.
B. S., University of Tennessee, 1901; M. A., same,
1903; Graduate student in English, University of Chi-
cago, 1902, University of Tennessee, 1902-1903, Univer-
sity of Virginia, 1906-1907; Fellow in English, Univer-
sity of Virginia, 1906-1907; Instructor in English for
five years in private and public schools of Tennessee
and North Carolina; Professor of English, Alabama
State Normal College, 1903-1906; Instructor in
English and lecturer on Southern Literature, Uni-
versity of Virginia, 1906-1907; Professor of English, Cox
College, 1907-1908; Professor of English, Southwestern
Presbyterian University, 1908-1910; Acting Professor of
English, Vanderbilt University, 1910-1912; Associate
Editor, American Library of Reference, 1913; Assistant
Professor of English and Director of Department of
Journalism, University of Montana, 1913; Director of
Bureau of Public Information, 1913; Instructor in Vir-
ginia State Summer School, 1907-1912; Lecturer in
Monteagle Chautauqua, 1912; Member of National Coun-
cil of English Teachers, National Committee for Revi-
sion of Grammar Terminology, 1912-1913, Religious
Education Association, Authors' League of America,
Classical Association of the South and Middle West;
President, Tennessee Intercollegiate Oratorical Associa-
tion, 1908-1912; Director, Montana State High School
Debating League, 1913; Daughters of American Revolu-
tion Prize for the best treatise on Virginia history,
1903; Colonial Dames Prize for the best treatise on
Colonial Virginia, 1906; Author of A History of Sou-
thern Literature, The Wit and Humor of Colonial Days,
The Literature of Colonial Virginia, Three Centuries of
Southern Poetry, The Cavalier Poets, English Fiction
From the Fifth to the Twentieth Century, The Poets
Laureate of England (in preparation), etc. Contributor
to McClures, Leslie's, Americana, American Educational
Review, Youth's Companion, World's Work, Independ-

GEORGE R. COFFMAN, Ph. D. Rozale Apartments
Assistant Professor of English.
A. B., Drake University, Iowa, 1903; A. M., Harvard Uni-
versity, 1909; Ph. D., University of Chicago, 1913;
Assistant in Greek, Drake University, 1901-1903; In-
structor in English and History, Moulton High School, 1903-1904; Instructor in English and History, East High School, Des Moines, Iowa, 1904-1906; Assistant in English, Bradley Polytechnic Institute, 1906-1908; Reader in English, University of Chicago, Summer Quarter, 1906; Instructor in English, Washington University, St. Louis, 1909-1911; Fellow in English, University of Chicago, 1911-1913; Substitute Instructor in English, University of Chicago, Summer Quarter, 1913; Assistant Professor of English, University of Montana, since September 1, 1913. Author of A New Theory Concerning the Origin of the Miracle Play.

CHARLES C. STAEHLING, Ph. B. 811 Hilda Avenue
Assistant Professor of Commerce and Accounting.
Graduate, School of Commerce and Accounts, Kankakee, 1904; Ph. B., University of Chicago, 1908; Instructor in the Department of Commerce, University of Oklahoma Preparatory School, 1908-1909; Head of the Department of Commerce, State Normal School, Warrensburg, Mo., 1909-1911; Head of the Department of Commerce, South High School, Milwaukee, 1911-1913; Instructor in Business English, Evening Industrial School, Milwaukee; Practical Work in Auditing and Systematizing, Milwaukee, 1911-1913; Head of the Department of Commerce, Missoula County High School, 1913; Assistant Professor of Commerce and Accounting, University of Montana, since September, 1913; Member of Phi Beta Kappa. Author of “Theory and Methods in Writing for Secondary Schools” (in preparation); “Vocational Guidance for High Schools and Colleges.” (In preparation).

JOSEPHINE SWENSON 811 Hilda Avenue
Assistant Professor of Piano.
Studied with Professor Ove Christensen, (Royal Court Musician to the Czar of Russia), Copenhagen, Denmark, 1898-1905; with Professor Dr. Carl Reinecke, Leipzig, Germany, 1905-1906; Instructor in Piano, Mary Baldwin Seminary, Staunton, Va., 1906-1907; Professor of Piano, Gustavus Adolphus College, St. Peter, Minn., 1907-1913; Assistant Professor of Piano, University of Montana, since 1913.

MARY STEWART, A. B. Craig Hall, University Grounds
Dean of Women and Instructor in Languages.
A. B., University of Colorado, 1900; Instructor in State Preparatory School, 1900-01; Principal of Longmont High School, Colorado, 1901-05; Instructor in East Denver High School, 1905-07; Student, Columbia University, summer of 1908; Dean of Women, University of Montana, since 1907.

GERTRUDE BUCKHOUS, B. S. 206 S. Fourth St. West
Librarian.
B. S., University of Montana, 1900; Illinois State Library School, 1900-01; Special Course in Government Documents, Wisconsin State Library Commission, 1902; Librarian, University of Montana, since 1902.
MARGERY WINNIFRED FEIGHNER, B. A. . . 315 East Front St.

Assistant Librarian.

B. A., University of Montana, 1908; B. S., Library School, Simmons College, 1908-09; Assistant in the Library, University of Montana, 1909-1911; Assistant Librarian, since September 1, 1911.

W. WALTER H. MUSTAINE, B. S .............................................. 22 Rozale Apts.

Director of Physical Education.

B. S., The Centre College of Kentucky, 1899; Postgraduate work, major, Physiology, the State University of Kentucky, 1910, 1911, 1912; Graduate, Yale Summer School of Physical Education, 1905; Graduate, Chautauqua, N. Y., School of Physical Education, 1905; Graduate, Harvard Summer School of Physical Education, 1911; Instructor in Gymnastics and Athletics, Hogsett Military Academy, 1897-1901; Director Boyle-Humphrey Gymnasium, Centre College, 1901; Director Physical Education, State University of Kentucky, 1902-1912; Director, Lexington, Ky., Business Women's physical Training Club, 1908-12; Supervisor, Public Playgrounds, Lexington, Ky., 1907; President, Kentucky Physical Education Society and Member National Council A. P. E. A., 1910; Director, Physical Education, University of Montana, since November, 1912.

MARY ELIZABETH EDMONDS, B. S. . . 306 University Ave.

Instructor in Home Economics.

B. S., Ohio State University, 1910; Student Assistant in Chemistry, Ohio State University, 1908-10; Instructor in Home Economics Extension Department, Ohio State University, 1910-13; Instructor, Summer Session, Ohio State University, 1912; Instructor in Home Economics, University of Montana, since beginning of Summer Session, 1913. Elected to the Omega Chapter of Sigma XI, Ohio State University, March, 1910.

ALICE WICKLUND MACLEOD . . . . 306 University Ave.

Instructor in Public Speaking and Physical Education.

B. S., Oregon Agricultural College, 1905; Student at Western Academy of Dramatic Art, Portland, Oregon, 1905-06. Studied in Studios of Expression in New York City, 1906-08; traveled and studied abroad, 1908-10; conducted Studio of Expression, 1910-11. Graduated Cumnock School of Oratory, 1912; Post Graduate Cumnock School of Oratory, 1913; Instructor of Public Speaking at University of Montana, since beginning of Summer School, 1913.

BELLE KEMP BATEMAN, B. A. . . . 814 Hastings Avenue

Instructor in Fine Arts.

B. A., Stanford University, 1909; Student of Jean Mannheim; Instructor in Art, Shasta County High School, California, 1909-1910; rug designer, China, 1910-1912; Instructor in Fine Arts, University of Montana, Summer Session, 1913; Instructor in Fine Arts, University of Montana, since October 1, 1913.
ADAM GEORGE HEILMAN, Ph. B., M. D. . . . The Penwell
Instructor in Biology, Coach of Football and Track Teams.

Ph. B., Franklin and Marshall College, 1908; M. D., University of Pennsylvania, 1913; Instructor in Biology and Coach of Football and Track Teams, University of Montana, since September, 1913; Member of the American Medical Association; the Graduate Medical Association of the University of Pennsylvania; the John B. Deaver Surgical Society of Philadelphia. Athletic record: Member of the Football, Basketball and Track Teams of Franklin and Marshall College, 1904-1908; Second place in the All-around Championship Indoor Athletic Meet, same, 1908; Y. M. C. A. Championship Basketball Team, Lancaster, 1907-1908; Freshman Football, Basketball and Track Teams, University of Pennsylvania, 1908-1909; University Crew Squad, same, 1909; Rowed for Undine Barge Club, Philadelphia, 1909; University Football Team, Captain Second Football Team, University of Pennsylvania, 1909-1912; University Basketball Team, same, 1911-1912.

JAMES H. BONNER, B. S. . . . 520 South Third Street West
Instructor in Forestry.

B. S., University of Montana, 1907; Graduate Student (Water Power Engineering), 1907-1908; County Surveyor of Missoula County, since January 1, 1909; Instructor in Forestry, University of Montana, since November 1, 1913; Contributor to "The Engineering Record."

A. W. L. BRAY, B. S., B. A.
Instructor in Biology.

First Class King's Scholar, Triple Distinction, England, 1900; Diploma in English Literature, Cambridge, England, 1900; Government Teachers' Certificate, First Class, with distinction in Higher Mathematics, England, 1904; First Class Art Masters' Certificate, 1904; Cambridge University Diploma in Education, 1907; Honorsman in Hygiene, Cambridge, 1908; Honorsman in Natural Sciences, Cambridge University, 1909; Graduate Student, Oregon University, Summer, 1912; Lecturer in Hygiene to Red Cross Association, London, England; Vice-Principal and Tutor in Chemistry and Mathematics, The College, St. John's, Newfoundland, 1909-1911; Tutor in Biology and Chemistry, Columbian College, New Westminster, B. C., Canada, 1911-1913; Graduate Student in Botany and Instructor in Biology, University of Montana, 1913.

HARRIET LOUISE KIDDER, A. M. . . . 661 University Avenue
Assistant in the Library.

A. B., Wellesley, 1907; A. M., University of Chicago, 1910; Assistant in the Library, University of Montana, since September, 1913.
LECTURERS IN LAW

C. L. F. KELLOGG, LL.B. .................................................. 1130 S. Higgins Avenue

Lecturer on Abstracts and Examination of Title.
LL.B. University of Wisconsin, 1882; admitted to practice in Wisconsin, Washington, Minnesota and Montana; practiced law three years in Seattle; five years in St. Paul, remainder in Montana; President and General Counsel for Northwestern Abstract and Title Insurance Company.

F. C. WEBSTER, A. B. .................................................... 241 South Fifth Street, East

Lecturer on Probate Law and Procedure.
A. B. Yale University, 1873; law lectures at Yale University during last year; two years student in law office; admitted to practice in Connecticut, 1875; admitted to practice thereafter in Minnesota, Colorado, and Montana; Judge of District Court of Montana twelve years, 1901-1913; practicing attorney and law lecturer since 1913.

SPECIAL LECTURERS IN FORESTRY

F. A. SILCOX, B. S., M. F. .................................................. District Forester
District 1, United States Forest Service.
Lecturer in Forest Administration.

P. R. HICKS, B. S. in Mech. Engineering, Univ. of Michigan
Engineer in Forest Products

E. W. KRAMER, C. E., Cornell University
District Engineer
Lecturer in Forest Engineering.

Assistant District Forester
Lecturer in Fire Protection.

D. T. MASON, B. S., M. F. Yale
Assistant District Forester
Lecturer in Silviculture and Forest Management.

F. E. BONNER
Geographer
Lecturer in Reconnaissance and Forest Maps.

JAMES R. WEIR, Ph. D., Munich
Consulting Pathologist
Lecturer in Forest Protection and Forest Pathology.

R. H. RUTLEDGE
Assistant District Forester
Lecturer in Forest Claims, Agricultural Settlements, Land Valuations and Classifications.

C. E. KNOUF
Forest Scaler
Lecturer and Instructor in Forest Mensuration and Log Scaling.

C. H. GREGORY
Forest Lumberman
Lecturer and Instructor in Lumbering and Log Scaling.

EARL H. TANNER
Forest Lumberman
Lecturer and Instructor in Lumber and Log Scaling.

J. A. URBANOWICZ
Fiscal Agent
Lecturer in Forest Accounts and Cost Keeping.

H. H. FARQUHAR
Forest Examiner
Lecturer in Forest Planting and Extension.
S. S. MALVEN, A. B. Rutgers College 1903 . . Forest Examiner
Lecturer in Forest Protection and Insect Control.

C. H. ADAMS, E. M. College of Mont. . Assistant District Forester
Lecturer in Grazing.

Lecturer in Forest Improvements.

W. W. WHITE, M. S. F., Mich. Univ. . . . Forest Supervisor
Lecturer in the Practice of Forestry.

ELERS KOCH, M. F. Yale . . . . . . Forest Supervisor
Lecturer in the Practice of Forestry.

RUTLEDGE PARKER . . . . . . Forest Supervisor
Lecturer in the Practice of Forestry.

J. W. BUTLER, D. V. S. . . . . . State Veterinarian
Lecturer in Veterinary Science.

HON. J. W. KENNEDY . . . . . . . . . State Commissioner of Agriculture and Publicity
Lecturer in Industrial and Community Development.

SIDNEY MILLER . . . . Register State Land Department
Lecturer in Forest Valuation and Taxation.

C. W. COGSWELL, M. D. . . . . . State Health Officer
Lecturer in Camp Sanitation.

W. J. SWINDLEHURST State Commissioner of Industry and Labor
Lecturer in Relations of Labor and Industry.

INSTRUCTORS IN OBSERVATION AND PRACTICE TEACHING

HANNA BOOK, A. B. (Indiana) . . . . Mathematics
ELVA JAMESON, B. S. (Beloit) . . . . Botany
EMMA SCHOELERMANN, B. S. (Iowa) . . Modern Languages
MABEL G. RICH, A. B. (Wisconsin) . . . English
ROY HAZELRIGG, B. S. (Knox) . . . . Physics

STUDENT ASSISTANTS

BIOLOGY
WALTER CONWAY
SHIRLEY SHUNK
LUCIUS E. FORBES
RALEIGH GILCHRIST

LIBRARY
MILDRED SCOTT
MILLARD NESBIT

CHEMISTRY
HESTER ROLFE

PHYSICS.
LANSING WELLS

PHYSICAL EDUCATION
MARGERY MAXWELL
MATHEMATICS

MABEL LYDEN

BOTANY

HARRY ADE

E. E. HUBERT

GEOLOGY

ROY WILSON

PHARMACY

LOUIS FISCHL

MANUAL ARTS

CORNELIUS BOL

ASSISTANTS IN OFFICE

BERNICE OLDRIDGE . . . . Bookkeeper and Stenographer
ANNA DAVIS . . . . Stenographer
EDITH ROLFE . . . . Registration Clerk
DOROTHEA C. DAVIS . . . . Stenographer
STELLA STILLWELL . . . . Stenographer

EMPLOYEES

RICHARD KESSLER . . . . . . . Engineer
THEODOR KESSLER . . . . . . . Assistant Engineer
MAX KRANICH . . . . . . . Gardener
GEORGE HEIGHTON . . . . . . . Head Janitor
FACULTY COMMITTEES.

SCHEDULE OF COURSES FOR PROSPECTIVE TEACHERS:
Kemp, Aber, Phillips, Rowe, Lennes.

SCHOLARSHIP:
Kirkwood, Haxo, Neff, Stewart, Coffman.

ADMISSION AND REGISTRATION:
Aber, Rowe, Kemp, Langmaid, Mollett.

ATHLETICS:
Mustaine, Rowe, Jesse, Heilman, Leaphart.

ATTENDANCE:
Craighead, Aber.

EXTENSION LECTURES:
Reynolds, Kemp, Elrod, Holliday, Smith.

CORRESPONDENCE STUDY:
Lennes, Buckhous, Haxo, Edmonds, Staehling.

GRADUATE WORK:
Jesse, Reynolds, Bolton, Trexler, Lennes.

LECTURE COURSE:
Elrod, Buckhous, Smith, Maclead, Rowe, Phillips.

STUDENT AFFAIRS:
Scheuch, Whitlock, Knowles, Bateman, Stewart, Aber.

STATE FAIR EXHIBIT:
Aber, Scheuch, Ayer, Edmonds, Mrs. Bateman.

SCHEDULE AND EXAMINATIONS:
Carey, Phillips, Coffman, Langmaid.

RECOMMENDATIONS:
Kemp, Corbin, Phillips, Dunlop, Mollett.

PUBLICATIONS:
Holliday, Reynolds, Bateman, Mustaine, Ayer, Dunlop.

PUBLIC EXERCISES:
Bolton, Aber, Macleod, Smith, Swenson.

PUBLIC ACCOUNTANCY:
Whitlock, Dunlop, Staehling.

INTERSCHOLASTIC:
Rowe, Elrod, Jesse, Mustaine, Brewer, Heilman, Leaphart, Thompson.

SELF HELP:
Phillips, Scheuch, Aber.
GENERAL INFORMATION

HISTORICAL SKETCH

The University of Montana is the head of the public school system of the state, and as such, is intimately connected with all its educational interests. At the base of this system are the primary and grammar schools which are found in every section of the state. From these schools the students pass to the high school, which in turn fits them for the University.

The support of universities for higher education has become a settled fact of national and state policy. As early as 1787 Congress declared that "religion, morality and knowledge being necessary to good government and the happiness of mankind, schools and the means of education shall forever be encouraged." To carry out the policy here laid down, Congress has from time to time made large grants of lands to the various states for the purpose of founding and endowing great state universities. As the result of this liberality of Congress and the generosity of the people of Montana, the University of Montana became established.

By an Act of Congress, passed in 1881, the University of Montana was granted 46,000 acres of land as an endowment that could never be diminished, and the income from this formed a permanent fund to be applied to the maintenance of the University. It was not until twelve years later, however, in 1893, that the Legislature of Montana took steps toward the organization of the University. The University proper was located at Missoula, but separate schools were founded at other places; one for Agriculture at Bozeman, a School of Mines at Butte, and a Normal School at Dillon. This act of 1893, however, made provision for the affiliation of these schools with the University whenever the State Board of Education should so decide.

In 1895 the University was formally opened in one of the public school buildings of Missoula. A local executive committee, consisting of J. H. T. Ryman, Judge Hiram Knowles, and Col. T. C. Marshall, was appointed to assist in the work of inaugurating and conducting the new University. Dr. Oscar J. Craig of Purdue University was elected the first president, and with him were associated four other professors who composed the
first faculty. In addition to a preparatory course, four college courses of instruction were offered: one in the classics, one in philosophy, one in general science, and one in applied science.

The home for the University was provided largely through the generosity of two Missoula citizens, Mr. E. L. Bonner and Mr. P. G. Higgins, who donated the ground on which the institution now stands. In 1897, the Legislature authorized a bond issue of $100,000 for the construction of two buildings. One of these, known as University hall, contained, besides class rooms, the administrative offices, the library and the museum. In the other, named Science Hall, was carried on the work in science and engineering. In 1901, the Legislature authorized an additional bond issue of $70,000 for the construction of a Woman’s Dormitory and a Gymnasium, and in 1907 gave $50,000 for a Library building. In 1911, the Legislature appropriated $50,000 for an Engineering building and $40,000 for the enlargement of the campus; but the funds for these improvements were never released by the State Board of Examiners. The same Legislature appropriated $5,000 for the construction of a Biological Station on Flathead Lake, and with this fund a commodious brick building was erected.

During the administration of President Craig, the University made remarkable progress. The faculty increased from five to thirty, and there was an even greater proportional increase in the number of students. A College of Liberal Arts and Sciences, and a College of Engineering were developed, while members of the faculty completed a number of investigations of great value to the people of the state.

In 1908, Professor Clyde A. Duniway, head of the history department of Leland Stanford, Jr., University, succeeded to the presidency of the University of Montana, and carried on a policy of vigorous development. The preparatory department was discontinued, and the duty of preparing students for University work was left exclusively to the high schools of the state. The University courses were standardized and put on the same plane as those of the best universities of America. The School of Law was established under the direction of Judge J. B. Clayberg, one of the foremost of American jurists, and the Summer School, primarily for the benefit of teachers, was made a part of the University.

In 1912, Dr. Edwin Boone Craighead, for eight years Pres-
ident of Tulane University, was appointed President of the University of Montana.

The development of the University of Montana during the past two years has been greater probably than that of any other University in the nation. The Law Department has more than doubled, both in number of students and in size of faculty, while the College of Arts and Sciences has shown surprising growth. Departments of Commerce and Accounting, Journalism, Pharmacy, Domestic Science and Household Arts, and Manual Arts have been added. Two highly efficient musicians have been added to the School of Music, while the School of Forestry has been reorganized and made the equal in equipment and standard of work of any similar school in the Northwest.

The University of Montana is now the largest and best equipped institution of higher education within the state. It not only trains undergraduates toward culture and efficiency, but is prepared to offer to advanced students great opportunities for graduate work in all the arts and sciences. Graduates from its teachers' course are in constant demand, and they may teach in Montana without further examination. The graduates in law have thus far passed the bar examination with highest honors, and have already distinguished themselves in the legal profession.

The prospects for still greater development of the University are encouraging. Situated in one of the most picturesque parts of the country, with a climate unsurpassed for healthfulness, it draws its students not only from many sections of the United States, but also from the provinces of Canada.

The last general legislative assembly of the state doubled the appropriation for maintenance of the University, and much useful equipment and many highly trained specialists have also recently been added. Members of the faculty are carrying on works of investigation of genuine benefit to the citizens of Montana, and opportunities are offered to those properly prepared for original study to obtain valuable scholarships and fellowships, and thus add to the productive work of the institution.

The University belongs to the people of Montana and therefore stands ready to give them every service possible. Besides training students within its walls, it extends its benefits to all the people by means of extension lectures delivered by its faculty, by correspondence study, and by a Bureau of Public Infor-
mation which furnishes free to the people of the state information on any subject. The institution has withstood the hardships of early years, and now that it is firmly established on a sound basis, it is able to offer the best that scholarship and culture afford in the Northwest.

THE UNIVERSITY CAMPUS

The University campus proper is forty acres in extent, and lies near the southeastern limit of the city of Missoula, at the base of the hills which enclose the eastern end of the valley. To the north lies the Missoula river; westward stretches a wide plain, whose western and southern horizons are bounded by the Bitter Root mountains. The main entrance to the campus is at the western side from University Avenue. Trees, lawns, shrubbery, flowers, walks and driveways make an attractive setting for the buildings.

To the eastward, on the steep slopes of Old Mount Sentinel and rising two thousand feet above the plain, the University possesses five hundred and twenty acres of land which are at present unimproved.

BUILDINGS

University Hall, the largest building, stands on the east side of the oval, directly opposite the entrance to the driveway and facing the west. A little to the south stands Science Hall, which faces toward the northwest. Still farther west, and directly south of the oval, is Woman’s Hall. To the northeast of University Hall and at a distance of two hundred feet is the Gymnasium. The new Library building is situated on the north side of the oval. With the exception of the Gymnasium, all these buildings are constructed of brick and stone and face the large oval near the middle of the campus.

University Hall is 140 by 65 feet in its ground dimensions, and its central tower rises to a height of 112 feet. This building has four floors, including the basement, which is largely above the ground and well lighted. The basement walls are of granite; above rise double brick walls of substantial character; the inner partition walls are also of brick. The whole building contains thirty-one rooms, without including six small rooms in the rear of the Assembly Hall, serving as cloak rooms and offices and giving access from the rear to the platform of Assembly Hall.

Science Hall contains in the first floor eight rooms, equipped
for the Departments of Pharmacy, Domestic Science and Household Arts, and Manual Arts. Nine rooms on the second floor are occupied by the Department of Chemistry. In the basement are the boilers for the heating plant of all the buildings, and the engine which runs the machinery of the shops.

Craig Hall was constructed to furnish a home for women students. It is 136 by 46 feet in its ground dimensions and has four floors, including the basement, which is so largely above ground as to be well lighted. In the basement are the dining room, kitchen, laundry room, storage rooms, etc. The first floor contains the office, parlors and some students' rooms. The second and third floors are entirely devoted to students' rooms. The entire building is well furnished and amply supplied with electric lights, steam heat and every sanitary convenience.

The Gymnasium, north of University Hall, is 114 feet by 58 feet in its ground dimensions, the main floor being 114 feet by 43 feet. In the rear of this are dressing and bath rooms for men and for women. These are supplied with hot and cold water, and the building is lighted by electricity and heated with steam radiators. In the rear of the building, facing the track and athletic grounds are a commodious grandstand and extensive bleachers.

The new Library building is 86 by 56 feet, and contains the general library, the Law Department and several other class rooms and offices. Its furniture and equipment are new and modern.

An Infirmary Cottage especially designed for the isolation and care of students who may be suffering from contagious or infectious diseases, was constructed and furnished in 1910.

UNIVERSITY SURROUNDINGS

Missoula is located in Western Montana, on the Chicago, Milwaukee and St. Paul Railroad and on the main line of the Northern Pacific railroad at its junction with the Bitter Root valley and Coeur d'Alene branches, thus affording easy railroad connection with all parts of the state and the northwest.

The City of Missoula is noted as being one of the most beautiful in Montana, and is unexcelled as regards pure water, healthful surroundings and beautiful scenery. Situated at the head of the Missoula valley and near the outlet of the Bitter Root valley, it is within the limits of a great agricultural and fruit-growing region.
ADMISSION REQUIREMENTS

The completion of a four-year preparatory or high school course is the standard for regular entrance to the Freshman class. This must include at least 15 units of work. The term unit of work means one subject pursued for at least 36 weeks with not less than five recitations per week, of not less than 40 minutes each.

Applicants must be at least sixteen years of age and must present evidence of good moral character.

A good preparation for beginning the University work should include the following: 4 units of English, 2 to 4 units of language other than English, 3 to 4 units of Mathematics, 2 units of History, 2 units of Science.

ADMISSION ON CERTIFICATES

Graduates of the accredited high schools of Montana obtain admission by presenting certificates of principals stating subjects taken, time given to each and grades obtained.

Blanks for such certificates are furnished by the University. These should be filed in the President’s office on or before the first day of registration.

Entrance credit is given for all subjects in the official courses of study for Montana high schools, which are properly certified as having been taken by the applicant. Subjects other than those in the official courses may be recognized for credits upon application in each case.

Graduates of high schools not in Montana are admitted on certificates without examination, provided such high schools are accredited to their state universities.

Preparatory work done in other schools than those accredited may receive credit. Applicants from such schools should present certificates stating the same points as those given from accredited schools. Blanks for this purpose are furnished by the University.

When the evidence of certificates is not clear and satisfactory, examinations will be given.

ADMISSION ON EXAMINATION

Applicants wishing to receive entrance credits on subjects for which they do not present satisfactory certificates are required to take examinations on days prescribed in the calendar.
of the University. For the academic year 1914-1915 these days are September 8 and February 2.

Those who are preparing to take entrance examinations should follow the appended outline descriptions of courses most commonly given in accredited schools:

**MATHEMATICS**

(1) **Algebra**—The elementary course should include fundamental operations upon literal members and expressions; factoring; highest common factor and lowest common multiple and fractions; ratio and proportion; graphical representation and solution of equations; theory of exponents; radicals; quadratic equations; radical equations. (One unit).

(2) **Algebra**—The advanced course should include most of the subjects of the first course, but considered from a more mature point of view; equivalent equations; theory of quadratic equations; binominal theorem; logarithms; progressions. (One-half unit.)

(3) **Geometry, Plane and Solid**—The equivalent of the subject matter in any of the standard texts, including a large number of original exercises. (One and one-half units.)

(4) **Plane Trigonometry**—This course should cover the following subjects: Definitions of the trigonometric functions as ratios; their line representations; their graphical representations; proof of the principal formulas; trigonometric transformations; circular measure of angles; inverse trigonometric functions; proofs of formulas of right and oblique triangles. (One-half unit).

**ENGLISH**

(1) **Composition**—The applicant must have the equivalent of the English composition required in a four-year high school course. Serious deficiency in spelling, punctuation, form, sentence-structure, grammatical inflections, or clearness of thought will be sufficient ground for rejection of the applicant’s work.

(2) **Literature**—The applicant should have thorough preparation in the books for reading and study as prescribed by the National Conference on Uniform Entrance Requirements in English.
HISTORY

One unit of history should embrace the history of ancient nations, with special reference to Greece and Rome.

The second unit should embrace the history of mediaeval and modern Europe.

The third unit may be in English history.

The fourth should embrace American history and civil government.

LATIN

Two units in Latin should cover the work of a good beginning Latin book and the reading of four books of Caesar’s Gallic War.

Three units should include the above and five orations of Cicero.

Four units should give in addition the reading of six books of Vergil’s Aeneid. There should also be practice in writing Latin during the reading of the texts above mentioned. Systematic grammatical instruction and drill by illustration and composition exercises should be given throughout the work.

GERMAN

Grammar, Joynes-Meissner, Whitney’s or their equivalent. Ability to read easy prose fluently, and to translate at sight such work as “Hauff’s Maerchen” (Goold.) (Two or three units.)

FRENCH

Grammar, Chardenal’s Complete, Edgren’s, or their equivalent. Ability to read easy prose fluently and to translate at sight such work as “La Pierre de Touche” (Harper.) (Two or three units).

PHYSICS

One year of Elementary Physics, the equivalent of Carhart and Chute’s Elementary Physics, Millikan and Gale’s First Course in Physics, Mann and Twist’s Physics, or Henderson and Woodhull’s Elements of Physics, one-half of the time having been devoted to laboratory work. The student’s note book in laboratory practice with the indorsement of the instructor will be considered evidence of having done this work. (One unit.)
CHEMISTRY

One year's work, the equivalent of Remsen's Beginning Course. One-half of the time must be given to laboratory work, as certified by the student's note book. (One unit.)

BIOLOGY

One year's work in Biological Science, with half the time given to laboratory work, the equivalent of Davenport's Elementary Zoology, or Linville and Kelley's Elementary Zoology, for class; and Kingsley or Colton in laboratory, with accompanying special reading or study. (One unit.)

CONDITIONAL ADMISSION

The entrance requirement of the completion of a four-year preparatory course with at least fifteen units of credit, may be modified in individual cases by permitting the conditional admission of students otherwise qualified if they are entitled to at least thirteen admission units.

Entrance conditions must be removed within one year from time of admission.

This may be accomplished by private study or tutoring and the passing of entrance examinations; by arranging to take the requisite courses in the regular classes of the Missoula County High School; or by transferring certain University credit hours and counting them toward entrance standing instead of toward graduation.

ADMISSION OF SPECIAL STUDENTS

Mature persons, not candidates for degrees, may be admitted without the usual entrance units as special students, if they give satisfactory evidence that they are prepared to pursue successfully the special courses desired.

Special students may acquire status as regular students and become candidates for degrees upon complying with the rules applicable to such cases.

ADMISSION TO ADVANCED STANDING

Students entering from collegiate departments of other colleges and universities must bring certificates of honorable dismissal. Upon presentation of the proper certificates they will receive advanced credit for courses taken in institutions of approved standards.
ACCREDITED HIGH SCHOOLS

The State Board of Education at a meeting held June 1, 1896, passed the following regulations, which are still in force:

"Any high school or academy whose course of instruction covers the branches requisite for admission to one or more of the courses of any State educational institution may be admitted to its accredited list of preparatory schools, after a satisfactory examination by a committee appointed by the State Board of Education. Application for such examination may be made by any school board to the Secretary of the State Board of Education, whereupon a committee appointed by the State Board of Education will examine the course of study and methods of instruction of the school and on the committee's favorable recommendation, and the concurrence of the State Board of Education, it will be entered upon the accredited list of the state educational institution for which it applied. Any graduate of such an approved school will be received by the president of the state educational institution wherein said graduate is entitled to enter, on presentation of proper diploma and certificate from the superintendent of said school, into any of the courses of said institution for which said graduate has been fitted.

"Students of any accredited school who are not graduates must expect examinations as other candidates.

"A school once entered upon the accredited list will remain there until its administration is changed, or until notice is given by the State Board of Education of unsatisfactory results. Upon a change of administration application for continuation upon the list, if desired, must be made. If the work of the principal coming into charge has been recently examined in connection with some other school, a new examination may not be required, but such examination should in all cases be invited.

"Annual reports will be asked for by the State Board of Education from all accredited schools."

At present, the State Superintendent of Public Instruction is Inspector of High Schools, and is authorized to designate members of the University Faculty as Assistant Inspectors.

In December, 1906, the Board appointed a committee "to formulate a uniform plan for accredited high schools." The committee formulated a plan and a brief outline of work for accredited high schools, which was adopted.
In December, 1905, the President of the University recommended that the Preparatory Department of the University be discontinued after September 1, 1908, and that at this date the accredited High Schools be required to sustain a four-year course of study. The recommendation was adopted and a committee was appointed to prepare a four-year course of study for accredited high schools. A course was prepared, reported to the Board, and formally adopted December 4, 1906.

This legislation was supplanted in June, 1910, when the State Board adopted new regulations upon courses of study in accredited High Schools, reported by a committee composed of Superintendent Largent, Superintendent Harmon and the President of the University. These regulations are as follows:

"Accredited High Schools of the State of Montana shall maintain one or more four-year courses of study, in all of which the following subjects shall be constant elements for the minimum amounts indicated:

(1) English Composition and Literature, 4 years, 4 units;
(2) Languages other than English, 2 years, 2 units;
(3) Mathematics, 2 years, 2 units;
(4) Science, 1 year, 1 unit;
(5) History, 1 year, 1 unit;
Total in prescribed subjects, 10 units.

"The authorities of each accredited school in their discretion may make suitable combinations of the constant elements with selections from the following list of subjects in amounts sufficient to constitute one or more full four-year courses of not less than fifteen units:

(1) Languages, other than English, 4 years, 4 units.
(2) Mathematics, 2 years, 2 units.
(3) Science, 3 years, 3 units.
(4) History (including Civics and Economics), 3 years, 3 units.
(5) Drawing, 2 years, 2 units.
(6) Commercial Subjects, 4 years, 6 units.
(7) Industrial Subjects, 4 years, 6 units."
# LIST OF ACCREDITED HIGH SCHOOLS

**1913-1914.**

<table>
<thead>
<tr>
<th>City</th>
<th>Principal</th>
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<tbody>
<tr>
<td>Anaconda</td>
<td>A. R. Gilpin</td>
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<tr>
<td>Belt</td>
<td>S. A. Remington</td>
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<tr>
<td>Billings</td>
<td>W. H. McCall</td>
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<tr>
<td>Butte</td>
<td>B. E. Milliken</td>
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<tr>
<td>Chinook</td>
<td>G. H. Willman</td>
</tr>
<tr>
<td>Columbus</td>
<td>J. D. Ray</td>
</tr>
<tr>
<td>Conrad</td>
<td>J. F. Goodrich</td>
</tr>
<tr>
<td>Eureka</td>
<td>A. R. Ford</td>
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<tr>
<td>Forsyth</td>
<td>H. Mackenzie</td>
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<tr>
<td>Fort Benton</td>
<td>C. M. Luce</td>
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<tr>
<td>Glasgow</td>
<td>D. S. Williams</td>
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<tr>
<td>Great Falls</td>
<td>James Rae</td>
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<tr>
<td>Hamilton</td>
<td>Henry Schwarm</td>
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<tr>
<td>Harlowtown</td>
<td>J. A. Johnson</td>
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<tr>
<td>Havre</td>
<td>Grace M. Easter</td>
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<tr>
<td>Helena</td>
<td>A. J. Roberts</td>
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<tr>
<td>Laurel</td>
<td>D. S. Clinger</td>
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<tr>
<td>Libby</td>
<td>Geo. B. Neff</td>
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<tr>
<td>Moore</td>
<td>Miss Wood</td>
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<tr>
<td>Plains</td>
<td>W. H. Shipley</td>
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<td>Polson</td>
<td>H. L. Hayden</td>
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<tr>
<td>Pony</td>
<td>Lee Tower</td>
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<tr>
<td>Roundup</td>
<td>F. P. Baird</td>
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<tr>
<td>Stevensville</td>
<td>J. D. Kegler</td>
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<tr>
<td>Terry</td>
<td>C. W. Grandey</td>
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<tr>
<td>Virginia City</td>
<td>J. D. Dawson</td>
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<tr>
<td>Victor</td>
<td>W. T. McWhinney</td>
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<tr>
<td>Whitehall</td>
<td>O. W. Wilkins</td>
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</table>

## COUNTY HIGH SCHOOLS

<table>
<thead>
<tr>
<th>County</th>
<th>City</th>
<th>Principal</th>
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<tbody>
<tr>
<td>Beaverhead</td>
<td>Dillon</td>
<td>Byron Toan</td>
</tr>
<tr>
<td>Broadwater</td>
<td>Townsend</td>
<td>A. E. Myers</td>
</tr>
<tr>
<td>Carbon</td>
<td>Red Lodge</td>
<td>C. W. Thompson</td>
</tr>
<tr>
<td>Custer</td>
<td>Miles City</td>
<td>J. A. Burger</td>
</tr>
<tr>
<td>Dawson</td>
<td>Glendale</td>
<td>R. L. Hunt</td>
</tr>
<tr>
<td>Fergus</td>
<td>Lewistown</td>
<td>H. L. Sackett</td>
</tr>
<tr>
<td>Flathead</td>
<td>Kalispell</td>
<td>E. L. Cummings</td>
</tr>
<tr>
<td>Gallatin</td>
<td>Bozeman</td>
<td>E. J. Parkin</td>
</tr>
</tbody>
</table>
Central High School, Butte . . Rev. M. McCormack
Mount Angela Ursuline Academy, Great Falls . Mother Xavier
Sacred Heart Academy, Missoula, Sister Martha of Bethany
Saint Vincent’s Academy, Helena . Sister Mary Berchmans
Butte Business College, Butte . . . . . .

**PRIVATE SCHOOLS**

**REQUIREMENTS FOR GRADUATION**

The present organization of courses of study within the University was adopted in 1909 by action of the Faculty. Instead of the fundamental principle of the “group system,” with elective elements, the principles of “elective” and “major department” system have been fused and adopted. These are modified by certain general prescriptions, and by provisions looking to careful administration.

For graduation a student must complete 122 credit hours of work, including 2 credit hours of required physical culture. One credit hour represents three hours of time each week throughout one semester, occupied in recitations or lectures and in preparation outside of the class room.

Time given to laboratory work is credited on the same basis of valuation, “three hours for one.”

**Required and Elective Work.**

**Required of all:**

- 2 Courses in English Composition ........................................ 6 hours
- 4 Courses in Physical Culture (2 exercises per week for 2 weeks) ........................................ 2 hours

**Restricted Electives:**

- 2 Courses in Science ........................................ 6 to 10 hours
- 4 Courses in Language, other than English .................. 12 to 20 hours
- 2 Courses in History or Economics .................. 6 to 10 hours
- 2 Courses in Literature or Philosophy .................. 6 to 10 hours

For required and restricted elective subjects for the University Certificate of Qualification to Teach, see Page 40.
MAJOR DEPARTMENT ELECTIVES

Not later than the Junior year, every student must choose a major department. This department may command from 30 to 40 hours of the student’s time, including the hours in this department taken in the restricted electives given above. The major professors define their prescriptions for each student.

FREE ELECTIVES

The rest of the 122 required hours are entirely free electives. These will be from 58 to 26 hours, according to whether the minimum or maximum number of hours are taken in required subjects, the restricted electives and the major department.

Until choice of a major department is made, a student’s electives are subject to the advice of an appointed Faculty adviser; after this choice, the head of the department chosen becomes the adviser.

Requirements beyond English Composition and Physical Culture do not apply to students in professional schools, since these departments definitely prescribe their work.

For the requirements for the University Certificate of Qualification to Teach, see Page 40.

SCHOLARSHIP AND REGISTRATION REGULATIONS

To encourage a higher grade of scholarship the Faculty has adopted the following statements of policy and regulations on registration:

1. Any student who has (and no student who has not) done exceptionally good work in any semester may be allowed to register for more than 16½, but not more than 18½ hours credit in the succeeding semester.

   This section does not apply to students in the Professional Schools.

2. Students of marked ability, if health and other circumstances are favorable, and if they have done exceptionally good work in previous semesters, should be encouraged to register for more than the normal average of 15 or 15½ credit hours.

3. “Exceptionally good work” shall be interpreted to mean that at least one-half of the work registered for shall receive grades of A or A+ and that no grade shall be lower than B+.

4. Students who may have been permitted to register for
more than $16\frac{1}{2}$ credit hours and who are failing during a semester to do at least passing work in any course shall have their registration reduced to $16\frac{1}{2}$ credit hours or less.

5. Students dropping a course more than four weeks after registration shall receive a D unless excused from this mark by the Committee on Registration on the recommendation of the instructor. Students so dropping a course after the end of four weeks shall not be allowed to register in the same number of hours in work of similar grade.

6. All students taking eight or more hours shall be automatically registered in the generally required courses (1) unless they have already secured credit here or elsewhere for such courses; (2) unless they are excused on petition to the Committee on Admission and Registration, which petitions have been approved by the department of English or Physical Culture. The Committee on Admission and Registration may require students failing in required subjects to drop other courses if this in the judgment of the Department of English or Physical Culture will aid them in passing the required subjects.

7. The first scholarship report shall be made at the end of four weeks from the beginning of the semester.

SPECIAL AND IRREGULAR STUDENTS

1. Persons admitted to registration with less than 13 units of entrance requirements shall be called Special Students in whatever department or school their work is taken.

2. Persons under 20 years of age shall not be admitted as special students.

3. Persons 21 years of age who present 13 or more units of high school work, or their equivalent for entrance requirements may be admitted to the law school and shall be called Specials in Law.

4. Persons admitted to registration with 13 or more units of entrance requirements and allowed to take courses without following requirements as to number of hours, and required and elective courses, shall be called Irregular Students.

BACCALAUREATE DEGREES

Upon the successful completion of undergraduate courses the University confers degrees of Bachelor of Arts, or Bachelor of Science.
DEGREES OF B. A. AND B. S.

Requirements for the degrees of Bachelor of Arts and Bachelor of Science are not minutely defined, but they are set forth in the preceding section on "Requirements for Graduation." In all except professional departments the work of the University is so organized that the determination of his course for each student is largely an individual problem.

For requirements for professional degrees see the announcements of the Schools of Law, Pharmacy, Forestry and Music.

ADVANCED DEGREES

Work of advanced character, involving research, may be pursued after graduation. The several departments will make such provision for graduate courses as the qualifications of each student and the special circumstances may require.

For the present the University is not satisfactorily equipped to offer courses leading to the degrees of Doctor of Philosophy or Doctor of Science.

Degrees of Master of Arts or Master of Science may be conferred in accordance with the following regulations:

The Master's Degree is granted only for special attainment in some branch of learning. As evidence of such attainment the candidate must submit a satisfactory thesis and must pass a satisfactory examination. The thesis must be submitted to an examining committee of three members, consisting of the instructor with whom the major work has been done and two other members of the faculty selected by the Committee on Graduate Work. This examining committee will pass upon the merits of the thesis. When the thesis has been accepted, the same committee will arrange and conduct the examination of the candidate. The examination may be oral, or written, or both, as the committee decides.

In order to be admitted to the examination, the candidate must have complied with the following conditions:

(a) He must be a graduate of the University of Montana or of some other institution of equal rank approved by the Committee on Graduate Work.

(b) He must have been in residence and registered at this University as a candidate for the Master's Degree, for two full semesters, or one semester and two summer sessions, or four summer sessions, or their equivalent in time.

(c) He must offer himself for examination in specific
subjects amounting to the equivalent of at least twenty credit hours. Fifteen of these twenty hours must be in the major subject. Twelve of the twenty hours must have been pursued in residence at the University. A list of the specific subjects in which the candidate offers himself must be reported one month before the time of examination to the committee on graduate work and must be approved by this committee.

Note—Graduate work is intensive in character and it requires much more diligent application than does undergraduate work. Therefore, the twenty credit hours of graduate work is considerably more than the equivalent of twenty credit hours of undergraduate work. It should be understood that the Master’s Degree is not granted for any number of credit hours. In all cases some distinction in achievement is required of the candidate.

(d) The instructor with whom the major work is elected is the candidate’s adviser. With his help, the candidate must, within two weeks after the time at which he takes residence, prepare and submit to the Committee on Graduate Work for its approval a program of the courses which he intends to pursue in preparation for the examination.

(e) The subject of the thesis must be reported to the Committee on Graduate Work four months before the time at which the candidate expects to present himself for examination and the subject must be approved by this committee.

THE UNIVERSITY CERTIFICATE OF QUALIFICATION TO TEACH

The aims of the University in providing instruction in Education are as follows:

1. To encourage and promote the study of educational science.

2. To teach the history of education and of educational systems and doctrines.

3. To provide such courses of instruction as will secure to those engaged in teaching the rights, prerogatives and advantages of a profession.

4. To fit certain University students for the higher positions in the public school service, and specifically in high schools.

The Twelfth Legislative Assembly enacted a law recognizing the diploma of the University, when accompanied by its Certifi
cate of Qualification to Teach, as a legal license to teach in high schools. A resolution of the State Board of Education, passed in June, 1913, extended this license to all public schools of Montana.

Students wishing to receive the Certificate of Qualification to Teach should note the following:

1. **SPECIAL PREREQUISITE**.—The candidate must show special professional intention and interest, and possess some native fitness to teach.

2. **GENERAL SCHOLARSHIP**—Each candidate for such a teacher’s certificate must hold a bachelor’s or master’s degree from this university, and must have maintained a good standard of scholarship throughout his college course.

3. The following regulations covering special and general professional training were adopted by the faculty February 2nd, 1914, and will go into effect September, 1914, subject to the approval of the State Board of Education:

<table>
<thead>
<tr>
<th>Required</th>
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<tbody>
<tr>
<td>English</td>
<td>6 hours</td>
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<tr>
<td>Physical Culture</td>
<td>2 hours</td>
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</table>

<table>
<thead>
<tr>
<th>Restricted Electives—</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Modern Languages</td>
<td>14 hours</td>
</tr>
<tr>
<td>Mathematics or Science</td>
<td>6 hours</td>
</tr>
<tr>
<td>History or Economics</td>
<td>6 hours</td>
</tr>
<tr>
<td>Literature or Philosophy</td>
<td>6 hours</td>
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</tbody>
</table>

Total required and restricted electives 40 hours

\[
\begin{align*}
\text{Major work} & \quad 25 \text{ hours} \\
\text{Two minors} & \quad 28 \text{ hours} \\
\text{Total major and minor subjects} & \quad 53 \text{ hours} \\
\text{Education} & \quad 13 \text{ hours} \\
\text{Psychology prerequisite} & \quad 6 \text{ hours} \\
\text{Free electives} & \quad 10 \text{ hours} \\
\text{Total} & \quad 122 \text{ hours}
\end{align*}
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In addition, a course in Observation and Practice under the supervision of the Department of Education which will be the equivalent of not more than 4 hours per week for one semester.

Candidates for Teachers’ Certificates should select their major work at the beginning of the Sophomore year.

Major work should include a course in Special Method of the subject, of the value of at least 1 credit hour.

In no case shall a candidate for this certificate be required to take more than 36 hours in the major department.

4. All general questions relating to each student’s professional work are under the supervision of a special committee, of which the head of the Department of Education is the chairman.
All recommendations for the teacher's certificate are made to the Faculty through this committee.

5. All candidates for the certificate should confer with the professor of education not later than the beginning of their second year.

6. By agreement with the Missoula County High School Board opportunities for observation and practice teaching with the assistance of the Faculty of the high school will be given in the second semester of the senior year to students who are recommended as candidates for the Certificate of Qualification to Teach.

FEES AND DEPOSITS

The University of Montana requires no general tuition fee, and there is no charge for instruction except in the Department of Music and in the Law School.

An annual matriculation fee of ten dollars must be paid on the day of registration.

An incidental fee of five dollars must be paid annually on the day of registration.

Exemption from the payment of the matriculation fees (but not the incidental fees) is granted to one student from each graduating class of each accredited school in the state, provided the faculty of the high school will recommend the student as having been distinguished for scholarship. This exemption constitutes an Honor Scholarship extending through four undergraduate years.

From students previously matriculated who present themselves for registration after the official registration days, a special registration fee is required.

Tuition fees in the Law School are $40 per year, or $20 per semester. To those carrying less than ten semester credit hours of Law courses, the tuition charge will be $2.00 per semester credit hour.

Tuition fees in the Department of Music for individual instruction are $20 per semester for one lesson per week.

All tuition fees must be paid on the first day of the student's registration in each semester.

In laboratory courses, and in certain other courses, deposits are required as security for payment of the cost of breakage and of materials supplied. These deposits must be paid within one
month after the opening of each semester, and vary in amount from three dollars to ten dollars. After each of such courses is finished, the balances of deposits are returned.

EXPENSES

Women students who do not make their homes with their families in or near Missoula, are expected to live in Craig Hall and Craig House, unless permission to live elsewhere is obtained from the faculty. These buildings are well furnished, lighted, and heated for their special purpose, and will comfortably house about ninety students. The University itself has the entire management of the Hall, making a combined charge of $25.00 and upward per month for room and board. Each room must have two occupants. A plat of the halls may be obtained from the Registrar of the University. Rooms are fully furnished except that each student is expected to supply her necessary linen, sheets, pillow cases, towels, curtains and table napkins.

Men students are expected to find rooms and board in private families. By combining in club houses, either as fraternities or otherwise, young men may live at very reasonable rates. They may obtain meals at Craig hall at a uniform price of $4.25 per week.

Students will not be permitted to live in places not approved by the faculty.

EMPLOYMENT AND AID FOR STUDENTS

A large number of students of the University earn either the whole or a part of their expenses while in college. Students intending to work their way can usually do so if they come with sufficient means to support themselves for the first half year, though many have made all their expenses from the beginning.

The University cannot guarantee work for students, but it is believed that those who are strong and willing to do any work that offers will not lack opportunities. A number of students find work about the University, as stenographers, assistants in the laboratories, in the library, in Craig Hall, as carpenters, gardeners, and in other capacities. Others find employment in town as draftsmen, bookkeepers, clerks, reporters, janitors, newsboys, helpers in homes, etc.

While nothing is more efficient in obtaining work than the personal endeavors of the student, a committee of the Faculty
will give every aid possible. Particular attention will be paid to the needs of new students. Those wishing employment during the coming year, and new students wishing information, should send their names, together with an account of the work they have done, the character of the work they wish to do, and the kind of positions they would be willing to fill, to the Registrar.

During summer vacations, students readily find profitable employment in many occupations. The Forest Service in particular offers unusual opportunities for those who are studying that subject. Other students are in demand for surveying, etc., with railroad and construction companies.

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**SCHOLARSHIP AND CONDUCT**

The University requires all of its students to manifest a serious purpose by maintaining satisfactory standing in the courses which they undertake. No student will be permitted to continue his connection with the University who shows persistent unwillingness or inability to comply with reasonable standards of scholarship. Students will not be permitted to neglect their registered work for extra-curricular activities. When this occurs such students will be obliged to limit or drop such activities.

No prescriptive rules are formulated to control the conduct of students, but they are expected to conform to the usual standards of society and law-abiding citizenship.

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**ATTENDANCE RULES**

1. All absences from classes or laboratories shall be settled with the instructor in charge, and all work shall be made up at his direction.

2. Reports on scholarship as to satisfactory or unsatisfactory work shall be made every six weeks to the office and there recorded and immediately referred to the committee on scholarship in the College of Arts and Sciences and the deans in the schools of Law and Forestry.

3. All weekly attendance reports shall be made in the same manner and referred to the deans and the proper committee.

4. All cases of persistent or flagrant absence or deficiency in scholarship shall be reported to the deans or to the committee on attendance or scholarship who, together with the instructor, shall deal with the offending student.
FELLOWSHIPS, SCHOLARSHIPS AND PRIZES

The sum of $6,000 has been set aside for the establishment of fellowships and scholarships as follows:

Ten scholarships, valued at $250, including tuition and fees. These fellowships should be open to the graduates of the University and of other colleges and universities maintaining good standards.

Twenty-five $100 scholarships, including tuition and fees. Open to college, university and normal school graduates, or to advanced students of promise. These scholarships are not open to students who may not be able to enter the junior year of the Arts and Science College.

Thirty-four scholarships in the Law School, giving free tuition to the holders, one for each county in the State. Scholarships belonging to counties having no candidates, shall be open preferably to Montana students and to students of limited means.

Twenty scholarships in the Department of Education, open to graduates of normal schools and colleges who wish to pursue advanced work in the Department of Education, these scholarships to be worth to the recipient $50 a year, including free tuition.

HONOR SCHOLARSHIPS

One student in each graduating class of each of the accredited high schools of the state is entitled to an Honor Scholarship in the University, provided he or she is recommended by the faculty of the high school as distinguished for scholarship. These scholarships exempt the holders from the payment of Matriculation fees throughout their four-year courses in the University.

BONNER SCHOLARSHIP

Mrs. E. L. Bonner of Missoula has generously endowed the Bonner Scholarship in honor of her husband, Mr. E. L. Bonner. It is awarded once in three years to that student who has most distinguished himself in scholarship during the Freshman year. The holder receives three hundred dollars annually for the remaining three years of his course in the University.

This scholarship is now held by Miss Bernice Selfridge of Helena, Montana. It will be awarded again in 1915.

KEITH SCHOLARSHIP

By the gift of John M. Keith of Missoula, a scholarship in
the University, amounting to fifty dollars, is to be given annually to one of the high school debaters, selected from the twelve members of the four district championship teams of the Montana High School Debating League. The income of the scholarship will be paid to the student for one year, in two installments; one at the beginning of the first semester; the other, at the beginning of the second semester of the first year of his enrollment in the University.

Applications for the scholarship, directed to the President of the University, should be accompanied by credentials showing the amount and quality of high school work done by the student, and by recommendations showing promise of the applicant’s future usefulness. The scholarship can be granted only to a student who was a member of a high school class graduating in the year in which it was awarded.

**CLARIBEL LEGGAT COUSE SCHOLARSHIP**

The Claribel Leggat Couse Scholarship established and supported by the College Club of Butte and endowed in 1914 by Mr. M. B. Couse of Butte, in memory of his wife, is a fund of $1,000 of which $250.00 may be lent each year to a woman student who is a graduate of the Butte High School and is recommended to the College Club of Butte by three teachers of that high school. Ample time is given for the repayment of this loan and no interest is charged during the four years of college residence.

**BUCKLEY PRIZE IN ORATORY**

This prize was founded by Dr. J. J. Buckley of Missoula in memory of his father, Mr. H. N. Buckley, and is awarded annually to the successful competitor in an oratorical contest, under conditions prescribed by the faculty. The amount of the prize is twenty dollars. It was won in 1913 by Mr. Payne Templeton of Missoula.

**ANNIE LEWIS JOYCE MEMORIAL MEDAL**

This prize was founded by Attorney M. M. Joyce of Missoula, in memory of his wife, and is awarded annually for the best essay, thesis or poem by an undergraduate. In 1913 it was won by Mr. George Armitage of Billings.

**BENNETT ESSAY PRIZE**

Mr. Philo S. Bennett of Bridgeport, Connecticut, set aside
by will $10,000 to be distributed among twenty-five colleges or universities to be selected by Hon. W. J. Bryan of Lincoln, Nebraska. The University of Montana received an endowment of $400, the annual proceeds of which will be given as a prize (in money or in a medal of equivalent value, at the option of the successful contestant) for the best essay by any student of the University, on some topic pertaining to good government.

The subject for 1913-14 is "The Cost of Living vs. the High Cost of Production."

THE 1904 CLASS PRIZE.

The endowment fund for this prize was donated by the members of the class of 1904, who, in rotation, name the particular excellence for which the prize shall be given. For the year 1904-05 it was awarded to the student holding the highest rank in the first year college class in Latin, and was won by Miss Cora Averill; for the year 1905-06 to the student representing the University State Oratorical Contest, won by Miss Olive Hall; for 1906-07, to the student making the greatest progress in Chemistry, won by Dean King; for 1907-08, to the student having the highest standing in Economics, won by Frederick Greenwood; for 1909-10, to the student making greatest progress in Greek, won by Miss Viola Golder; for 1910-11, to the student doing the best work in Geology, won by Mr. E. A. Winstanley; for 1911-12, to the best student in Elementary Chemistry, won by Mr. Rayleigh Gilchrist; for 1912-13, to the best student in Engineering, won by Mr. Royal D. Sloan.

MUSIC MEDALS

A medal is given annually in the Department of Music by Mrs. E. L. Bonner for advanced piano technique. It was awarded in 1911 to Miss Gladys Huffman of Butte.

THE C. A. DUNIWAY SCHOLARSHIP BOOKS

A fund of $400, established by former President Duniway provides standard books within the various fields of knowledge to be awarded annually to students distinguishing themselves by scholarship in the several departments. In 1913 these books were given as follows:

Biology, Mary Shull; Botany, Mary Shull; Chemistry, M. R. Nesbit; English, Carl Glick; Fine Arts, Nat Little; Geology, Paul Gervais; History and Economics, Gordon Watkins; Law, A. B. Hoblit; Latin and Greek, Payne Templeton; Literature, Alice
MISCELLANEOUS

UNIVERSITY PUBLICATIONS

Several series of Bulletins are published by the University, partly as official announcements and records, partly as contributions to science by various members of the Faculty.

For bulletins on special subjects, application should be made to the Registrar.

SOCIETIES

The whole body of students is organized in one society entitled the Associated Students of the University of Montana. This society, through appropriate committees, manages such general interests as athletics, oratory, debates, entertainments, etc.

Two literary societies, the Hawthorne and Clarkia, are open to students. The first-named society is composed of young men and the second of young women. Students will find membership in either of these societies helpful and pleasant.

Branches of the Y. M. C. A. and the Y. W. C. A. are organized in affiliation with intercollegiate associations, and carry on work for the religious life of the University.

Five musical organizations are in existence, the University Glee and Mandolin Clubs, composed of young men, the Music Club and the Sextette, composed of young women, and the University Orchestra. These organizations provide music for University events during the year, and furnish an opportunity for all students who have musical talent to cultivate it as well as to participate in the social pleasures pertaining to such organizations.

The Penetralia Society is an honor organization of women students, a non-secret society, devoted to advancing the interests of the University in every feasible way.

A Dramatic Club, a Writers’ Club, a Science Association, a Chemical Club, and a Pharmaceutical Society perform functions indicated by their titles.

DEBATING CONTESTS

By joint agreement with the Gonzaga University and Mon-
tana College of Agriculture and Mechanic Arts, debates between representative teams of two men each from each institution are held annually.

In 1914 the University of Montana was represented in the debate with Gonzaga by Mr. S. M. McHaffie and Mr. Alva Baird, and in the debate with the Montana State College of Agriculture and Mechanic Arts by Mr. Will Long and Mr. Payne Templeton. The University won both debates.

**PUBLICATIONS BY STUDENTS**

The Associated Students of the University publishes The Weekly Kaimin as a newspaper. The paper, through the effective efforts of its corps of editors, has become a permanent factor in the University life.

The Junior Class of each current year issues an annual entitled, "The Sentinel." This book is a valuable record of the activities of each year.

**ATHLETICS**

A Faculty Committee on Athletics, with the Director of Physical Education as chairman, has general oversight of athletic sports. The details of management are in the hands of the Executive Committee of the Associated Students.

The Gymnasium has an equipment of apparatus and baths. The athletic field, located in the northeast corner of the Campus, is now in excellent condition. There is a quarter of a mile cinder track, within which are located the baseball diamond and the football field. To the south are the tennis courts.

**ANNUAL INTERSCHOLASTIC MEET**

For eleven years the University has held annual interscholastic invitation meets for track and field contests on Montana field. Invitations to participate have been extended to all high schools in the state, except that in 1909 Missoula was entirely neutral ground, when the Missoula County High School assisted the University as host for visiting teams.

In determining and administering rules of eligibility for contestants the University has had the invaluable aid of the Montana State Interscholastic Athletic Association, now known as the Montana High School Athletic Association. This is a league of accredited high schools of the state, organized for the promotion and control of athletics.

Usually about twenty schools are represented in the annual
contests with from three to twenty contestants from each school.

To the athletic contests, a contest in declamation is added, with one representative from each school.

Great interest is taken in these contests and their influence in raising standards and unifying the schools by bringing them together in friendly rivalry has been very great.

The meet for 1914 was held May 13, 14, 15, 16.

HIGH SCHOOL DEBATING LEAGUE

A Debating League having for its object improvement in debate among students in high schools of the state was organized by high school principals and superintendents at a meeting held at the University on May 17, 1906. Among the provisions of the constitution is one that the president shall be a member of the Faculty of the University. Another is that the final contest shall occur at the University at or before the time of the Interscholastic meet. In 1914 it was held on May 13. The several series of contests have been held for seven years, beginning in 1907.

THE LIBRARY

The General Library, consisting of about 25,000 volumes and 9,000 pamphlets, occupies the main floor of the Library building.

Reference books, including general encyclopedias, dictionaries, indexes, and special reference works on history, literature, science, etc., are placed on open shelves in the reference room where they are accessible to all. Works selected by professors for supplemental reading in connection with class room work are "reserved" on special shelves for students in those classes.

Admission to the shelves is restricted to the Faculty, administrative officers, graduate students and members of the senior class; other students may be admitted upon recommendation of their instructors. Students are allowed to withdraw books from the Library under reasonable regulations.

The system of departmental libraries prevails to a limited extent, collections of books specially needed in connection with laboratories and class room work being deposited in several departments.

The Library receives over 400 periodicals, the current numbers of which are available in the reading room, as are newspapers and college exchanges. Through the courtesy of the edi-
tors a large number of the city and county newspapers of Montana are sent to the reading room for the use of students.

The Library is a designated depository of documents issued by the United States Government.

The Library is open from 8:15 a.m. to 5:30 p.m., and from 7:00 to 9:30 p.m., except on Saturday when the hours are from 9:00 a.m. to 12:30 p.m., and from 1:30 to 5:00 p.m. It is also open, for reading only, on Sundays from 2:30 to 5:00 p.m. Persons not connected with the University are free to use the books.

As a part of the educational system of the state, the University Library is glad to extend all possible assistance to the high schools of the state. Under reasonable regulations, books and pamphlets will be loaned upon request, and where it is impossible to loan material, reference lists or suggestions as to sources of information are gladly given.

Gifts are always gratefully received, and any one who is about to destroy pamphlets or periodicals is reminded that a Library can preserve and make useful much that is useless in a household. Material relating to Montana, by Montanans, or published in the state, is particularly solicited; also files of state papers, especially early issues, and early catalogues of the University.

THE MUSEUM

Owing to the lack of sufficient room for classes the museum has been temporarily distributed in various places. The space in the Library formerly used for the museum has been converted into a library and recitation room for the Law Department. The working collections are given space with the departments that make use of them. In the department of Geology and Mineralogy are several cases filled with ore specimens and fossils. The herbarium is in the Botany Department, and occupies a large space. The collection of insects, bird skins, a part of the shells, and most of the alcoholic materials is taken care of in the Department of Biology.

The collections of the Museum, from various sources, are as follows: A collection of over a thousand bird skins, almost entirely from the state; a collection of shells, partly collected in the state and partly through donations from several sources; a collection of plants, embracing about 3,000 species, with many thou-
sand duplicates, received largely through donations, by collecting and from the exhibit at Omaha; a collection of insects, partly through purchase, but largely by collection; a collection of fossils, almost entirely from the state, partly donated and for the remainder collected; a collection embracing money, historical relics, souvenirs and promiscuous articles; a collection of fishes, partly from the United States Fish Commission, the remainder collected in the state; a collection of fresh water entomostraca from the lakes and rivers of Montana; a collection embracing coals, rocks, concentrate samples, building stones, brick, tile and pottery, developed and produced in the state; a set of the series of educational rocks prepared by the United States Geological Survey; the Wiley collection of over a thousand species of Lepidoptera.

It is most earnestly requested that all who are interested in the University, and especially in the preservation of valuable material for scientific work, should take special pains to contribute to the Museum. Time and circumstances are fatal to nearly all specimens, but proper care in the Museum will secure their preservation. Correspondence is solicited concerning material which may be donated. All donations will be acknowledged, and the articles properly labeled and the donor’s name recorded.

EDUCATIONAL LIBRARY OF REFERENCE, SCHOOL TEXTS AND EXHIBITS

There is being built up in connection with the Department of Education in University Hall, an Educational Library of Reference, School Texts and Exhibits, designed to present illustrative materials of the entire educational field to the students of education in the University and to the teachers of the state. When finally completed it will contain in its several sections, (1) the best school texts in all elementary and secondary school subjects; (2) charts, maps, school supplies and such other illustrative material as may show the application of the newest and most advanced ideas in education and methods; (3) a carefully selected list of the best books on the psychology of learning, on the methods and art of teaching, on the growth and development of children, on educational psychology and the psychology of special methods in the several school branches, on mental and school hygiene, etc.; (4) old text books and materials illustrating the history and development of methods; (5) a collection of all national, state and city reports, the published proceedings of edu-
cational associations, and societies, copies of school laws, of the various countries and states, reports of Boards of Education, educational bulletins, and all general and special books of reference; (6) typical sets of text books used in German, Scandinavian and French elementary and secondary schools; (7) the catalogues of the leading universities, colleges, normal and technical schools of the world; (8) a complete set of the text books used in Montana schools, and such other materials as may show the progress made by the schools of the state; (9) classified bibliographies for all divisions and aspects of the educational field; (10) the reports and files of special studies of educational problems in the fields of child study, educational psychology, statistics and hygiene; (11) educational journals devoted to the printing of general educational news and results of current investigations of educational problems.
College of Arts and Sciences
DEPARTMENTS AND COURSES OF INSTRUCTION

In the following statements a "course" extends through one semester. One credit "hour" per week is the equivalent of about three hours of time spent in lectures or recitations and in study. Likewise three credit hours per week in a laboratory will be reckoned as one credit "hour."

These announcements are subject to necessary changes in details, especially as to the days of the week and hours of the day. If less than three qualified students apply for a particular course it may not be given.

Carefully revised schedules of days and hours for all courses are compiled and given to all students in the arrangement of the student's program.

BIOLOGY

The work of the department includes general zoology, physiology and hygiene, anatomy and physiology, bacteriology, histology, entomology, embryology and photography.

Four rooms in University Hall are given to these subjects, besides a dark room and two store rooms. Individual desks and apparatus are provided. The rooms are airy and have an abundance of light.

There are about 30 compound microscopes, besides the various pieces of special and general apparatus found in a well-regulated laboratory, preserved material for study, glassware, etc. The apparatus is all new and of late pattern. Demonstration material, charts, library books, museum specimens and supplies of various kinds are provided in sufficient quantity to enable the student to carry any work offered with good success. Every student receives individual attention.

MAJOR REQUIREMENTS.

Students doing their major work in Biology will be required to take courses 11 to 15, inclusive, and Seminar work during the senior year to the amount of four credit hours. They must also take two years of Modern Language and one year of Botany. A year each in Chemistry and Physics is strongly recommended. A minimum of 30 hours credit in Biology will be required.
COURSES OF INSTRUCTION.

11. **General Biology.**

An introduction to the study of living things, illustrated by a study of invertebrated animals, and dealing with the fundamental laws governing living organisms. The course consists of text-book study, lectures, library references and laboratory work, the latter requiring one-half of the time. In the laboratory attention is given to manipulation of apparatus as well as to the study of specimens. The work of the first semester deals with the lower forms of life from Protozoa to Arthropoda, and includes a study of the structure, habits and distribution of the animals from the zoological standpoint. The idea of development according to evolution is kept prominent, and a consistent effort is made to stimulate and develop powers of thought. This and Course 12 make a continuous course for the year. Open to all students.

First semester; 4 credit hours; lecture T. Th., 10:30 and 11:30. Laboratory, M. W. or T. Th., 1:30.

12. **General Biology.**

A continuation of the preceding, but dealing largely with the vertebrates. During the spring excursions are taken and study made of local animals as they live in the environment furnished by the locality. Attention is given to the local fauna and its origin. Open to all students.

Second semester; 4 credit hours; lecture, T. Th., 10:30 and 11:30; Laboratory, two afternoons, M. W., or T. Th.

13. **Animal Ecology.**

The work of the course deals with the relationship of animals to their surroundings, adaptability of structure to modes of life, the effects of climatic and other conditions upon growth and structure, and like topics. The museum collections will be extensively used both in the laboratory and to illustrate the lectures. The study will consist of lectures, recitations, library and laboratory work, with field excursions. Prerequisite: Biology 11 and 12.

First semester; 4 credit hours; lecture and recitation, T. Th., 8:30; laboratory, time to be arranged.

14. **Animal Ecology.**

This is a continuation of Course 13 and with it makes a continuous study for a year. During this semester attention will be devoted to distribution, isolation and migration, leading to an
understanding of the origin of the present fauna in various places on the earth.

Second semester; 4 credit hours; lecture and recitation, T. Th., 8:30; laboratory, time to be arranged.

15. Economic Zoology.

A study of the economic value of animals with reference to man. The work will include both benefits and injuries. In the former will be included the relation of insects to plants, the value of birds, the value of furbearing animals, the microscopic organisms of the sea and fresh water, and kindred topics. With reference to injuries some of the topics taken up will be the disease-producing animals, wood-boring beetles and various injurious insects; the injurious birds; plagues of animals; and the like. This course will make practical application of zoological knowledge. One year of Biology is a prerequisite.

Four credit hours, two laboratory periods.


A study of the life history of various protozoans, their structure, habits, reproduction, distribution; their relation to animals and man as producing diseases, and remedies therefor. A textbook and numerous library references will be used. May be taken with or without laboratory work. Prerequisite: Biology 11.

Second semester; 3 or 5 credit hours; lectures and recitations, T. Th., 8:30; Laboratory; time to be arranged.

17. Entomology.

A study of the anatomy and classification of insects, the orders and families, with use of keys for the determination of species; special attention will be given to beneficial and injurious insects. Two recitations and one to three laboratory periods. Open to all students.

First semester; 3 to 5 credit hours; recitation, M. F., 8:30; laboratory, time to be arranged.

18. Entomology.

A continuation of course 17. Outdoor work will be required when the season opens. The collections must be identified, labelled and properly prepared for the cabinet. Much time will be given to injurious insects. Open to all students, but must be preceded by 17.

Second semester; 3 to 5 credit hours; recitation, M. F., 9:30; laboratory, time to be arranged.
19. General Bacteriology.

This is a general course as outlined by the standard textbooks which includes lectures, recitations, discussions and laboratory work. The course deals with the general phases of the subject, such as origin and history, sterilization, culture media separation of different species, methods of staining and mounting, and microscopic methods, structure, development and composition of bacteria, disinfectants and antiseptics, and effects of bacterial growth. Special species of pathogenic bacteria will be studied from the standpoint of their characteristics, pathogenesis, and immunity. In the laboratory the theory is put into practice. The work has to deal with sterilization of glassware, preparation of culture media, staining, mounting and microscopical examination of the organisms, about thirty different species. Observations are made of the growth and development of these organisms on different media. Prerequisite familiarity with the microscope, general chemistry and general biology.

First semester, 5 credit hours; lecture M. W. 9:30; laboratory, time to be arranged.

20. Advanced Bacteriology.

This is a continuation of general bacteriology and will take up the study of higher bacteria, the pathogenic protozoa as to their characteristics, developmental stages, pathogenesis for man and animals, and diseases caused by them. The study of the bacteriology of milk, milk products, air, soil, water, arts and industries. The bacterial diseases of plants will also be discussed. Laboratory work will consist of observations of the growth, development and effects caused by these organisms, also the analysis of milk, water, air and soil from a bacteriological standpoint with the use of a bacteriological key. Pre-requisite: General Bacteriology.

Second semester; 2 credit hours, time to be arranged.


This is a course recommended to all who expect to teach or those interested in public health. It is the aim of this course to impress upon students the importance of following out hygienic principles and to show what steps have been taken in this direction and the good society has received from them. This also includes the study of health and disease, taking up the causes, predisposing and direct; resistance, prophylaxis, etc; epidemics
with reference to source, spread and means of control; discussion of the value of antitoxins, disinfectants and quarantine. Methods of ventilation, water and milk supply filtration, drainage and sewage disposal will also be considered. A separate study will be made of the most common contagious and infectious diseases from an hygienic standpoint.

Open to all students. Second semester, 2 credit hours, T. Th., 8:30.

22. Normal Histology and Microscopical Technique.

This study is recommended for those who wish to teach in biology or enter a medical school and will consist of practical laboratory work with occasional lectures. The work will include the study of elementary and specialized animal tissues, together with practice in preserving, hardening, staining, embedding, sectioning and the mounting of these different tissues. Pre-requisite, General Biology 11 and 12; General Chemistry, 11 and 12.

First semester; 3 credit hours, to be arranged.


An advanced course of the structures and functions of the human body both as a whole and in part. It consists of lectures, recitations and laboratory work but may, by special permission, be taken without the laboratory work. The course takes up the subject from different viewpoints, mainly: evolution; the relation of the human body to lower animal life; development of specialized tissues and organs; the skeleton; muscles; and other structures with reference to the division of labor; function of respiration, circulation of blood and lymph, assimilation and dissemination of food and drink, metabolism, heat mechanism, the nervous system and the organs of special sense; eye, ear, etc. Some first aid principles in accidents will be discussed. In the laboratory will be studied the formation of different typical body tissues, the blood, the skeleton, eye, ear, brain, heart, liver, lungs and other organs of the body.

Open to all students. Second semester; 5 credit hours with laboratory work; 3 without laboratory. Lectures and recitations M. W. F. 9:30 to 10:30. Laboratory periods to be arranged.


A study of the formation and development of vertebrates which includes lectures, recitations and laboratory work. This includes the general conceptions of vertebrate type of structure;
the study of embryonal cells and processes; karyokineses; germ cells and germ-layers; the different developmental stages or life cycle of vertebrates with the origin and formation of all specialized parts of the animal. The laboratory work will consist of the study of a definite vertebrate (probably the chick) in all its developmental phases; method of obtaining embryos, incubation, hardening, staining, sectioning and mounting of embryonal tissue and finally the microscopical study of sections of different parts of embryos taken at definite intervals of time. Prerequisite: General Biology 11 and 12, 3 credit hours; time to be arranged. Second semester.

25. Photography.

A study of lenses, cameras, paper, development, practical demonstration in printing, toning, developing, negative making, and the various manipulations necessary to produce a completed and perfect picture. This is not an elementary course, but demands a knowledge of both physics and chemistry, which are requisite for admission. No attempt is made at portraiture. During the first semester a series of negatives is made by each student, with different lenses, and on plates of different kinds. This is followed by the use of four or five different kinds of paper, with different methods of treatment. This subject must be chosen for the year.

First semester; 2 credit hours; lecture F., 8:30; laboratory, F., 1:30.


Continuation of 25, which is a prerequisite. Laboratory work with class demonstrations or lectures. Each student works alone at hours to be arranged. The work is devoted to the various methods in practical photography. Copies are made of black and white printed pages and illustration, of colored prints, oil painting and water colors, and of such varied subjects as may be found. Lantern slides, transparencies, bromide enlargements and other positives are made. Scientific specimens and interior subjects of many different kinds are photographed.

Second semester; 2 credit hours; time to be arranged.

27. Biology.

A course of two hours for students in Forestry.

First semester; 2 hours credit; time to be arranged.
28. **Entomology.**

A course of two hours for students in Forestry. Second semester; 2 hours credit; hours to be arranged.

29. **Forest Zoology.**

A course of two hours for students in Forestry. First semester; 2 hours credit; hours to be arranged.

30. **Biological Seminar.**

Reviews of current and recent literature intended to give a comprehensive survey and knowledge of the trend of thought and study in biological studies. Continued during the second semester. Open to all advanced students and required of all students doing major work in the department. First semester; 2 credit hours; time to be arranged.

31. **Biological Seminar.**

A continuation of Course 30. A thesis will be required of all seniors, involving a study of some phase of animal life and requiring investigation on the part of the student. Second semester; 2 credit hours; time to be arranged.

32. **Research.**

An opportunity will be given to graduate students and others of sufficient fitness to pursue original investigations within the facilities of the department as to laboratories and material. Details will be arranged with individual students. Both semesters; credit and time to be arranged.

**Biological Station.**

In addition to the courses here offered, students are referred to the description of the work of the Biological Station. The courses of summer work are open to all who may choose to attend, and University credit is given for the amount of equivalent work satisfactorily completed during the summer.

**SUGGESTED SCHEDULE FOR THOSE WHO WISH TO TAKE UP MEDICINE**

**Freshman.**

**First Semester—**

Required English, 3 units. 
Physical Education, ½ unit. 
Chemistry. 
Biology. 
German.

**Second Semester—**

Required English, 3 units. 
Physical Education, ½ unit. 
Chemistry. 
Biology. 
German.
Sophomore.

First Semester.
Physical Culture, ½ unit.
Physics.
Qualitative Analysis.
German.
Elective from the following:
    Biology or Botany.
    Geology.
    History.

Second Semester.
Physical Culture, ½ unit.
Physics.
Qualitative Analysis.
German.
Elective from the following:
    Biology or Botany.
    Geology.
    History.

Junior.

Psychology.
Economics or Sociology.
Bacteriology.
Electives from the following:
    Biology.
    Geology.
    Botany.
    French.
    Physics.
    Public Speaking.
    Chemistry.

Psychology.
Economics or Sociology.
Physiology or Protozoology.
Elective from the following:
    Embryology.
    Botany.
    Public Speaking.
    French.
    Physics.
    Geology.
    Chemistry.

Senior.

Organic Chemistry.
Logic.
Histology.
Elective to make up the required number of hours.

Embryology.
Ethics.
Elective to make up the required number of hours.

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**BOTANY MAJOR REQUIREMENTS**

Students doing their major work in Botany will be required to take Botany 11, 12, 13, 14, 17, 18, 19, inclusive, and Seminar work to the amount of four hours during the senior year.

Candidates for the Teacher’s Certificate in this department must have completed acceptably courses 11, 12, 13, 14.

**COURSES IN BOTANY.**


This course is offered with the object of giving a general review of the vegetable kingdom. It consists of lectures and laboratory work on typical plants representing the various natural groups, such as the algae, fungi, mosses, ferns, etc. The work of the first semester deals with the lower forms of plant life up to the ferns, and will involve a study of the form, structure and habits of these plants from the standpoint of adaptation, and of their relationship from the standpoint of evolution. This course forms with 12 the continuous work of a year.

First semester; 3 credit hours; T., 9:30; laboratory, M. W., 1:30.

The second course takes up the seed plants from the same points of view as course 11. Typical members of various families and genera are studied, outlining the classification of the principal groups. Field trips will constitute a part of the work.

Second semester; 3 credit hours; T., 9:30; laboratory M. W., 1:30.

13. Plant Histology.

A study of the structure of plants from a morphological standpoint, including the development of organs and the differentiation of tissues. This course furnishes also an introduction to the methods of microtechnique. Students are enabled to obtain a collection of slides for their own use. Prerequisite: Botany 11 and 12 or equivalent.

First semester; 3 credit hours; time to be arranged.


A study of plants from the standpoint of their composition, nutrition, growth, movements, reproduction, etc. The relation of plants to air, light, water and the various forces of nature is presented in lectures and laboratory work. This course is experimental in character, involving the use of apparatus for qualitative and quantitative study.

Second semester; 3 credit hours. Prerequisite: Botany 11, 12 and 13, or equivalent. Friday, 8:30; T. Th., 1:30.

15. Histology of Woody Plants.

The structure and composition of lignified tissues and the minute structure of plants as related to forest physiology and ecology. The aim of this course is to present the anatomy of the tree so as to prepare the way for a fuller study of the functions of its organs and tissues.

First semester; 3 credit hours; time to be arranged. Prerequisite: Botany 11 and 12.


Special consideration of the functions of growth, absorption, nutrition, sap-movements, reproduction, etc., in trees. Designed especially for forestry students. This course follows 15, and constitutes the continuous work of a year.

Second semester; 3 credit hours; time to be arranged.
17. **Morphology.**

An advanced course in the study of special features of the structure and form of various groups of plants, more or less adaptable to the needs or tastes of individual students. Involves some special technique in the matter of sectioning, staining, etc. A continuation of Courses 11 and 12, which are necessarily prerequisites.

Both semesters; 3 or 4 credit hours; time to be arranged.

18. **Systematic Botany.**

Under this title is treated the classification of flowering plants. The purpose of this course is to familiarize the student with the characters of the principal families of this group, especially those represented in the western flora. The course also treats of the distribution and relationship of the species. Prerequisite: Botany 11 and 12 or equivalent.

Both semesters; credit and time to be arranged.

19. **Systematic Botany.**

Critical studies of more or less restricted groups. This may include work upon the lower orders of plant life. Prerequisite: Botany 18.

Both semesters; credit and time to be arranged.

20. **Dendrology.**

The work contemplated under this subject is the study of the classification of the forest trees of the United States and Canada, based upon the study of their form, silvical characters, distribution and structural and morphological features. The work in this subject extends through three semesters. The divisions of the course being 20a, 20b and 20c, two credit hours in each division, six hours for the whole course. Time to be arranged.

21. **Forest Ecology.**

The side of forest botany presented in this course deals with the effect of climate and soils upon distribution, local and general, and such factors as have to do with the growth and life histories of different species.

Second semester; 3 credit hours; W., 10:30; laboratory, T. Th., 1:30.

22. **Structure and Classification of Woods.**

Lectures and laboratory work on the structure and physical
properties of woods; identification of woods and examination of gross and microscopic structure; the uses of various woods, their durability, preservation, etc.

First semester; 3 credit hours; time to be arranged.

23. Forest Pathology.

A course dealing mainly with diseases of timber, their recognition and treatment. The various organisms which affect living trees and structural timbers studied from a systematic and biological standpoint. Lectures, laboratory and field work.

Second semester; 3 credit hours; time to be arranged.


Reviews of recent literature designed to give an outlook upon the field of botanical science.

First semester; 2 credit hours; time to be arranged.


A continuation of Course 24. A thesis will be required upon some topic in connection with the work involving a critical survey of botanical literature in some special line.

Second semester; 2 credit hours; time to be arranged.

Note—Courses 24 and 25 are open only to seniors, but are required of all students doing major work in the department.

GRADUATE WORK IN BOTANY

Montana is a rich field for work in several lines of botanical research, dealing especially with problems of taxonomy and ecology. A great variety of physiographic conditions is to be seen in the region of Missoula, and Western Montana generally, and affords special opportunity to students in the flora of its valleys, plains and mountains. As to the lower groups of plant life, Montana is almost a virgin field. Forest conditions also offer special opportunities for interesting and profitable research.

GRADUATE COURSES

31. Special Morphology.

A course designed for the intensive study of plant structures, dealing with the life histories of plants in various groups, the development of organs and tissues, and morphological conceptions of the present day.

Both semesters; 4 or 5 credit hours; time to be arranged.
32. Cytology.

Study of cell structures in detail. Special technique. Literature of the subject.

Both semesters; 4 or 5 credit hours; time to be arranged.

33. Research.

Opportunity is given for the pursuit of original work in the fields of structural and morphological botany, in ecology and in forestry, by graduate students and others showing special fitness for the work.

Both semesters; credit to be arranged.

CHEMISTRY

MAJOR REQUIREMENTS.

Students who elect Chemistry as a major subject must complete, as a minimum, courses in Chemistry amounting to 36 credit hours. These courses should be distributed as follows: General Chemistry, 8 hours; Qualitative Analysis, 4 hours; Quantitative Analysis, 8 hours; Organic Chemistry, 8 hours; Physical Chemistry, 8 hours.

SUPPLEMENTARY COURSES.

Students who elect Chemistry as a major subject should take, in addition to the work outlined above, English 11 and 12, Physics 10 and 11 and should acquire a reading knowledge of scientific German and a knowledge of elementary mathematics including the calculus. Courses in French and in Mineralogy and Crystallography are also desirable.

COURSES OF INSTRUCTION

11 and 12. General Chemistry.

A study of the fundamental laws of chemistry and of the properties and the relations of the more common elements and their compounds. Text, MacPherson & Henderson, A Course in General Chemistry. Lectures, laboratory work and quizzes. Prerequisite: High school physics.

Both semesters; 4 hours credit.

Note—Chemistry 11 and 12 form a continuous course throughout the year. Credit for Chemistry 11 will not be given until the student has completed Chemistry 12.

13 or 14. Qualitative Analysis.

A study of the methods for the detection and separation of
the principal bases and inorganic acids, and of the scientific principles upon which these methods are based. Lectures, laboratory work and quizzes. Prerequisite: Chemistry 11 and 12 or their equivalent.

Either semester; 4 credit hours; time to be arranged.

15 or 16. Quantitative Analysis.

An introduction to quantitative methods and the chemistry upon which they are based. Students perform simple analyses with the use of apparatus ordinarily employed for gravimetric and volumetric analysis. Lectures and laboratory work. Prerequisite: Chemistry 11, 12 and 13 or 14.

Either semester; 4 credit hours.

17. Organic Chemistry.

A systematic study of the constitution and properties of the carbon compounds. Lectures and laboratory work. This is a short course intended for students in Pharmacy and Home Economics. Text: Text Book of Organic Chemistry, Holleman-Walker. Prerequisite: Chemistry 11 and 12.

First semester; 4 credit hours.


A more extended course than the above, for students who take Chemistry as a major.

Both semesters; 4 credit hours.

Note—Chemistry 18 and 19 form a continuous course throughout the year. Credit for Chemistry 18 will not be given until Chemistry 19 is completed.

20. Physiological Chemistry.

The chemistry of the human body; digestion, secretion, the urine, blood, etc. Lectures and laboratory work. Text: A Text Book of Physiological Chemistry, Hammarsten-Mandel; and Practical Physiological Chemistry, Hawk. Prerequisite: Chemistry 11, 12 and 17.

Second semester; 4 credit hours.

24 and 25. Physical Chemistry.

A study of the more important results, methods and problems of theoretical chemistry. Lectures, laboratory work and reports. Chemistry 24 and 25 form a continuous course. Those who elect 24 must elect 25 in the following semester. Prere-
quisite: Chemistry 11, 12, 13, Physics 10 and 11. An elementary knowledge of calculus is desirable.

Both semesters: 4 credit hours; time to be arranged.


Prerequisite: Chemistry 24 and 25.

Second semester; credit to be arranged.

27 or 28. Advanced Quantitative Analysis.

It is the object of this course to increase the student's knowledge of the foundations upon which analytical chemistry rests. The laboratory work is designed to further this aim rather than to give the student a wide experience in analytical technique. Lectures, laboratory work, reading and reports. Prerequisite: Chemistry 15 or 16.

Either semester; credit to be arranged.

29. Technical Chemistry.

A course of lectures on the manufacture and uses of chemical products, and upon the application of chemistry to manufacturing, engineering, and the useful arts. Prerequisite: Chemistry 11, 12 and 17.

First semester; 3 credit hours; time to be arranged.

30. Technical Analysis.

The analysis of such bodies as are met with in commercial work. Analysis of minerals, clays, iron and steel, foods, water, fuel, gas, brick, cement, etc. The work may be to some extent adapted to the tastes of the individual student. Chiefly laboratory work. Prerequisite: Chemistry 15 or 16.

Second semester; credit to be arranged.

34. Foods.

The testing of foods for purity and quality. Lectures and laboratory work. Text: Food Inspection and Analysis, Leach. Prerequisite: Chemistry 11, 12, 13, 15 and 17.

Second semester; 4 credit hours.

35. Textiles and Dyeing.

A study of the various classes of fabrics and dyestuffs, with application in the laboratory to cushions, hangings, scarfs, etc. Text: Dyes and Dyeing, Pellew.

Second semester; 1 credit hour.
36. History of Chemical Theories.

This course is designed for students who specialize in chemistry and also for advanced students of other sciences and of philosophy, who desire an acquaintance with present chemical theories, but who have not time to become specialists in chemistry. The course seeks to give a clear insight into the present status and value of chemical theories through an examination of their origin and historical development. Lectures and reports. Prerequisite: An elementary knowledge of inorganic and organic chemistry.

First semester; 3 credit hours.

40. Fire Assaying.

Sampling and grinding of ores; fire assay for silver, gold, lead and copper. Chiefly laboratory work. Prerequisite: Chemistry 11 and 12.

Second semester; 2 credit hours.

41. Wet Assaying.

Rapid processes, chiefly volumetric, for the analysis of minerals and ores. Chiefly laboratory work. Prerequisite: Chemistry 15 or 16.

Second semester; credit to be arranged.

42. Metallurgy of Iron, Steel and Lead.

Lectures and reports.

First semester; 3 credit hours.

43. Metallurgy of Copper.

Lectures, reports and excursions.

Second semester; 3 credit hours.

Advanced Courses in Chemistry and Courses of Research.

The department of chemistry is prepared to arrange more advanced courses in Inorganic, Analytical, Organic and Physical Chemistry for students who are properly prepared. Courses of Research in Analytical and Physical Chemistry will be arranged for students who have the requisite training and experience.

ECONOMICS AND SOCIOLOGY

The courses in Economics and Sociology are designed to fit the needs of those who desire to study law, to prepare themselves for business, or to increase their general culture.
Students who make this department their major should acquire a reading knowledge of German and French. They should also choose as many of their electives as possible from Mathematics, Biology, History and Psychology.

COURSES IN ECONOMICS AND SOCIOLOGY.

10 and 11. Economics.

The historical analysis of industry and property; the development of the modern industrial organization; the processes of the production and the distribution of wealth; the laws of profits, interest, rent and wages; the relation of recent economic changes to the fundamental laws of economics; illustration of economic principles from current economic life.

First and second semester; 3 credit hours; M. W. F., 10:30.

12. Money and Banking.

The nature and the functions of money; history and present organization of the American monetary system; the theory of credit; history and description of the American banking system; banking methods; the conditions of a sound currency system; present financial problems.

First semester; 2 credit hours; T. Th., 9:30.


The theory of finance; public expenditures; sources of revenue; systems of taxation; problems of taxation; financial administration and policy.

Second semester; 2 credit hours; T. Th., 9:30.


The causes and forms of American Corporations; the promotion, financeering, incorporation, and capitalization of corporate consolidations; stock speculation, relations of industrial corporations to international competition; receiverships and reorganizations; social and political effects of corporations.

First semester; 2 credit hours; T. Th., 9:30.

15. Trust Problem.

The causes and the development of monopolistic industrial organization; the organization and methods of trusts; legislation affecting trusts; the control of monopoly, legal and social.

Second semester; 2 credit hours; T. T., 10:30.
17. General History of Commerce.

The spread of ancient peoples and their commerce and trade routes, the mediaeval trade and colonization, the growth of commercial policies (mercantilism, free trade, protection), modern trade expansion, rail and waterways, and the international market of the present.

First semester; 2 credit hours.


The growth of transportation and western settlement, the highway, canal, domestic shipping, merchant marine, and the development of the railroad system of the country. Some time will also be given to the railway problems of the present day.

Second semester; 2 credit hours.


A general survey of ancient industry, commercial activity, agriculture, and colonial policy, the feudal system and town industry of the middle ages, and the economic development of Europe resulting from the industrial revolution. Prerequisite: Economics 10 and 11.

First semester; 2 credit hours.

20. The Labor Problem.

A study of the condition and claims of labor, the development of labor unions, and their relation to the state.

Second semester; 2 credit hours.

21 and 22. Sociology.

A study of the development of the social organization, in four parts. (1) Primitive society and fundamental social factors; (2) the development of civilization and of democracy; (3) social psychology and social control; (4) social policy and the principles of orderly progress.

First and second semesters; 2 credit hours; T. Th., 9:30.


An application of the principles of economics and sociology to the study of current questions and institutions; theories and institutions for the betterment of economic and social organization, “individualism,” socialism, the development of industrial organization, corporations and labor unions; legislation affecting industry and property; philanthropy; the church and social
problems, social settlements; social education, constructive phil-
anthropy. Prerequisite: One year in history and economics.
Both semesters; 3 credit hours; M. W. F., 8:30.

Studies in selected topics, and the discussions of student re-
searchers.
Both semesters; 2 credit hours; T. Th., 11:30.

GRADUATE COURSES IN ECONOMICS AND SOCIOLOGY.

32. Economic Development of Montana.
A study of the agricultural, mining and labor development
of the state. The materials dealing with Montana’s exploitation
will be examined. The work will be partly in the nature of a
seminar and partly lectures.
Both semesters; 2 credit hours; Fr., 2:30-5:30.

34. Social Problems of Europe.
A lecture and seminar course dealing with the present-day
problems which confront Europe, especial study being made of
social conditions in Great Britain.
Both semesters.

EDUCATION

Students desiring to prepare for Educational Administra-
tion as Principals and Superintendents should major in Educa-
tion. Those desiring to become teachers of a special subject in
high schools should major in that respective department. Major
students in Education, in addition to the requirements for the
University Certificate of Qualification to Teach, will be required
to take courses 13, 18, 21, 22.

Note—The courses in General Psychology or their equiva-
lents are a prerequisite to work in education.

11. History of Education.

This course gives a general survey of the evolution of educa-
tional ideals and the development of school systems in their rela-
tion to the history of civilization from the period of the earliest
cultural nations to the present time, including the history of
education in America.
First semester; 4 credit hours.
12. **Principles of Education.**

The meaning of education will be considered from the standpoints of biology, anthropology, sociology, neurology and psychology. Present-day problems and educational processes, aims and purposes and principles of general method will be considered in relation to their historic and scientific setting.

Second semester; 2 credit hours.

13. **School Supervision.**

A study of practical problems in elementary and secondary education, the organization and management of schools, courses of study, electives, correlation of studies, promotions, discipline, teachers' meetings, etc.

Second semester; 2 credit hours.

14. **Educational Psychology.**

The psychological facts and laws underlying learning and development will be considered. Special attention will be given to the nature of individual differences, and to the psychology of adolescence and child development.

Second semester; 2 credit hours.

15. **The High School, Its Evolution, Organization, Management and Problems.**

The development of the American high school and of foreign secondary school systems will be studied to give perspective for a practical consideration of the problems of the high school and its place in the educational system. The psychology of adolescence, and the development of youth as related to such problems as attendance, interest, discipline, ideals, the formation of character, etc., will be considered.

First semester; 3 credit hours.

16. **Observation and Practice Teaching.**

Lectures on the organization and administration of the high school. Systematic observation of classroom work, weekly conferences for the discussion of observations. Preparation of lesson-plans and practice teaching under the supervision of the Department of Education and critic teachers. Carried on in cooperation with the Missoula County High School. Prerequisite: Thirteen Hours in Education.

Second semester; four hours per week; time to be arranged.
17. School Hygiene.

The hygienic aspects of school architecture and equipment and the more important aspects of mental hygiene of instruction, including such topics as tests of vision, hearing and fatigue, recreation, habits of study and teaching, the hygiene of the various school subjects, etc.

First semester; 2 credit hours.

18. Educational Administration.

A course designed primarily for graduate and advanced students. This will deal with administrative problems of city and county school systems and the administration of such specific types of education as high schools, normal schools, vocational education for defective and subnormal children. A special study of the methods and results of recent scientific studies of school administration will be made, including school finance; promotion, retardation and elimination; causes and conditions of efficiency in teaching; and the measuring of education products.

First or second semester; 2 or 4 credit hours.

19 and 20. Pedagogical Seminary.

Designed for graduate and advanced students of education. Members meet once a week for discussion of a general topic selected at the beginning of each semester. A part of the time will be given to a critical consideration of current technical educational literature.

By special arrangement; credit and time to be arranged.


An advanced course for students who have completed Education 14. This course will deal with the nature and development of the mind during childhood and adolescence with special reference to the meaning of these facts to the educator. Opportunity will be given for the comparative study of the work of leading thinkers and investigators and for a study of special topics.

Credit and time to be arranged.

22. Administration of City Schools.

A study of the educational, financial and administrative principles underlying city school systems. Attention given to problems of administrative policy, revenue, economy of time, curriculum, employment and tenure of teachers, and the rela-
tion of the city school to supplementary agencies in public education.

Either semester; 2 credit hours.

**Suggestive Schedule of Courses for Prospective Teachers.**

**First Year's Work**

<table>
<thead>
<tr>
<th>First Semester, 15½ to 16½ Hrs.</th>
<th>Second Semester, 16½ to 17½ Hrs.</th>
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<tbody>
<tr>
<td>Science or Mathematics.............3 Hrs.</td>
<td>Science or Mathematics.............3 Hrs.</td>
</tr>
<tr>
<td>Modern Language...................4 or 5 Hrs.</td>
<td>Modern Language...................4 or 5 Hrs.</td>
</tr>
<tr>
<td>English............................3 Hrs.</td>
<td>English............................3 Hrs.</td>
</tr>
<tr>
<td>Gymnasium..........................½ Hr.</td>
<td>Gymnasium..........................½ Hr.</td>
</tr>
<tr>
<td>History or Economics...............3 Hrs.</td>
<td>History or Economics...............3 Hrs.</td>
</tr>
<tr>
<td>Electives.........................2 Hrs.</td>
<td>Electives.........................2 to 3 Hrs.</td>
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**Second Year's Work**

<table>
<thead>
<tr>
<th>First Semester, 16½ to 18½ Hrs.</th>
<th>Second Semester, 16½ to 18½ Hrs.</th>
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<tbody>
<tr>
<td>Major Subject.....................4 or 5 Hrs.</td>
<td>Major Subject.....................4 to 5 Hrs.</td>
</tr>
<tr>
<td>Language...........................3 Hrs.</td>
<td>Language...........................3 Hrs.</td>
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<tr>
<td>Literature or Philosophy..........3 Hrs.</td>
<td>Literature or Philosophy..........3 Hrs.</td>
</tr>
<tr>
<td>Psychology*........................3 Hrs.</td>
<td>Psychology*........................3 Hrs.</td>
</tr>
<tr>
<td>Electives...........................2 to 5 Hrs.</td>
<td>Electives...........................2 to 5 Hrs.</td>
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<tr>
<td>Gymnasium...........................½ Hr.</td>
<td>Gymnasium...........................½ Hr.</td>
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**Third Year's Work**

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<thead>
<tr>
<th>First Semester, 16½ to 18½ Hrs.</th>
<th>Second Semester, 16½ to 18½ Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Subject.....................5 to 9 Hrs.</td>
<td>Major Subject.....................5 to 9 Hrs.</td>
</tr>
<tr>
<td>History of Education*............4 Hrs.</td>
<td>Principles of Education*...........2 Hrs.</td>
</tr>
<tr>
<td>Electives and Minors.............5½ to 7½ Hrs.</td>
<td>Educational Psychology*.............2 Hrs.</td>
</tr>
<tr>
<td>.......................................5½ to 7½ Hrs.</td>
<td>Electives and Minors................</td>
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**Fourth Year's Work**

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<tr>
<th>First Semester, 16½ to 18½ Hrs.</th>
<th>Second Semester, 16½ to 18½ Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Subject.....................5 to 9 Hrs.</td>
<td>Major Subject.....................5 to 9 Hrs.</td>
</tr>
<tr>
<td>School Hygiene*...................2 Hrs.</td>
<td>Special Method.....................1 Hr.</td>
</tr>
<tr>
<td>High School*.......................3 Hrs.</td>
<td>Observation Work*................4 Hrs.**</td>
</tr>
<tr>
<td>Electives and Minors.............4½ to 6½ Hrs.</td>
<td>Electives and Minors...............</td>
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<tr>
<td>.......................................4½ to 6½ Hrs.</td>
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*Subjects required in Department of Education for Teachers' Certificate of Qualification to Teach.

**The course in Observation and Practice is not included in the 122 hours required for the A. B. Degree.

**English, Literature and Journalism**

Students who wish to make English and Literature their major department are required to take courses 11, 12, 15, 16;
six (6) hours from courses 19 to 26; seventeen (17) hours from courses 13, 14, 17 to 40, 61 to 75.

Students who wish their teacher's certificate in English must take the work outlined above for a major in English and, as part of it, courses 36, 63.

Students who wish to make English their minor must take courses 11, 12, 15, 16 and six hours from courses 13, 14, 17 to 40, 61 to 75.

All students are advised to elect two courses in Public Speaking and English History as their restrictive election in History.

**INTRODUCTORY AND REQUIRED COURSES**

**Note**—On the Wednesday following registration all Freshmen will write a preliminary English examination to determine their required English work. Those who prove to be seriously deficient will be registered only for English A; those less deficient will be registered for English 11 and English A; those who pass the examination satisfactorily will be required to take only English 11 and 12. At the end of two weeks such readjustment of registration may be made as proves desirable.

A. **Correct English.**

Drill in spelling, punctuation, grammar and simple sentence structure. This course is provided for the assistance of any students deficient in these particulars and will be required of all Freshmen whose work in English 11 shows the necessity of this course.

First semester; no college credit.

11. **Freshman English.**

A study mainly of exposition, with oral themes, weekly written themes, and assigned readings. Individual conferences at frequent intervals. Required of all Freshmen.

First semester; 3 credit hours.

12. **Freshman English.**

A continuation of course 11. The study of exposition continued, and of simple narration and letter writing. Individual conferences at frequent intervals. Required of all Freshmen.

Second semester; 3 credit hours.

**Note**—For the present Freshmen English is not required
from students in the 2-year Pharmacy course, but they are required to take the preliminary examination and, if deficient, English A.

13. Introduction to Literature.
   Elementary work in the essay, poetry, drama and fiction. Open to all students.
   First semester; 2 credit hours.

   Selections from the verse of American poets. Open to all students.
   Second semester; 2 credit hours.

15, 16. Sophomore English.
   This course is conducted in part by lectures, giving an account of movements, of tendencies, of men and books, but chiefly by the careful study in class of selected masterpieces, representative of different periods, and by collateral reading, both prescribed and recommended. Fortnightly written reports on this outside reading are required. Recommended for all students who have completed courses 11, 12.
   Both semesters; 3 credit hours.

17. American Prose.
   A survey of American literary history and a discussion of notable works in prose. Prerequisite: Courses 11, 12.
   First semester; 3 credit hours.

18. Introduction to Drama.
   Half of this course is devoted to the study of modern dramatic technique and of the nature of Drama as an art form; the second half of the course is devoted to the study of typical Greek, Elizabethan and pseudo-classical plays, comparing and contrasting their structure and technique. Prerequisite: Courses 11, 12.
   First semester; 3 credit hours.

PERIOD COURSES IN ENGLISH LITERATURE.

The following courses offer an intensive study of the literature of the periods designated. The work consists in part of lectures, but chiefly of assigned readings in the literature of the period. The principal authors are naturally considered at greater length, but the work of the second and third-rate writers
is not neglected. The drama and the novel are considered only incidentally. For intensive study of these forms see courses 39, 65, 66, 74, 75. The influences and movements of the period are emphasized rather than the lives of the individual writers. These courses are open only to students who have had or are pursuing courses 15-16. They need not be taken in chronological order, though such an arrangement is advisable.

19. 1559 to 1603.
   First semester; 3 credit hours.

20. 1603 to 1660.
   Second semester; 3 credit hours.

21. 1660 to 1745.
   Second semester; 3 credit hours.

22. 1745 to 1796.
   Second semester; 2 credit hours.

23. 1796 to 1832.
   First semester; 3 credit hours.

24. 1832 to 1900.
   Second semester; 3 credit hours.


   A detailed study of literature in America from the earliest colonial writings to the present. Constant stress is placed upon the interpretation of American life as found in American writings. Not only the famous poets and novelists are studied, but also the colonial writers, the orators, the essayists, the famous editors, and other literary figures who have contributed to America's analysis of itself. The library is well supplied with the works of these writers, and the student is expected to make himself thoroughly familiar with these works.

   Both semesters; 3 credit hours.

31. Expository Writing.

   Daily, weekly, and fortnightly themes. Several nineteenth century and contemporary writers are studied from the point of view of style. Prerequisite: Courses 11, 12. Students who make English and Literature their major are advised to take this course in their Junior year.

   First semester; 3 credit hours.
32a. Short Stories.

A study of a large number of representative modern short stories as an introduction to the principles and most significant problems of literature and criticism.

Second semester; 2 credit hours.

32b. Short Story Writing.

Practice in the writing of short stories. This course can be taken only in conjunction with 28a, and students are permitted to register only by permission of the instructor. Prerequisite: Course 27.

Second semester; 1 credit hour.

33,34. Debate.

A study of the principles of debating, the regular practice in the outlining and briefing of arguments and in the actual work of team debating.

Both semesters; 2 credit hours.


An advanced course in the principles of grammar with special attention to English. Papers are also assigned on linguistic subjects of present interests.

First semester; 3 credit hours.

36. High School English.

The problems and methods of teaching composition and literature in secondary schools.

Second semester; 1 credit hour.

37. The Bible as Literature.

A study of the Bible, especially the Old Testament, from a literary point of view. Open to all students.

Second semester; 1 or 2 credit hours.

38. Present Day Poets.

Lectures and reports; illustrations from the poetry of Swinburne, Meredith, Noyes, Masefield and other contemporary poets.

Second semester; 2 credit hours.


Lectures and reports; illustrations from the novels of Thackeray, Dickens, Stevenson, Hardy, Galsworthy, Meredith,
and other contemporary novelists. Open to third and fourth year students.
Second semester; 2 credit hours.

40. Epic.
A critical and interpretative study of representative Epics, such as the Iliad, the Odyssey, the Divine Comedy, etc. These poems are read entire (in translation) and special topics assigned for individual work.
Second semester; 3 credit hours.

ADVANCED AND GRADUATE COURSES.

These courses are open to third and fourth year students who have taken courses 15, 16 and at least two-period courses (19-26). Students taking these courses as graduate work will be required to write special papers in addition to the regular assignment.

61. Old English.
Elementary course; grammar and reading. Bright’s Anglo-Saxon Reader.
First semester; 3 credit hours.

62. Old English.
Poetry; reading of the Beowulf with a study of the meter and of the literary characteristics of old English poetry.
Second semester; 3 credit hours.

63. Chaucer.
Selections from the Canterbury Tales studied as an introduction to Middle English.
First semester; 3 credit hours.

64. Middle English—(Continued.)
Emerson’s Middle English Reader. Primarily a reading course, though attention is given to grammar and dialectology.
Second semester; 3 credit hours.

65. Development of the English Drama.
A study of the history of the English drama from the Middle Ages down to the present time, with special emphasis on the Elizabethan period; for Shakespeare see courses 67-68. Open only to students who have had course 18.
Second semester; 3 credit hours.
66. **Advanced Drama.**

   The subject of this course varies from year to year; in 1911, Pseudo-Shakespearean plays; in 1912, Comedy. Open only to students who have had course 65.
   
   Either semester; 2 credit hours.

67, 68. **Shakespeare.**

   A careful and detailed study of some of Shakespeare's plays.
   Both semesters; 3 credit hours.

69. **The Appreciation of Poetry.**

   A study of the essential elements of poetry and of English verse forms; illustrations are drawn mainly from recent verse, and an opportunity for exercises in verse writing is offered those who wish it.
   
   First semester; 3 credit hours.

70. **Wordsworth and Coleridge.**

   Second semester; 2 credit hours.

71. **Shelley, Keats, Byron.**

   First semester; 2 credit hours.

72. **Tennyson and Browning.**

   Second semester; 2 credit hours.

73. **Carlyle, Ruskin, Elliot.**

   First semester; 3 credit hours.

74, 75. **Development of English Fiction.**

   A thorough and detailed study of English fiction from Anglo-Saxon days to the present. This course traces the storytelling instinct among the English, not only in prose but in poetry, and students taking it should have some knowledge of Old and Middle English literature. The instructor gives a number of lectures, especially on social conditions in the various periods. Importance is placed upon actual knowledge of the fiction itself rather than upon biographical data, and students should be prepared to read a large amount of literature. Much of the classroom work follows the seminar plan in which papers by the students are read and discussed. Open to graduates and undergraduates as the instructor considers sufficiently prepared.

   Both semesters; 3 credit hours.
JOURNALISM

The course in Journalism, at present covering one year, will be expanded according to the needs of the students taking the work. The instruction is extremely practical and explains those general and technical problems met with by every new worker in a newspaper office. Among the subjects which receive thorough discussion and practice are newsgathering, the structure and style of news stories, the writing of leads and heads, proof-reading, editing, the uses of various kinds of type, office managing, advertising, etc. A number of editors and other men actually engaged in journalism lecture before the class on special phases of newspaper activities. Much writing is required and every student undertaking the work should see that considerable extra time is saved from other students in order that he may follow up news assignments given by the instructor. Only students who have had Freshman English or its equivalent are permitted to enter the class. Three hours’ credit is at present granted, but during the session of 1914-1915 the courses offered will probably be numerous and much more credit may be granted.

FINE ARTS

MAJOR REQUIREMENTS.

For major work in this department students must take thirty-two hours. Ten additional hours selected from the departments of Literature, History, Languages, Philisophy and Sociology are advised. Candidates for the Teacher’s Certificate must have completed acceptably courses 13, 14, 15, 16, 17, 18, 19, 21, 23, 24, 25, 27.

COURSES IN HISTORY AND APPRECIATION


This course gives a general survey of the architecture, sculpture and painting of the ancient world.

First semester; 3 credit hours.


An analysis of the styles of architecture, with special emphasis upon the evolution of church structure from the early basilica to the developed Gothic style.

Second semester; 2 credit hours.
   A study and comparison of the Italian schools of sculpture and painting.
   First semester; 2 credit hours.

14. History of Renaissance Art. (Continuation of Course 13.)
   A study and comparison of the German, French and Dutch schools of painting.
   Second semester; 2 credit hours.

15. The Appreciation of Art.
   An introductory course in art criticism, in which an appreciation of aesthetic and technical qualities in the fine arts is acquired by means of lectures on theory, observation, and practical application. This course consists of two lectures and one laboratory period a week.
   First semester; 3 credit hours.

   A consideration of the classic, romantic, realistic and idealistic tendencies of sculpture and painting in the present age. It includes a study of American art.
   Second semester; 3 credit hours.

COURSES IN REPRESENTATION

17. Elementary Drawing and Painting.
   An introductory course in free-hand drawing and painting.
   First semester; 2 credit hours.

18. Technical Training in Representation.
   Practical work in painting and modeling. Choice of mediums, oil, water color, or clay. Work is from still life, cast, landscape and life. Prerequisite: Course 17.
   First semester; 2 credit hours.

   A continuation of course 18.
   Second semester; 2 credit hours.

   The object of this course is to prepare students to do practical illustration for books, magazines or newspapers. Special attention will be given to pictorial composition and methods of reproduction. Prerequisite: Courses 17, 18, 19.
   Second semester; 2 credit hours.
COURSES IN DESIGN.


A course in which architectural design is applied to the house, landscape design to the grounds, and knowledge and taste in furnishing is developed.
First semester; 2 credit hours.

22. House Furnishing and Decorating.

A continuation of course 21.
Second semester; 2 credit hours.

23. Design.

Theory and practice in the principles of design. Geometrical design and conventionalization of plant and insect forms. The course is arranged so that the designs may be applied in the Handicraft Courses.
First semester; 2 credit hours.

24. Design.

A continuation of course 23. Application in some of the simpler crafts.
Second semester; 2 credit hours.

25. Handicraft.

Work in leather, copper and brass and pottery. Two or three laboratory periods.
Both semesters; 2 or 3 credit hours.


Work in copper, brass and silver, jewelry, pottery and weaving. A course in which the student may specialize in working with any of the materials taken up in courses 25 and 26. Two or three laboratory periods.
Both semesters.

27. The Teaching of Art.

A course planned for supervisors and instructors in drawing, painting and design. The work will include a general survey of the methods of presenting the subject, practical exercises, and definite plans for the organization of courses. Prerequisite: Courses 15, 17, 18, 19, 21, 23, 24, 25.
First semester; 2 credit hours.
MAJOR REQUIREMENTS IN GEOLOGY

Students desiring to specialize in General Geology must take Chemistry 11 and 12, Zoology 11 and 12. General and Systematic Botany one year, Physics 11 and 12, and should have at least two years work in German and one year in French.

MINING AND ECONOMIC GEOLOGY

The work given under this head will comprise courses in Chemistry, Physics, Civil Engineering, together with several courses in Geology, besides the regularly required University work. Students wishing to become mining or economic geologists will find given in the University, work arranged especially for this profession. The Department of Geology, through the summer collection trips, has geologic material from almost every portion of the state. Many trips are taken during the college year to nearby mines and economic deposits. Much systematic and carefully planned work is undertaken by the student during his work in the department. While no definite course of studies is outlined here, the department has arranged a course thoroughly preparing students for work in mining or economic geology. Situated as the University is, between the great copper mines at Butte and the rich silver and lead deposits of the Coeur d'Alene district, Idaho, the students of economic geology are favorably located for practical field work. The Department of Geology is well equipped in library and laboratory facilities to give thorough work in the subjects offered. As Montana, or rather the great Rocky Mountain region, is noted for its wonderful geologic products, the study of mining or economic geology in this state is of prime importance.

UNDERGRADUATE COURSES IN GEOLOGY.

11. General Geology.

This course is arranged for those students who do not intend to specialize in the subject of Geology, but who wish to gain a general idea of the earth and its past history. It is primarily a lecture course, however, one afternoon in the week will be required in the laboratory. The lectures will be illustrated by lantern slides, stereographs, charts, relief maps, minerals and rocks from many localities. It is intended to be largely a cul-
natural course, and is open to all students. Text: Chamberlin and Salisbury's College Geology.

First semester; 3 credit hours; lecture, M. W., 8:30; laboratory, M. or F., 1:30-4:00.

12. General Geology.

A continuation of course 11. The study of historical geology by means of lectures, laboratory and field work. Text: Chamberlin and Salisbury's College Geology.

Second semester; 3 credit hours; lectures, M. W., 8:30; laboratory, M. or F., 1:30-4:00.


Lectures, laboratory work and collateral readings on the action of wind, water, vulcanism, diastrophism, etc., in the work of changing the configuration of the earth's crust. Intended for students whose major is Geology. Text: Chamberlin and Salisbury's Geology, Vol. 1.

First semester; 3 credit hours; lectures, M. W., 10:30; laboratory, M., 1:30-4:00.

14. Historical Geology.

Lectures and laboratory work. Intended to follow course 13, but may be taken independent of it. A general review of the past life of the earth, both fauna and flora, with special reference to the locality and sequence of the same in the United States. Text, Chamberlin and Salisbury's Geology, Vols. 2 and 3.

Second semester; 3 credit hours; lectures, M. W., 10:30; laboratory, M., 1:30-4:00.

15. Physiography.

A careful study of the chief physiographic features of the earth, their origin, history, etc. Illustrated lectures, laboratory and field work. This course has been planned primarily for teachers. Text, Salisbury's Physiography for Advanced Students.

First semester; 2 credit hours; time to be arranged.

16. Geography and Geology of Montana (Lectures and Field Work.)

The object of this course is to give the student a general survey of the geological formations and products of the state, and a careful study of its geography. The mountains, rivers, valleys and their products will be studied, together with railroad maps, weather maps, topographic maps, rainfall charts, temperature charts, etc. Every student in the University should be
more or less familiar with the geography and general natural products of the state. This course is intended to give a general survey along this line.

First or second semester; 2 credit hours.

17. Practical Geology and Mineralogy.

A course arranged primarily for students in the Law School or pre-legal students. The study of geologic structure such as folds, faults, veins, dikes, etc., will be taken up and applied especially to mining problems and vein formation. The laboratory work will include the study of the common rocks and many ore minerals.

First semester; 2 credit hours; lectures, T. Th., 9:30; laboratory, M., 1:30-4:00.

18. Commercial Geography.

This course treats of the products of the mines, farms, orchards, quarries, etc., or the geography of production. The relation of the production and demands of the several countries and their general industrial activities. The relations of climate, land forms, etc., upon natural and manufactured productions.

Second semester; 2 credit hours.

20. Invertebrate Paleontology.

Lectures and laboratory work. A careful study of invertebrate fossils and their places in the geological time scale. Special attention will be paid to Montana fossils. Must be preceded by Invertebrate Zoology. Text, Zittel's Paleontology, Vol. 1., 1913 Edition.

Second semester; 4 credit hours; time to be arranged.

MAJOR REQUIREMENTS IN MINERALOGY AND ECONOMIC GEOLOGY

Students desiring to specialize or major in Mineralogy or Economic Geology should take Mathematics 11, 12, 13, 16 and Chemistry 11 and 12, 13 or 14, 15 or 16, 30, 40, together with two years of German and one year of French.

COURSES IN MINERALOGY AND ECONOMIC GEOLOGY.

21. Physical Mineralogy (Elementary Crystallography and Physical Mineralogy.)

A study of the elements of crystallography and the identification, by means of physical characters and chemical tests, of
150 common minerals. Text, Rowe's Elements of Crystallography and Mineralogy. Prerequisite: Chemistry 11 and 12 or equivalent.
First semester; 3 credit hours; lectures, T. Th., 9:30, laboratory, T. Th., 1:30-4:00.

22. Physical Mineralogy.
A repetition of course 21.
Second semester; 3 credit hours; lectures, T. Th., 9:30; laboratory, T. Th., 1:30-4:00.

23. Advanced Mineralogy.
The determination and study of minerals as to their origin, locality, uses, etc. Must be preceded by course 21 or equivalent.
Credit and time to be arranged.

Chiefly laboratory work. The determination of many of the principal ore-forming minerals by means of physical properties, blow-pipe and other chemical reactions. Text, Penfield and Brush, Determinative Mineralogy and Blow-Pipe Analysis. Prerequisite: Mineralogy 21.
Second semester; 2 to 4 credit hours; laboratory, T. Th. S., 1:30-4:00.

25. Practical Mineralogy.
A course designed for men intending to do field work in mineralogy, or for prospectors and mining students. Most of the important economic minerals are taken up in this course, and simple field methods of identification studied. Text, Rowe's Practical Mineralogy Simplified.
First semester; 2 credit hours; time to be arranged.

Lectures, laboratory work and assigned readings. A general study of the non-metallic and metallic economic geology of the United States, and especially Montana. Such non-metals as coal, oil, gas, gypsum, clay, building stones, etc., and such metals as gold, silver, copper, platinum, zinc, lead, mercury, etc., will be studied. Excursions will be taken to nearby mines and mills. Should be preceded by Geology 13 and 14. Texts, Ries, Economic Geology of the United States; Rowe, Economic Geology of Montana. Prerequisite: Geology 11 and 12.
Second semester; 2 credit hours; T. Th., 9:30; laboratory, M., 1:30-4:30.
27. Petrology.
A careful study of rocks as to composition, physical properties, locality, decomposition products, origin and uses. Text, Piersson's Rocks and Rock Minerals.
First or Second semester; 2 credit hours; time to be arranged.

A general study of the legal aspect of mineral deposits, etc. Lectures and recitations. Text, Shamel, with collateral readings.
Second semester; 2 credit hours; time to be arranged.

GRADUATE COURSES IN GEOLOGY.
The following courses are primarily Graduate Courses. However, some of them may be elected by the more advanced undergraduate students. One or two new Instructors are to be added to the instructional force of the department, during the coming year, and it is fully expected that all of the courses herein outlined will be given.

31. Advanced Geology.
A more careful study of the principles of Geology. Field and laboratory work and a thorough review of past and recent geological literature.
First semester; 2 to 4 credit hours; time to be arranged.

32. History of Geology.
This course is intended for those specializing in general geology. The basis of the course will be, "Founders of Geology," by Geikie; "History of Geology and Paleontology," by Zittel; and "History of Geology," by Woodward.
Second semester; 2 credit hours; time to be arranged.

33. Advanced Economic Geology.
This course should follow course 14, and is a careful study of the coals, oils, gas, etc., of the United States and other countries.
First semester; 2 credit hours; time to be arranged.

34. Genesis of Ore Deposits.
Lectures, assigned readings and mine examinations. The basis of the work will be such books as Van Hise on Metamorphism; Posepny and others on the Genesis of Ore Deposits; Kemp, Ore Deposits of the U. S. and Canada; Phillips and Louis, A
Treatise on Ore Deposits; Weed (Beck’s), The Nature of Ore Deposits; and many U. S. Geological Reports such as the Butte Special Folio; Geology and Ore Deposits of the Coeur d'Alene District, Idaho; The Leadville District; Enrichment of Sulphide Ores, by Emmons, etc.

Second semester; 2 or 4 credit hours; time to be arranged.

35. Causal Geology.

This course will deal more largely with the causes or theoretical causes underlying the various geological phenomena such as earthquakes, volcanoes, mountain making, etc.

2 hours credit.

36. Regional Geology.

A careful and systematic study of the geology of some particular region. The mapping of the special area and the interpretation of its past geologic history.

3 to 5 hours credit.

37. Mine Examination and Reports.

Near the City of Missoula are many mines, both coal or lignite and metal mines. A particular mine or group of mines is assigned to each student and an examination, study and interpretation of the geology, rocks, deposits, mining methods, etc., is made by him, together with a careful surface and underground map of each property. A careful report upon the property is written by the student and either re-visited by the student with the instructor or checked up carefully by the instructor.

Credit to be arranged.

38. Field Work in Economic and Mining Geology.

A study of the geology, theory of formation, value, transportation facilities, in fact, the general commercial and geological aspect of gypsum deposits, phosphate deposits, baryte deposits, coal and clay deposits, building stones, lime deposits, deposits for making Portland cement, etc., and outcrops and general reports on metallic prospects and reconnaissance work in mining regions.

Credit to be arranged.


This course deals with the origin of rocks, their localities in Montana, their megascopic and microscopic description, texture, weathering, etc. If at all feasible, a selected igneous region near
Missoula will be assigned to each student, and a petrographic report upon this will be made by him.

40. Glacial Geology.

As the University of Montana stands within an old local glacier region, and Missoula Valley is the bed of an old glacial lake, with glacial evidences almost everywhere, the subject of glacial geology is of more interest to a student at the State University than it would be in many other localities. A student taking this course is expected to become familiar with the latest literature on the subject of glaciers, and will therefore do a great deal of reading. However, much field work will be done, enough so as to enable each student to properly interpret and study with intelligence glacial deposits wherever found.

41. Summer Field Work in Geology.

A five-weeks’ course will be given in the systematic mapping and geologic study of a special area. A field camp will be established and the expense of each person will be nominal. Only a limited number of students may be admitted to this course.

3 hours credit.

42. Research Work.

Individual work upon selected subjects, but under the direction of the head of the department.

GERMAN

The minimum requirement for a major in German consists of the following courses: 10, 11, 12, 13, 14, 15, 18, 19, 20, 21, 22, 23. In addition students majoring in German will be expected to take two years of one other modern language and one course in the history of Europe.

Candidates for the Teacher’s Certificate in this Department must have completed the above requirements.

UNDERGRADUATE COURSES.

Note—No beginning class will be organized in the second semester.

10 and 11. Elementary.

Joynes-Meisner’s, Becker’s German grammar or their equivalents; Bernhart’s composition; translation of easy prose and
poetry. Careful and systematic attention must be paid to pronunciation. Readers are chosen from the following: Kleine Geschichten, Maerchen und Erzahlungen, Der Zerbrochene Krug, Immensee, etc.

Both semesters; 5 credit hours; M. T. W. Th., F. 9:30.


Composition, conversation and some of the following readers: Wilhelm Tell, Karl Heinrich, Das Abenteuer einer Neujahrsnacht, Maria Stuart, Minna von Barnhelm, Hermann und Dorothea, Wallenstein.

Both semesters; 3 credit hours; M. W. F., 10:30.

14 and 15 Advanced.

Composition, conversation, sight reading; Max Mueller, Deutsche Liebe, Scheffel, Ekkehart, Goethe’s Faust.

16 and 17 Scientific German.

Students electing Chemistry, Geology or some other science as their major work will do outside reading upon German articles which bear upon their special work and report in class.

Both semesters; 3 credit hours; M. W. F., 11:30.

18 and 19. Special.

Sight reading and conversation, with outside reading, either scientific or purely literary.

Both semesters; 1 credit hour; time to be arranged.

20 and 21. History of German Literature.

An advanced course. Prerequisite: Three years of German.

22. Journalistic.

Sight reading, reports, essays on German Magazine Articles.

2 credit hours.

23 and 24. Methods of Teaching German.

Review of grammar, sight reading, general review of 3 or 4 years’ work. Prerequisite: All above named courses except 16 and 17.

GRADUATE COURSE.

26 and 27. Survey of German Literature.

Lectures, outside readings, from the beginning to Lessing.
1st semester. Second from Lessing through the Nineteenth Century. Essays, written reviews and criticisms in the German language.

Both semesters; 3 credit hours.

GREEK AND LATIN
MAJOR REQUIREMENTS

Students choosing this department for their major work will be required to take at least thirty hours of the work outlined below. Six of these hours must be given to the courses in Greek and Roman life; and at least twelve hours of Latin, the rest of the required hours may be given to Latin, Greek or Modern Languages.

Candidates for the Teachers’ Certificate must have completed courses 10A, 10B, 11A, 11B, 12, 13 and 17 in Latin.

COURSES IN LATIN

Note—Courses 10A, 10B, 11A and 11B are designed especially for first-year work, to give a preliminary grammatical review; but students of exceptionally good preparation and aptitude for the work may take other courses first if circumstances require such a departure from the desirable order of work. Students taking Latin as their major subject should, as far as possible, take the courses in the order presented below; but the courses are open to students in any college year if they are prepared to take the work with profit.

10a. Cicero.
    De Amicitia and De Senectute of Cicero.
    First semester; 3 credit hours; M. W. F., 9:30.

10b. Prose Composition.
    First semester; 2 credit hours; T. Th., 9:30.

11a. Livy.
    Book 21 or 22.
    Second semester; 3 credit hours; M. W. F., 9:30.

11b. Prose Composition.
    Second semester; 2 credit hours; T. Th., 9:30.

    Selected Poems of Catullus and Odes and Epodes of Horace.
    First semester; 3 credit hours; M. W. F., 8:30.
13. Tacitus.
The Agricola and Germania.
Second semester; 3 credit hours; M. W. F., 8:30.

Selected Epistles of Horace and Satires of Horace and Juvenal.
Second semester; 3 credit hours; time to be arranged.

15. Lucretius.
Selections from De Natura Rerum.
First semester; 3 credit hours; time to be arranged.

Selected Letters of Pliny and Cicero.
Second semester; 3 credit hours; time to be arranged.

17. Roman Life.
A view of Roman life such as is presented in "Life of the Greeks and Romans" by Guhl and Kohner, and Johnson's "Private Life of the Romans" and similar studies. The work is conducted by reading works of reference, guided by syllabi of lessons, with the aid of informal talks and illustrations by photographs and stereopticon views.
Second semester; 2 credit hours; time to be arranged.

18. Pharmacy Latin.
An elementary course in Latin for Pharmacy students.
First semester; 2 hours credit.

COURSES IN GREEK.

Note—Greek is begun in the University because few high schools of Montana offer Greek in their courses. Opportunity will be given to take any of the courses for which students are prepared, provided there are at least three applicants; time of all classes to be arranged.

10. Beginning Greek.
White's First Greek Book.
First semester; 5 credit hours.

11. Beginning Greek.
Completion of First Greek Book and beginning Xenophon's Anabasis, with composition based on the text read.
Second semester; 5 credit hours.
12. Xenophon.
   Four books of Anabasis completed.
   First semester; 5 credit hours.

13. Homer.
   Selections from the Iliad and Odyssey.
   Second semester; 5 credit hours.

   Selections from Herodotus and Thucydides.
   First semester; 3 credit hours.

15. Plato.
   Apology and Crito of Plato.
   Second semester; 3 credit hours.

16. Drama.
   A play each of Aeschylus and of Sophocles, and selections
   from Euripides and Aristophanes.
   First semester; 3 credit hours.

17. Pindar, Demosthenes.
   Selected Odes of Pindar, Demosthenes on the Crown.
   Second semester; 3 credit hours.

18. Greek Life.
   A course like that in Roman life described above, with Blum-ner's "Home Life of the Ancient Greeks," and Guhl and Koh-ner's "Life of the Greeks and Romans," as the principal work
   of reference.
   First semester; 2 credit hours.

HISTORY AND POLITICAL SCIENCE

Majors in History and Political Science may specialize in
American History or European History or Political Science.
They will also be required to take six hours in Economics or
Sociology. Students should also have a reading knowledge of
two foreign languages, preferably French and German.

The work of the department is designed, in the first place, to
contribute something towards a liberal education and to a prep-paration for citizenship. In the second place, it is planned to
prepare students for professional work in teaching, business
and law.
Those who expect to teach history in the secondary schools should take courses 12, 13, 14, 15, 20 and 21, and, if possible, 10 and 11. Those who expect to teach civics should have, at least, courses 16 and 17 in Political Science. Attention is also called to course 33 for teachers.

The department is well equipped for graduate work in United States History, history of the west, and especially the history of Montana.

COURSES IN HISTORY FOR UNDERGRADUATES.


This is a study of the institutional and political organization of ancient civilization, largely from the sources. The purpose of this course is to give the student an insight into ancient life and thought rather than an outline of facts.

First semester; 2 credit hours; W. F., 2:30.

11. Rome and the West.

This is largely a study of Roman government, colonial policy and institutions. The sources rather than texts are used.

Second semester; 2 credit hours; W. F., 2:30.

12. Mediaeval Europe.

The history of Europe to the Reformation. Especial attention is given to the influence of Christianity, of Roman civilization, and of the Teutonic nations. Mediaeval institutions such as the feudal system, the organization of the church, and mediaeval culture will be studied in detail, and considerable attention will be given to the Crusades, the Renaissance, and other significant movements.

First semester; 3 credit hours; M. W. F., 10:30.


Emphasis will be laid on such topics as the Reformation, the breakup of the feudal system, the rise of modern state systems, the wars of religion, the benevolent despots, and European institutions to the French Revolution.

Second semester; 3 credit hours; M. W. F., 10:30.


A course in the political, social and institutional history of England to the close of the Tudor period. The life of the peo-
people, their culture, religious and political ideas, and their social and economic organization will be studied in detail. Careful attention will also be given to such institutions as have had a permanent influence upon modern conditions such as the growth of Parliament, the development of the jury, and English law. Scotch and Irish history will be studied in so far as it has bearing on modern conditions.

First semester; 3 credit hours; M. W. F., 1:30.


A continuation of History 14. The principal emphasis will be placed on the economic, social and political problems of modern England. Attention will be paid to such topics as the Puritan Revolution, the rise of the cabinet, and Parliamentary government. A detailed study will also be made of the colonial and imperial phases of British history, commercial and industrial development, and democratic and social movements of the nineteenth century.

Second semester; 3 credit hours; M. W. F., 1:30.

20. American History to 1814.

In the colonial period a study will be made of the social and institutional forces which go to make up the history of the republic. Detailed consideration will be given the causes of the American Revolution, and the Revolution itself in its social and political aspects, to the influences leading up to the formation of the Constitution, to the work of the convention itself, to the first trial of the Constitution under the Federalist system, and to the political experiments of the Jeffersonian Republicans. Attention will be given such topics as the formation of political parties, their principles and leaders, the development of the Supreme Court, the beginning of the westward movement, and the causes and results of the War of 1812.

First semester; 3 credit hours; M. W. F., 9:30.

Prerequisite: One year of college work.

21. The United States, 1814-1876.

The course will open with a survey of social and economic conditions at the close of the War of 1812. There will be taken up in detail such subjects as western expansion, the development of nationality, the growth of democracy, the slavery controversy, and commercial and industrial expansion. The course
will close with a consideration of the War of Secession, Recon­struction, and social and political readjustment.
Second semester; 3 credit hours; M. W. F., 9:30.
Prerequisite: One year of college work.

COURSES FOR GRADUATES AND QUALIFIED UNDERGRADUATES

22. The Renaissance.

Political, economic and intellectual conditions at close of Middle Ages; the papacy; beginnings of the Renaissance; geogra­phical discoveries; inventions; Greek influence; a detailed study of the intellectual ideas of the Renaissance.
First semester; 2 credit hours; T. Th., 11:30.
Prerequisite: Six hours of college history.

23. The Reformation.

Social and ecclesiastical conditions underlying the reformation; reform within and without the church; Luther and the reformation in Germany; religious wars; importance of the Reformation.
Second semester; 2 credit hours; T. Th., 11:30.
Prerequisite: Six hours of college history.

24. Revolution and Napoleonic Eras.

French society and state before the Revolution; estates general; reign of terror and reaction; Constitution of 1795 and Directory; Napoleon and the Empire; Napoleonic wars and the commercial struggle with the British Empire.
First semester; 3 credit hours; T. Th., 9:30.
Prerequisite: Six hours of history.

25. Europe in the Nineteenth Century.

A detailed study of the political and social conditions of Europe since 1815. Period of reaction and revolution; unifica­tion of Germany and Italy; development of the British Empire; international relations; arbitration and world politics.
Second semester; 3 credit hours; T. Th., 9:30.
Prerequisite: Six hours of history.


This course is designed as an introduction to contemporary American politics. It is presented from the point of view of
present-day affairs. Such matters as our industrial system, capitalism and socialism, direct government, equal suffrage, the negro question, the labor movement, and the new nationalism are treated from an historical point of view.

First semester; 2 credit hours; T. Th., 11:30.
Prerequisite: History 21 or Political Science 16.


This will be a study of the social and economic origins of Montana, its development as a territory, its organization as a state, and the social and political influences in the commonwealth since 1889. Consideration will be given to the transformation of Montana from mining to agricultural and industrial interests, to the development of industry, and to general economic conditions. The state will be studied as a typical commonwealth in relation to the general course of American history.

Second semester; 2 credit hours; T. Th., 11:30.
Prerequisite: History 21.

32. Expansion of the United States.

In the first semester will be considered the westward development of the colonial period, the colonial policies of Great Britain, France and Spain, and the development of the Mississippi Valley to the period of the War of Secession. In the second semester attention will be given chiefly to the development of the far West, in its social, economic, and political aspects, and to the recent colonial expansion of the United States. A continuous course throughout the year.

Two credit hours each semester; T. Th., 2:30.
Prerequisite: Thirty hours of college history.

33. The Teaching of History.

A course in the practical problems of teaching history in the secondary schools.

Second semester; 1 credit hour; F., 2:30.
Open only to advanced students.

COURSES IN POLITICAL SCIENCE


A study of the organization, functions and powers of the federal government, and of the origin, growth, and methods of political parties in the United States, and of their relation to our government.

First semester; 2 credit hours; T. Th., 8:30.
17. **State and Local Government in the United States.**

Consideration will be given to the powers, obligations and limitations of the states in the Union, to the formation and admission of states, the development of state constitutions, to the organization of state and local government, and to political methods.

Second semester; 2 credit hours; T. Th., 8:30.

18. **Introduction to Political Science.**

An outline course dealing with political groups, theories and governments. A general survey of the subjects of government and politics.

First semester; 3 credit hours; M. W. F., 1:30.
Prerequisite: Five hours history.

19. **Comparative Governments.**

An historical review of the development of the more important ones. The idea of democracy will be traced through the various governing bodies. The government of the United States will be treated in its relations to that of other countries.

Second semester; 3 credit hours; M. W. F., 1:30.
Prerequisite: Political Science 18.

**COURSES FOR GRADUATES**

50. **Historical Methods.**

A study of the methods of historical investigation. Students are required to make a study of historical bibliography and criticism and are given practice in the solution of a few typical problems in various fields.

Both semesters; once a week.

51. **Seminar in American History.**

The bibliography of American history and individual investigation by the student will comprise the scope of the course. In 1914-15 the work will be limited to the period from 1760 to 1789.

Both semesters; once a week.

52. **Studies in Montana History.**

Opportunities will be given students to investigate problems in the social, economic, and political history of Montana.

Both semesters; once a week.
HOME ECONOMICS

The courses in this department are planned to give training in the economic and scientific administration of the household; to present the place of the household in society as a cultural unit and to prepare teachers of Home Economics. The department stands for a liberal training of University grade. The regular courses are supplemented by courses offered by instructors in other departments. A number of those are prerequisite to work offered in the Home Economics Department. Special attention is called to courses offered in Art, Education, Chemistry, Biology, Physiology and Bacteriology. Four years of regular university work are required to obtain the degree of Bachelor of Science in Home Economics. Certain courses offered in this department are elective for students specializing in other departments.

COURSES OF INSTRUCTION.

FIRST YEAR.

<table>
<thead>
<tr>
<th>First Semester.</th>
<th>Credits.</th>
<th>Second Semester.</th>
<th>Credits.</th>
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</thead>
<tbody>
<tr>
<td>Chemistry (general)</td>
<td>4</td>
<td>Chemistry (general)</td>
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<tr>
<td>English</td>
<td>3</td>
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<tr>
<td>Biology</td>
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<td>Biology</td>
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<tr>
<td>Home Economics 18</td>
<td>3</td>
<td>Home Economics 19</td>
<td>3</td>
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<tr>
<td>(Sewing and Textiles)</td>
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<td>(Sewing and Textiles)</td>
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<tr>
<td>*Fine Arts</td>
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<tr>
<td>(Practice in Design)</td>
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<td>(Applied Designing)</td>
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<tr>
<td>Physical Education</td>
<td>½</td>
<td>Physical Education</td>
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</tbody>
</table>

*Free hand drawing is prerequisite to the work in design. If it has not been studied in preparatory schools it must be studied at the University before work in design is taken up.

SECOND YEAR.

<table>
<thead>
<tr>
<th>First Semester.</th>
<th>Credits.</th>
<th>Second Semester.</th>
<th>Credits.</th>
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</thead>
<tbody>
<tr>
<td>Home Economics (Foods)</td>
<td>4</td>
<td>Home Economics (Foods)</td>
<td>4</td>
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<tr>
<td>*Chemistry</td>
<td>3</td>
<td>Chemistry (Food)</td>
<td>4</td>
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<tr>
<td>(Qualitative Analysis)</td>
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<td>Biology</td>
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<tr>
<td>Chemistry (Organic)</td>
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<td>(Physiology)</td>
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<td>German or French</td>
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<tr>
<td>Physical Education</td>
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<td>Physical Education</td>
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</table>

*Those who have previously studied general chemistry and whose work is satisfactory to the Chemistry Department may enter the class in Quantitative Analysis the second semester of the first year.
**THIRD YEAR.**

<table>
<thead>
<tr>
<th>First Semester.</th>
<th>Credits.</th>
<th>Second Semester.</th>
<th>Credits.</th>
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<tbody>
<tr>
<td>Psychology</td>
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<td>Psychology</td>
<td>3</td>
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<tr>
<td>Biology (Bacteriology)</td>
<td>5</td>
<td>House Sanitation 13</td>
<td>2</td>
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<tr>
<td>House Planning 16</td>
<td>2</td>
<td>House Furnishing and Deco-rating 17</td>
<td>2</td>
</tr>
<tr>
<td>German or French</td>
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<td>German or French</td>
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<tr>
<td>✦Applied Design</td>
<td>3</td>
<td>*Chemistry (Physiological)</td>
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<td>✦Applied Design</td>
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<td>✦Textiles and Dyeing</td>
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</tr>
</tbody>
</table>

*Students specializing in food work must study Physiological Chemistry as a prerequisite to Dietetics.

†Students specializing in Domestic Art must study Applied Design and Textiles and Dyeing.

**FOURTH YEAR.**

<table>
<thead>
<tr>
<th>First Semester.</th>
<th>Credits.</th>
<th>Second Semester.</th>
<th>Credits.</th>
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<tbody>
<tr>
<td>Economics</td>
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<td>Home Economics 22</td>
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<td>Household Management 14</td>
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<td>(Seminar)</td>
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<td>History of Education</td>
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<td>History of Education</td>
<td>3</td>
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<tr>
<td>Dietetics 15</td>
<td>3</td>
<td>Teachers' Course 21</td>
<td>2</td>
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<td></td>
<td></td>
<td>(Domestic Science)</td>
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<tr>
<td>Dressmaking 20</td>
<td>4</td>
<td>Teachers' Course 21</td>
<td>2</td>
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<td></td>
<td></td>
<td>(Domestic Art)</td>
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</table>

Students may take either course under A or B.

Electives to make fifteen hours should be selected in the Departments of English and Education.

**SUGGESTIVE COURSE FOR PROSPECTIVE TEACHERS.**

**FIRST YEAR.**

<table>
<thead>
<tr>
<th>First Semester.</th>
<th>Credits.</th>
<th>Second Semester.</th>
<th>Credits.</th>
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<tbody>
<tr>
<td>Chemistry</td>
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<td>Biology</td>
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<td>Biology</td>
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<tr>
<td>Home Economics 18</td>
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<td>Home Economics 19</td>
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<tr>
<td>(Sewing and Textiles)</td>
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<tr>
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<tr>
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<tr>
<td>Physical Education</td>
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</table>

*Free hand drawing is prerequisite to the work in Design. If it has not been studied in preparatory schools it must be studied at the University.

**SECOND YEAR.**

<table>
<thead>
<tr>
<th>First Semester.</th>
<th>Credits.</th>
<th>Second Semester.</th>
<th>Credits.</th>
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</thead>
<tbody>
<tr>
<td>*Chemistry (Qualitative)</td>
<td>3</td>
<td>Chemistry (Foods)</td>
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<td>Chemistry (Organic)</td>
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<td>Biology (Physiology)</td>
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<tr>
<td>Home Economics 11</td>
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<td>Home Economics 12</td>
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<td>German or French</td>
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<td>Psychology</td>
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</tr>
<tr>
<td>Physical Education</td>
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<td>Physical Education</td>
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</tbody>
</table>

*Those who have previously studied general chemistry and whose work is satisfactory to the Chemistry Department may enter the class in Qualitative Analysis the second semester of the first year.*
### THIRD YEAR.

<table>
<thead>
<tr>
<th>First Semester.</th>
<th>Credits.</th>
<th>Second Semester.</th>
<th>Credits.</th>
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<tbody>
<tr>
<td>Biology (Bacteriology)</td>
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<td>Home Economics 13</td>
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<tr>
<td>Home Economics 16 (House Planning)</td>
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<td>(House Sanitation)</td>
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<tr>
<td>German or French</td>
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<td>Home Economics 17</td>
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<tr>
<td>History of Education</td>
<td>3</td>
<td>(House Furnishing and Decorating)</td>
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<tr>
<td>Principles of Education</td>
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<td>German or French</td>
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<tr>
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<td>History of Education</td>
<td>3</td>
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<td></td>
<td></td>
<td>Educational Psychology</td>
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<td>*Chemistry (Physiological)</td>
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<td>‡Applied Design</td>
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<td>Textiles and Dyeing</td>
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</tbody>
</table>

*All students specializing in food work must take Physiological Chemistry as a prerequisite to Dietetics.

‡All students wishing to specialize in Domestic Art and take courses in Dressmaking must have Applied Design, and Textiles and Dyeing as a prerequisite.

### FOURTH YEAR.

<table>
<thead>
<tr>
<th>First Semester.</th>
<th>Credits.</th>
<th>Second Semester.</th>
<th>Credits.</th>
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</thead>
<tbody>
<tr>
<td>Economics</td>
<td>3</td>
<td>Sociology</td>
<td>2</td>
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<tr>
<td>Home Economics 14 (Household Management)</td>
<td>3</td>
<td>Home Economics 22 (Seminar)</td>
<td>2-5</td>
</tr>
<tr>
<td>School Hygiene</td>
<td>2</td>
<td>Observation Work</td>
<td>5</td>
</tr>
<tr>
<td>High School</td>
<td>3</td>
<td>A. Teachers' Course 21</td>
<td>2</td>
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<td>B. Teachers' Course 21</td>
<td>2</td>
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<tr>
<td>Home Economics 15 (Dietetics)</td>
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<td>Electives to make fifteen hours for each semester.</td>
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</tbody>
</table>


A study of food principles; their occurrence, principles involved in their preparation, and their cost from various sources. Water, its use in the body and in cooking. Beverages, fruit; food value, canning and preserving. Proteid foods; milk, eggs, cheese, meat, fish, etc.; food value and cooking. Sugar, starch; cereals and cereal products, flour, batters, doughs. Fat; its use in cooking; salad dressings and salads. Formulating of menus, preparing and serving of meals.

Lectures and recitations combined with laboratory work.

Prerequisite: General Chemistry.

Both semesters; 4 credit hours, each.

The course in foods is continuous throughout the year. Credit for the first semester’s work will not be given until the second semester’s work is completed.

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**DESCRIPTION OF COURSES**

13. **House Sanitation.**

The situation of the house with regard to surroundings; drainage, lighting, etc. Construction of house and arrangement of rooms. Lighting, ventilation, water supply, heating, plumbing. Sanitary personal habits and household management.

*Prerequisite:* Bacteriology.

*Second semester; 2 credit hours.*

14. **Household Management.**

A study of the principles underlying housekeeping. Organization of the household, division of the income, account keeping, household processes, care of the household, buying of supplies, and equipment.

*Prerequisite:* Economics.

*Second semester; 3 credit hours.*

15. **Dietetics.**

A study of the composition, caloric value, digestion, metabolism and cost of foods in normal diet. Dietary standards; various opinions and scientific experiments upon which they are based. Abnormal diet.

Lectures and recitations combined with laboratory work. Menus are planned and portions served according to the different dietary standards. Practice is also given in preparation of food for the sick.

*Prerequisites:* Foods, Physiology, Chemistry of Foods and Physiological Chemistry.

*Second semester; 3 credit hours.*

16. **Houseplanning.**

This course includes the study of the evolution of the house; the development of the American house; the modern house. The site, outlook and surroundings of the house. The making of house plans, special attention being given to the proportions, entrances, thoroughfares, stairs, and the arrangement of the rooms. The construction of the house; foundation walls, framing walls, floors, fireplaces, windows, etc. The cost of building and the care of the house are also taken up.

*First semester; 2 credit hours.*

17. **House Furnishing and Decorating.**

This course includes a study of the fundamental principles of decoration; e.g. proportion, color, harmony and appropriateness, color gradation, etc. The decoration of the various rooms
The furnishings, their color, design, suitability for purpose and cost.

The laboratory work consists of the making of plans and estimates for house furnishings, the designing and making of some furnishings and visits to shops.

Prerequisite: Design, Applied Design and Houseplanning.
Second semester; 2 credit hours.

18 and 19. Textiles.

The lectures will cover the study of fibers; the development of the textile industry; the manufacture of fabrics and the economic and social conditions which affect their value. The laboratory work will deal with the principles of hand and machine sewing in the construction of garments.

Two semesters; 3 credit hours, each.

20. Dress.

A study of costume design. Materials and their influence on the design of a gown; color, hygiene and economics in relation to dress. Laboratory work includes drafting and designing of patterns, the selection and combination of materials and the making of silk and cloth dresses.

Prerequisite: Textiles, Design and Applied Design, Textiles and Dyeing.
First semester; 4 credit hours.

21. Teachers' Course.

The working out of some particular problem in Household Science or Household Art. Open only to Fourth Year Students.
First semester; 2 to 5 credit hours.

22. Seminar.

Two teachers' courses are offered, one for those specializing in Household Science and the other for those specializing in Household Art. They will include the comparison of courses of study in different schools and cities, the planning of courses of study, the study of types of equipment and practice teaching.
Second semester; 2 credit hours.

LIBRARY SCIENCE
COURSES OF INSTRUCTION

The purpose of these courses is to give students systematic instruction in the use of the library. An effort is made to fa-
miliarize the student with such catalogues, bibliographical aids and general reference books as will enable him to investigate a subject with intelligence.

**General Reference.**

Lectures, reading and reference work. Lectures will be given on the following topics: The arrangement of the library and the privileges granted students, the use and value of the card catalogue, dictionaries and encyclopedias, Poole's index and periodical literature, classification, cataloguing, atlases and gazetteers, note-taking, book-binding and the care of books, government publications, and reference books on English and American literature, history and science. One lecture or recitation per week. One afternoon laboratory work. One hour credit. Either semester.

**SPECIAL TRAINING COURSES**

It is the purpose of the Library to offer instruction to students who wish to specialize in library work. This work will include the fundamental principles of library economy, and the essentials of library technique and practice, so that students will have no difficulty in undertaking the requirements of assistants' positions in any library.

The work will last throughout one semester and requires the entire time of the student. Instruction will be given by lectures, followed by practical work under the supervision of the librarians in the University Library and the Missoula Public Library. The student will thus have experience in both types of libraries.

The entrance requirements for this department are the same as those for others in the University. Students will be admitted at the beginning of the first semester. The number of students at any one time will be limited to four. It is therefore advisable that applications for admission be made before the opening of the University in the fall.

Certificates will be granted to students who satisfactorily complete the course.

**Library Economy.**

Instruction will be given in the order of regular library routine and includes the subjects of trade bibliography, ordering, accession, classification, cataloguing and binding. One month is devoted to cataloguing books for the University Library.
Elementary Reference.

This course trains students in methods of research and familiarizes them with indexes, dictionaries, encyclopedias, atlases and handbooks of general information. They have practical work in preparing reference lists for special classes, literary societies and debates.

Selection of Books.

Lectures on the various editions of the works of standard authors; the type, paper, and binding used by the more noted publishers; the placing of orders through various publishers or agents; second-hand booksellers and auction and remainder sales.

Bibliography.

Lectures by professors from the various departments on the best collections of books for general readers.

Public Documents.

A brief study of the activity of the government in publication, the methods of printing and distributing the federal documents, and a study of the check lists and the various indexes.

MANUAL ARTS

The department of manual arts aims to offer courses to meet the demands of two principal classes of students; first, those desiring special intensive training which will fit them for positions as directors and supervisors of manual arts in the public high schools of the state; and second, those who, in addition to the preparation to teach some one of the regular academic subjects of the high school, are seeking to equip themselves to teach one or more of the special lines of manual arts work. Students majoring in this department must take a minimum of thirty credit hours.

Candidates for the Teacher’s Certificate must fulfill major requirements.

COURSES OF INSTRUCTION.


An elementary course in the principles of free-hand drawing and the use of the common media of expression in drawing. Given by the department of fine arts.

First semester; 2 credit hours.
12 and 13. **Instrumental and Mechanical Drawing.**

An elementary course in instrumental and mechanical drawing covering the following subjects: Use of instruments, geometrical drawing, lettering and simple working drawing introducing the theory of projections, revolutions, sections, intersections and machine sketching.

Both semesters; 2 credit hours.

14. **Descriptive Geometry.**

Fundamental problems on point, line and plane, section, intersections.

First semester; 2 credit hours.

15. **Shades, Shadows and Perspective.**

Shades and shadows, perspective, isometric projection.

Second semester; 2 credit hours.

16. **Elementary Bench Woodwork.**

Practice in the use of hand tools.

First semester; 2 credit hours.

17. **Elementary Bench Woodwork.**

A continuation of course 16.

Second semester; 2 credit hours.

18. **Turning and Pattern Making.**

A course in elementary wood-turning and pattern-making.

First semester; 2 credit hours.

19. **Turning and Pattern Making.**

A continuation of course 18.

Second semester; 2 credit hours.

20. **Forge Work.**

Work in handling iron and steel in the fundamental processes of forging, welding, tempering and annealing.

Second semester; 2 credit hours.

21. **Machine Shop Work.**

Bench work in chipping and filing, grinding, practice on the lathe, shaper and milling machine.

First semester; 2 credit hours.

22. **Machine Shop Work.**

A continuation of course 21.

Second semester; 2 credit hours.
22. Handicraft.
    Work in leather, copper and brass, and pottery. Given in the department of fine arts.
    First semester; 2 credit hours.

23. Handicraft.
    A continuation of course 22.
    Second semester; 2 credit hours.

    This course is designed to give a background for the work of the teacher and supervisor of the Manual Arts.
    First semester; 3 credit hours.

25. Organization.
    Courses and equipment for Manual Arts.
    Second semester; 3 credit hours.

    Methods of teaching and supervising constructive work in the high schools.
    Both semesters; 2 credit hours each semester.

MATHEMATICS

The minimum requirement for a major in mathematics is thirty semester hours. This should include courses 11, 12, 13, 16, 17 and 18. The remaining hours should be selected on consultation with the instructors in charge of the courses which the student proposes to select. In case a student does not present Solid Geometry for entrance, course 10 must be taken at the earliest opportunity. In this case the major requirement is thirty-two semester hours.

Advanced Degrees.

Candidates for the Master's Degree must present as basis for graduate work an amount of elementary work equivalent to the major requirement in undergraduate work. For general requirements for the Master's Degree see page 38.

The mathematics library contains complete sets of all the American mathematical journals, and complete sets of several of the most important foreign journals, such as Crelle, Annalen, Fortschritte and others. The current volumes of all the important mathematical journals are in the library. The important
new books are being added. It is usually possible to add books not in the library as the need for them arises.

COURSES OF INSTRUCTION.

10. Solid Geometry.
An elementary course based on entrance algebra and plane geometry.
First semester; 2 credit hours; T. Th., 11:30.

11. College Algebra.
Prerequisite: One and one-half units of entrance algebra.
First semester; 2 credit hours; two sections; T. Th., 9:30.

A continuation of course 11.
Second semester; 2 credit hours; T. Th., 9:30.

Plane trigonometry and logarithms; prerequisite to all other courses in mathematics except 10, 11 and 36.
Prerequisite: Plane geometry and one unit of entrance algebra.
First semester; 3 credit hours; two sections; M. W. F., 9:30.

Prerequisite: Course 13.
Second semester; 2 credit hours; T. Th., 10:30.

Prerequisite; Course 13.
Second semester; 2 credit hours; T. Th., 11:30.

15a. Geometrical Drawing.
Solving of geometrical problems; construction of mathematical curves.
Either semester; 2 credit hours; time to be arranged.

15b. Descriptive Geometry.
Fundamental problems on point, line and plane; sections, intersections.
Either semester; 2 credit hours; time to be arranged.
16. **Plane Analytic Geometry.**
Elements of plane analytic geometry, including the geometry of the conic sections.
Second semester; 3 credit hours; two sections; M.W.F., 9:30.

17. **Calculus.**
Differential and integral calculus, with applications.
First semester; 5 credit hours; M. T. W. Th. F., 10:30.

18. **Calculus.**
A continuation of course 17.
Second semester; 3 credit hours; T. Th. S., 10:30.

19. **Advanced Analytic Geometry.**
Introduction to modern methods in analytic geometry. Pre­requisite: Courses 16 and 17.
First semester; 3 credit hours; T. Th. S., 9:30.

20. **Solid Analytic Geometry.**
Prerequisite: Courses 16 and 17.
Second semester; 3 credit hours; T. Th. S., 9:30.

21. **Analytic Mechanics.**
Prerequisite: Course 17.
First semester; 3 credit hours; M. W. F., 10:30.

22. **Analytic Mechanics.**
A continuation of course 21.
Second semester; 3 credit hours; M. W. F., 10:30.

23. **Differential Equations.**
A study of the more common types of ordinary differential equations, especially those of the first and second order, with applications to geometry, mechanics and physics.
Prerequisite: Courses 17 and 18.
First semester; 3 credit hours; M. W. F., 8:30.

24. **Partial Differential Equations.**
The important partial differential equations of applied mathematics.
Prerequisite: Course 23.
Second semester; 3 credit hours; M. W. F., 8:30.

25. **Advanced Calculus.**
Selected topics in the differential and integral calculus, re-
quiring more extensive and theoretical treatment than is given in courses 17 and 18.

First semester; 3 credit hours; T. Th. S., 9:30.

   An introductory course.
   Second semester; 3 credit hours; T. Th. S., 9:30.

27. Theory of Equations.
   Prerequisite courses 11, 12, 16 and 17.
   First semester; 3 credit hours; M. W. F., 10:30.

   Second semester; 3 credit hours; M. W. F., 10:30.

29. Limits and Series.
   Critical theory of the convergence of sequences and series of numbers. An introductory course.
   First semester; 2 credit hours; W. F., 11:30.

31. Statistics.
   This course is adapted to the needs of students of science and economics.
   First semester; 3 credit hours; M. W. F., 9:30.

32. The Mathematics of Life Insurance.
   An introductory course, designed to meet the needs of students majoring in commerce.
   Second semester; 3 credit hours; M. W. F., 9:30.

33. Elliptic Integrals.
   The theory of indefinite integration, leading to elliptic integrals, with attention to applications.
   First semester; 3 credit hours; M. W. F., 8:30.

   Summer term; 2 credit hours.

35. The Teaching of Secondary Mathematics.
   Summer term; 2 credit hours.

36. Culture Mathematics.
   The chief purpose of this course is to consider the role which elementary mathematics, up to and including the calculus, plays in modern life. Enough of the subject matter will be given to enable the student to understand the general methods which are
used in trigonometry, analytic geometry and calculus. Considerable attention will be given to the historical development.

Prerequisite: Entrance mathematics and some intellectual maturity.

Second semester; 3 credit hours; M. W. F., 9:30.

COURSES IN ASTRONOMY.

A11 Descriptive Astronomy.
An introductory course, dealing with the fundamental facts and the principal theories of the subject.
First semester; 2 credit hours; T. Th., 9:30.

A12. Descriptive Astronomy.
A continuation of course 11.
Second semester; 2 credit hours; T. Th., 9:30.

A13. Practical Astronomy.
Determination of latitude, azimuth and time.
Either semester; 2 credit hours; time to be arranged.

The fundamental principles and processes of the method of least squares.
Prerequisite: Mathematics 15.
First semester; 3 credit hours; M. W. F., 9:30.

GRADUATE COURSES.

41. Functions of Real Variables.
An introductory course. Prerequisite: Course 23 or 25.
3 hours throughout the year.

42. Functions of a Complex Variable.
An introductory course. Prerequisite: Course 23.
3 hours throughout the year.

43. Vector Analysis.
An introductory course with applications to geometry and physics. Prerequisite: Course 22.
3 credit hours.

40. Analytic Projective Geometry.
A study of the coordinate systems of projective geometry,
the principle of duality, general introduction to the projective theory of conic sections and quadric surfaces. Prerequisite: Courses 17, 18 and 20.
3 credit hours.

44. Harmonic Motion.
The analytic treatment of vibratory and wave motion. Prerequisite: Courses 22 and 23.
3 credit hours.

45. The Theory of Sets of Points.
A general introduction to the modern theory of sets. Prerequisite: Courses 25 or its equivalent.
2 credit hours.

46. Theory of Numbers.
Elementary properties of numbers, theory of congruences, residues of powers, primitive roots, quadratic forms. Prerequisite: Course 27.
3 credit hours.

47. Finite Groups.
Elements of the theory of abstract groups; substitution groups. Prerequisite: Course 27.
3 credit hours.

48. Continuous Groups.
A study of the Lie Theory. Prerequisite: Course 47.
3 credit hours.

The application of the differential calculus to the geometry of twisted curves and surfaces. Prerequisite: Courses 28 and 40.
3 hours throughout the year.

49. Projective Geometry.
A course for advanced graduate students. Prerequisite: Course 40.
3 hours throughout the year.

50. Advanced Mechanics.
Theory of the gyroscope and related problems. Prerequisite: Courses 20 and 22.
3 hours throughout the year.
51. **Infinite Series.**

A course dealing with the modern aspects of infinite series. The important original memoirs will be read. Prerequisite: Courses 29, 41 and 42, and a reading knowledge of French and German.

3 hours throughout the year.

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**PHYSICAL EDUCATION**

The Department of Physical Education has charge of all athletics of the University and directs the course in Gymnasium work. At the beginning and end of each school year a physical examination is given each student and suitable exercises are prescribed for his development. The cards given to each person examined give him an opportunity to compare his development with that of the average man and also his increase in strength during the year.

The University requires that each student must have two credits in Physical Culture listed with the total number for a degree. This work is given in the Freshman and Sophomore years, but where the student has a satisfactory reason this may be postponed until a more convenient time. One-half a credit a semester is given for the regular gymnasium work and the student is required to spend two hours a week during the semester to receive this credit. When men are engaged in competitive sports they may be excused from the gymnasium classes by applying to the Director of Physical Education.

The expenses of a gymnasium course are about three dollars, each student being required to purchase a regulation uniform.

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**COURSES FOR MEN**

11 and 12.

Setting up exercises and special exercises for building up the body; elementary exercises on the horizontal bars, parallel bars, buck, etc.

Both semesters; ½ credit hour; time to be arranged.

13 and 14.

Advanced work on the apparatus, club swinging, etc.

Both semesters; ½ credit hour; time to be arranged.
COURSES FOR WOMEN

15 and 16.
Exercises without apparatus; breathing exercises, walking and running; dumb bells; exercises for rhythm; the latter including folk games and dances. This work is taken by all undergraduate women during the first year of their attendance at the University.

Both semesters; \( \frac{1}{2} \) credit hour; two sections; time to be arranged.

17 and 18.
Exercises with chest weights, wands, bar bells, dumb bells, Indian clubs, rubber balls, games, advanced work in rhythm, including folk games and dances, and gymnastic dancing.

Both semesters; \( \frac{1}{2} \) credit hour; time to be arranged.

PHYSICS

MAJOR REQUIREMENTS

A student making Physics his major subject will be expected to take, in addition to his thirty-five or forty hours in Physics, courses 12, 13, 17, 18 and 23 in Mathematics, courses 10 and 11 in Chemistry, and courses 10, 11, 12 and 13 in German or French. Other courses in Mathematics, Astronomy, or Chemistry may be prescribed, according to the trend of the student's specialization and the end in view.

Candidates for the Teacher's Certificate in this department must have completed acceptably courses 10, 11, 12 and from fourteen to twenty-four additional hours.

A. Beginning Physics.

This course meets the needs of students who have not presented Physics for entrance. The course is continuous with B, and credit will not be given for one without the other. Two recitations, one laboratory.

First semester; 3 credit hours; time to be arranged.

B. Beginning Physics.

Continuation of A.
Second semester; 3 credit hours; time to be arranged.
10. Mechanics, Molecular Physics and Heat.

The course comprises about twenty-five of the fundamental and representative problems which, experimentally, will yield quantitative results. Prerequisite: Course A and B, or equivalent; Mathematics 12.

First semester; 4 credit hours; lectures, T. Th., 11:30; laboratory, M. W., 1:30.

11. Electricity, Sound and Light.

This course is a continuation of course 1, and with it constitutes a general survey of the subject. Prerequisite: Physics 10.

Second semester; 4 credit hours; lectures, T. Th., 11:30; laboratory, M. W., 1:30.


This is a lecture demonstration course. It takes up the topics of college Physics that cannot be successfully treated by the laboratory method with the average college student. It completes the general survey of college Physics. Prerequisite: Physics 11.

First semester; 3 credit hours; M. W. F., 10:30.

20. Advanced Light.

This is primarily a laboratory course in the advanced phases of the subject. Prerequisite: Physics 12.

Second semester; 3 credit hours; time to be arranged.

22. Advanced Sound.

This is a lecture-laboratory course. The subject will be introduced with a study of Hydrodynamics. Prerequisite: Physics 12.

First or second semester; 3 credit hours; time to be arranged.


This is primarily a laboratory course, similar to 20 above. Prerequisite: Physics 12.

First or second semester; 3 credit hours; time to be arranged.

30 and 31. Advanced Experimental Physics.

This course will be entirely of a laboratory nature. The work will be an extension of the above advanced courses, or a repetition of some classical experiment. Prerequisite: Physics 20, 22, 24; Mathematics 18.

Both semesters; 2 or 5 hours; time to be arranged.
15. Electrical Measurements.

This is a lecture-laboratory course dealing with the theory and practice of electrical measurements and measuring instruments. Prerequisites: Physics 10 and 11.

Second semester; 3 hours; time to be arranged.


This course will consist of discussions of, and assigned readings and reports on, the subject matter and methods of high school physics. Some attention will be paid to satisfactory methods of demonstrating important phenomena by means of simple apparatus that can be had by any school.

Second semester; 2 credit hours; time to be arranged.


This course consists in the study of some good textbook supplemented with laboratory and observation work.

First or second semester; 3 credit hours; time to be arranged.

13. Practical Physics.

This course is planned for non-technical students and will discuss in a descriptive, rather than a rigorously mathematical way, among others, such subjects as gasoline and oil engines, their operation and troubles, their ignition systems; dynamos and motors, their types, characteristics and troubles; telephone systems, their mechanisms, operations and troubles, etc. In addition some of the more recent applications of physics to industrial problems will be considered.

Prerequisite: High School Physics.

First or second semester; 3 hours; M. W. F., 1:30.

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PSYCHOLOGY AND PHILOSOPHY

COURSES IN PSYCHOLOGY

Students that wish to elect their major work in psychology should take courses 11, 12, 13, 14, 15 and 18. After taking courses 11, 12 and 13, the student may with the consent of the professor substitute other courses for 15 and 16, according as he is working toward pure philosophy or education. Courses 14 and 18 are especially designed for teachers who wish to ground themselves in the principles of psychology and mental measurement. Courses 15 and 16 are especially suitable for students of biology and sociology.
11 and 12. General Psychology.

This course runs throughout the year and forms a general introduction to all the courses in psychology and serves as a prerequisite for the work in education. The work is given by textbook, lectures, class demonstration and assigned readings with written papers. It is open to all students that have done one year of university work.

Three credit hours; M. W. F., 9:30.

13. Experimental Psychology.

The work of this course will consist of lectures and experiments in the psychological laboratory. There will be one lecture a week and two periods of two hours each in the laboratory. The experiments will cover perception, attention, memory, affective states, fatigue, etc. Open to all students that have taken courses 1 and 2.

First semester; 3 credit hours; laboratory T. Th., 2:30-4:30.


This is designed especially for teachers. The aim is to present experimentally the various methods of determining sensory and bodily defect and of measuring mental power. The plan is to establish in connection with the department a bureau of child study which shall be open to teachers and parents for determining the causes of poor work and retardation among pupils in school. All teachers are to be trained in Mental Measurements. The prerequisites are courses 1, 2 and 3.

Second semester; 2 credit hours; T. Th., 2:30-4:30.

15. Genetic Psychology.

This course is devoted to a study of mental evolution in animals and men and of the process of learning. An attempt is made to work out the various stages in the development of mind. The work will be given by lectures and selected readings with papers by the students.

First semester; 2 credit hours; T. Th., 10:30.


The work of this course will be directed towards sketching the evolution of mind. It follows naturally the course in genetic psychology and is a continuation of it. The emphasis will be laid upon the development of mind in men and so concern itself particularly with the study of children. The work will be given by lectures and readings with written theses.

Second semester; 2 hours credit; T. Th., 10:30.
17. Psychology of Religion.

This course will cover a discussion of the origin and development of religions among primitive peoples and aims to show the nature of religion among the cultured peoples of Europe and America. It will treat especially the phenomena of conversion, religious revivals, the meaning of the confessional, the fetish, ancestor worship, nature worship, etc. Its standpoint will be that of sympathy and appreciation rather than that of criticism. It will aim to avoid entirely the whole field of dogmatic religion and theology. Its culminating point will be a treatment of the place of religion in the individual life.

First semester; time to be arranged.


A study of the psychological foundations of society. The main themes are the social instincts and emotions, the principles of leadership and the various factors in the environments of races that have been influential in fixing the psychological characteristics of the same. The work will be given by lectures and readings with papers.

Second semester; 2 credit hours; T. Th., 10:30.

19. Physiological Psychology.

In this course the structure and functions of the nervous system are studied in relation to mental phenomena. The aim of the work is to show the foundations especially of the plasticity of the nervous system and the educability of the human being. Open to all students that have taken work in biology or the first year's work in general psychology. The work is given by lectures and demonstrations in the laboratory.

First semester; 2 credit hours; M. W., or W. F., 2:30-4:30.

20. Mental Pathology or Abnormal Psychology.

This course undertakes a study of the morbid phenomena of mental action. The work begins with a study of feeblemindedness in children and of insanity and criminality in adults and leads up to a study of hysteria, hypnotism, alternating personalities, loss of memory and other forms of common mental disorders. The work is given by lectures, readings and demonstrations in the state hospitals. Open to all students that have taken courses 11 and 12. This course is especially valuable for teachers as it presents the principles for interpreting backward children and cases of bodily arrest and mental retardation.

Second semester; 2 credit hours; time to be arranged.

The seminary is open to all students of advanced attainments in psychology. The work will be chosen to suit the tastes and interests of those who wish to elect the course. In general it may be said that the aim is a systematic study of special themes in psychology. Admission by special permit.

Both semesters; credit and time to be arranged.

COURSES IN PHILOSOPHY.

23. Introduction to Philosophy.

A study of the great problems in the development of thought and especially of present-day problems of philosophical inquiry. Bergson's Creative Evolution was studied in 1913-1914.

First semester; 2 credit hours; T. Th., 8:30.

24. Ethics.

A study of the principles of conduct and of moral living. The course will attempt to show the development of social living, and to treat in view of their historical setting some of the more important social problems of the day such as individualism, socialism, the family and the production and distribution of goods. Dewey and Tufts' Ethics will be used as a textbook.

Second semester; 3 credit hours; M. W. F., 10:30.


This course will give a general survey of the development of philosophical thought and of ethical inquiry. The work will be given by lectures, assigned readings and class reports.

27. Logic.

A study of the laws of thought and of the principles of reasoning and argumentation. The relation of scientific methods of investigation to mathematics and logic will find consideration.

First semester; 2 credit hours; M. F., 11:30.

28. Psychology of Thinking.

This course will attempt to analyze the general thought processes as they appear in daily activity. The work will be based upon such books as Dewey: How We Think, and Miller: Psychology of Thinking.

Second semester; 2 hours credit; W. and F. at 11:30.
29. Philosophical Seminary.

The work of this course will be arranged to suit the tastes and interests of the students who apply for admission and are doing their major work in philosophy.

Time and credit to be arranged with the professor in charge.

READING AND PUBLIC SPEAKING

11. Essentials of Public Speaking.

Correct pronunciation, development of the voice, tone production, vocal quality, flexibility, distinct articulation. The reading of short stories and poems, with special attention to emphasis and cadence as the two fundamental elements of reading and speaking. Open to all students.

First semester; 2 credit hours.


Dramatic readings and the speaking of extracts from great orations to develop freedom and ease on the platform; and to gain an understanding of Pitch, Rate and Quality as elements of expression. Prerequisite: Course 11.

Second semester; 2 credit hours.

13. Effective Reading.

This course aims to develop greater skill in expression and a keener appreciation of the beauty and power of imaginative literature. Choice stories and poems from English and American literature; scenes from modern plays. Prerequisite: Courses 11 and 12.

First semester; 2 credit hours.


Continuation of course 13. Interpretation of the Lyric and the Drama. The study of the drama will be divided equally between Shakespeare and modern plays. Prerequisite: Courses 13.

Second semester; 2 credit hours.

15. Public Speaking.

Delivery of orations; history of oratory; extemporaneous speaking. Each student is required to write at least one oration and deliver it. The aim is to cultivate analytical and constructive thinking and develop a clear, forceful, easy delivery. Prerequisite: Courses 11 and 12.

First semester; 2 credit hours.
16. **Public Speaking.**
   A continuation of course 15. Prerequisite: Course 15.
   Second semester; 2 credit hours.

17. **Reading of the Bible, Hymnal, Psalter and Liturgy.**
   This course, which is purely professional, is offered for the aid of any who intend going into the missionary field or the ministry, and who realize the importance of voice training for such service.
   First semester; 2 credit hours.

18. **Continuation of 17.**
   Prerequisite: Course 17.
   Second semester; 2 credit hours.

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**ROMANIC LANGUAGES**

Students majoring in French will be expected to take the following courses: 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 or 21, 22, 23. Course 24 is also required of those who wish to teach French.

In addition, students choosing French will have to take two years of one other modern language and one course in the History of Europe.

Candidates for the Teacher's Certificate in this department must have completed the above requirements.

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**FRENCH**

10 and 11. **Elementary French.**
   Fraser and Squair's French Grammar, Aldrich and Foster's French Reader, Matzke's Primer of French Pronunciation. It is the object of this course to give special attention to accurate pronunciation, mastery of the essentials of grammar, and acquisition of vocabulary.
   Both semesters; 3 credit hours; M. W. F., 9:30.

12 and 13. **Intermediate French.**
   Prerequisite: Courses 10 and 11 or two units of Entrance French, grammar, composition and reading. Translation of selected texts in prose and verse.
   Both semesters; 3 credit hours; M. W. F., 10:30.

14 and 15. **Advanced French.**
   Grammar, reading and composition. Texts will be selected from the works of the principal authors of the classical period.
   Both semesters; 3 credit hours; M. W. F., 11:30.
Rapid reading of standard modern novels. Reports by the members of the class.
First semester; 2 credit hours; T. Th., 9:30.
To be given in 1914-15 and in alternate years thereafter.

17. Modern French Drama.
Rapid reading of standard works of modern dramatists. Reports by the members of the class.
Second semester; 2 credit hours; T. Th., 9:30.
To be given in 1914-15 and in alternate years thereafter.

General survey of French literary activity from 1600 to 1800. Lectures with reading of principal authors and reports by the members of the class.
Both semesters; 2 credit hours.

20. Moliere.
His life, works and influence on later French comedy. All his plays will be studied. Reports, rapid reading in class of his principal works. Lectures in French.
First semesters; 2 credit hours; time to be arranged.

Lectures in French with reading of the works of Racine, Boileau, Pascal, La Rochefoucauld, La Bruyere.
Second semester; 2 credit hours; time to be arranged.

22 and 23. French Literature of the Nineteenth Century.
Lectures with reading of the principal authors and reports by the members of the class.
Both semesters; 2 credit hours; T. Th., 10:30.
To be given in 1914-15 and in alternate years thereafter.

24. Teacher's Course.
Lectures on method of teaching French, introduction to French pedagogical bibliography, and review of French grammar. Reports by the members of the class.
One semester; 2 credit hours; time to be arranged.

GRADUATE FRENCH

26 and 27. Old French.
An introduction to the phonology and morphology of the Old French language. Suchier, Les voyelles toniques du vieux
francais, Schwan Behrens, Grammatik des altfranzoesischen, Nyrop, Grammaire historique de la langue francaise. Texts to be read are: La Chanson de Roland, Aucassin et Nicolete, and one romance of Crestien de Troyes.

Both semesters; 3 credit hours; time to be arranged.

SPANISH

10 and 11. Elementary Spanish.

Special attention is given to accurate pronunciation mastery of the essentials of grammar and reading vocabulary.

Both semesters; 3 credit hours; M. W. F., hours to be arranged.


Advanced grammar, composition and translation of selected texts in prose and verse. Ramsey’s, A Textbook of Modern Spanish; Umphrey’s, Spanish Prose Composition.

Both semesters; 3 credit hours; hours to be arranged.
Graduate Department
GRADUATE DEPARTMENT

AIMS AND METHODS

The University has established courses of graduate study to serve the needs of young men and women of college training who desire a larger and more thorough acquaintance with the scholarship and research of the world than can be obtained in current undergraduate courses. Although graduate study will naturally appeal especially to those who desire to fit themselves for the higher positions in the work of education, it is not exclusively for this class. It seeks to awaken in the minds of capable men and women an appreciation of high scholarship, research, and the advancement of learning, to the end that they may effectively aid, not only in the promulgation of academic instruction, but also in extending the boundaries of knowledge. The principal aim of graduate study is the development of the power of independent work and research. Such power is essential for success in any walk of life.

The University aims to give advanced instruction of a high character in each of its departments, but the scope, form and methods of this instruction are determined independently within the several departments. Each graduate student is expected, however, to do a wide range of private reading and study; for the graduate student usually does not obtain from lecture and laboratory courses all the knowledge and training necessary to meet the requirements for his degree.

ADMINISTRATION AND FACULTY

Almost every department of the University is prepared to offer courses of graduate instruction. The members of the several departments who offer graduate courses compose the faculty of the Graduate Department. The details of administration of the department are in charge of a Committee on Graduate Studies.

FELLOWSHIPS AND SCHOLARSHIPS OPEN TO GRADUATE STUDENTS

For the year 1914-15 the University offers the following Fellowships and Scholarships:

Graduate Fellowships.

Ten fellowships with a stipend of two hundred and fifty dollars each and exemption from tuition and fees. These fellow-
ships are for the promotion of graduate study and research and are open to graduates of universities and colleges which maintain high standards of scholarship. They are assigned to the various departments according to the merits of the applicants.

**Graduate and Undergraduate Scholarships.**

Twenty-five scholarships with a stipend of one hundred dollars each and exemption from tuition and fees. These scholarships may be awarded either for graduate or for undergraduate study. They are open to graduates of universities, colleges, or normal schools, and to advanced undergraduates of promise. An applicant must show that he is able to enter the Junior year of the College of Arts and Sciences.

**Scholarships in Education.**

Twenty scholarships with a stipend of fifty dollars each and exemption from tuition, open to graduates of normal schools and colleges who wish to pursue advanced work in the Department of Education.

Fellows and Scholars may be required to give limited assistance in the work of the department of their principal study, not, however, to such an extent as to interfere with their studies.

Applications must be received not later than May 15th. The awards are made not later than June 10th. Applications or inquiries should be addressed to the Registrar, University of Montana, Missoula, Montana.

**ADMISSION**

For admission to the Graduate Department to work for a degree, an applicant must hold a first degree either from the University of Montana or from some other university or college of equivalent standing. Admission to particular graduate courses or departments may be secured only by those who have had the requisite undergraduate work in those courses or departments.

In order to be enrolled as a member of the Graduate Department a student must be doing graduate work. The possession of a first degree does not entitle a student to be enrolled in the Graduate Department, if the courses which he is taking are undergraduate.

Students of mature age who do not hold a first degree, but satisfy the Committee on Graduate Studies and the officers of the departments in which they wish to work of their earnestness
of purpose and special fitness, may be permitted to take work in the Graduate Department without reference to candidacy for a degree. In order to secure this permission, however, a candidate must have had such preliminary preparation for the work he wishes to take up as would justify his admission to the Graduate Department as a candidate for a degree if he could meet the other requirements fully.

FEES

The tuition and fees for Graduate Students are the same as those for undergraduates in the College of Arts and Sciences.

REQUIREMENTS FOR GRADUATE DEGREES

The University is prepared to give instruction of a thorough character leading to the Degrees of Master of Arts and Master of Science. Those who wish to pursue work leading to the degrees of Doctor of Philosophy or Doctor of Science are advised for the present to go to the larger universities. The Master’s Degree is conferred under the conditions noted on page 38 of this catalogue.

BIOLOGY.

20. Advanced Bacteriology.

This is a continuation of general bacteriology and will take up the study of the higher bacteria, the pathogenic protozoa as to their characteristics and developmental stages, pathogenesis for man and animals, and diseases caused by them. The study of the bacteriology of milk, milk products, air, soil, water, arts and industries. The bacterial diseases of plants will also be discussed. Laboratory work will consist of observations of the growth, development and effect caused by these organisms, also the analysis of milk, water, air and soil from a bacteriological standpoint with the use of a bacteriological key. Prerequisite: General Bacteriology.

Second semester; 2 credit hours; time to be arranged.


A study of the formation and development of vertebrates which includes lectures, recitations and laboratory work. This includes the general conceptions of vertebrate type of structure; the study of embryonal cells and processes; karyokinesis; germ cells and germ-layers; the different development stages or life cycle of vertebrates with the origin and formation of all special-
ized parts of the animal. The laboratory work will consist of
the study of a definite vertebrate (probably the chick) in all
its developmental phases; method of obtaining embryos, in­
cubation, hardening, staining, sectioning and mounting of embry­
onal tissue, and finally the microscopical study of sections of
different parts of embryos taken at definite intervals of time.
Prerequisite: General Biology; 3 credit hours; time to be ar­
ranged. Second semester.

30. Biological Seminar.

Reviews of current and recent literature intended to give a
comprehensive survey and knowledge of the trend of thought
and study in biological studies. Continued during the second
semester. Open to all advanced students and required of all
students doing major work in the department.

First semester; 2 credit hours; time to be arranged.

31. Biological Seminar.

A continuation of Course 30. A thesis will be required
of all seniors, involving a study of some phase of animal life
and requiring investigation on the part of the student.

Second semester; 2 credit hours; time to be arranged.

32. Research.

An opportunity will be given to graduate students and
others of sufficient fitness to pursue original investigations
within the facilities of the department as to laboratories and
material. Details will be arranged with individual students.

Both semesters; credit and time to be arranged.

Biological Station.

In addition to the courses here offered, students are referred
to the description of the work of the Biological Station. The
courses of summer work are open to all who may choose to
attend, and University credit is given for the amount of equiva­
 lent work satisfactorily completed during the summer.

BOTANY.

Montana is a rich field for work in several lines of botanical
research, dealing especially with problems of taxonomy and
ecology. A great variety of physiographic conditions is to be
seen in the region of Missoula, and Western Montana generally,
and affords special opportunity to students in the flora of its valleys, plains and mountains. As to the lower groups of plant life, Montana is almost a virgin field. Forest conditions also offer special opportunities for interesting and profitable research.

31. Special Morphology.

A course designed for the intensive study of plant structures, dealing with the life histories of plants in various groups, the development of organs and tissues, and morphological conceptions of the present day.

Both semesters; 4 or 5 credit hours; time to be arranged.

32. Cytology.

Study of cell structures in detail. Special technique. Literature of the subject.

Both semesters; 4 or 5 credit hours; time to be arranged.

33. Research.

Opportunity is given for the pursuit of original work in the fields of structural and morphological botany, in ecology and in forestry, by graduate students and others showing special fitness for the work.

Both semesters; credit to be arranged.

CHEMISTRY.

For Advanced Undergraduates and Graduates.


A more extended course than Course 17, for students who take chemistry as a major.

Both semesters; 4 credit hours.

Note—Chemistry 18 and 19 form a continuous course throughout the year. Credit for Chemistry 18 will not be given until Chemistry 19 is completed.

20. Physiological Chemistry.

The chemistry of the human body; digestion, secretion, the urine, blood, etc. Lectures and laboratory work. Text: A Text Book of Physiological Chemistry, Hammersten-Mandel; and Practical Physiological Chemistry, Hawk. Prerequisite: Chemistry 11, 12 and 17.

Second semester; 4 credit hours.

24 and 25. Physical Chemistry.

A study of the more important results, methods and prob-
lems of theoretical chemistry. Lectures, laboratory work and reports. Chemistry 24 and 25 form a continuous course. Those who elect 24 must elect 25 in the following semester. Prerequisite: Chemistry 11, 12, 13, Physics 10 and 11. An elementary knowledge of calculus is desirable.

Both semesters; 4 credit hours; time to be arranged.


Prerequisite: Chemistry 24 and 25.
Second semester; credit to be arranged.

34. Foods.

The testing of foods for purity and quality. Lectures and laboratory work. Text: Food Inspection and Analysis, Leach.
Prerequisite: Chemistry 11, 12, 13, 15 and 17.
Second semester; 4 credit hours.

36. History of Chemical Theories.

This course is designed for students who specialize in chemistry and also for advanced students of other sciences and of philosophy, who desire an acquaintance with present chemical theories, but who have not time to become specialists in chemistry. The course seeks to give a clear insight into the present status and value of chemical theories through an examination of their origin and historical development. Lectures and reports.
Prerequisite: An elementary knowledge of inorganic and organic chemistry.

First semester; 3 credit hours.

For Graduates.

Advanced Courses in Chemistry and Courses of Research.

The department of chemistry is prepared to arrange more advanced courses in Inorganic, Analytical, Organic and Physical Chemistry for students who are properly prepared. Courses of Research in Analytical and Physical Chemistry will be arranged for students who have the requisite training and experience.

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ECONOMICS AND SOCIOLOGY.

32. Economic Development of Montana.

A study of the agricultural mining and labor development of the state. The materials dealing with Montana’s exploitation
will be examined. The work will be partly in the nature of a seminar and partly lectures.

Both semesters; 2 credit hours; Fr., 2:30-5:30.

34. Social Problems of Europe.

A lecture and seminar course dealing with the present-day problems which confront Europe, especial study being made of social conditions in Great Britain.

Both semesters.

Graduate students in Economics and Sociology may also elect courses 21 to 26, with some additional requirements.

EDUCATION.

18. Educational Administration.

A course designed primarily for graduate and advanced students. This will deal with administrative problems of city and county school systems and the administration of such specific types of education as high schools, normal schools, vocational education for defective and subnormal children. A special study of the methods and results of recent scientific studies of school administration will be made, including school finance; promotion, retardation and elimination; causes and conditions of efficiency in teaching, and the measuring of education products.

First or second semester; 2 or 4 credit hours.

19 and 20. Pedagogical Seminary.

Designed for graduate and advanced students of education. Members meet once a week for discussion of a general topic selected at the beginning of each semester. A part of the time will be given to a critical consideration of current technical educational literature.

By special arrangement; credit and time to be arranged.


An advanced course for students who have completed Education 14. This course will deal with the nature and development of the mind during childhood and adolescence with special reference to the meaning of these facts to the educator. Opportunity will be given for the comparative study of the work of leading thinkers and investigators and for a study of special topics.

Credit and time to be arranged.
ENGLISH AND LITERATURE

These courses are open to third and fourth year students who have taken courses 15, 16 and at least two-period courses (19-26). Students taking these courses as graduate work will be required to write special papers in addition to the regular assignment.

61. Old English.

Elementary course; grammar and reading. Bright’s Anglo-Saxon Reader.
First semester; 3 credit hours.

62. Old English.

Poetry; reading of the Beowulf with the study of the meter and of the literary characteristics of old English poetry.
Second semester; 3 credit hours.

63. Chaucer.

Selections from the Canterbury Tales studied as an introduction to middle English.
First semester; 3 credit hours.

64. Middle English—(Continued.)

Emerson’s Middle English Reader. Primarily a reading course, though attention is given to grammar and dialectology.
Second semester; 3 credit hours.

65. Development of the English Drama.

A study of the history of the English drama from the Middle Ages down to the present time, with special emphasis on the Elizabethan period; for Shakespeare see courses 67-68. Open only to students who have had course 18.
Second semester; 3 credit hours.

66. Advanced Drama.

The subject of this course varies from year to year; in 1911, Pseudo-Shakespearean plays; in 1912, Comedy. Open only to students who have had course 65.
Either semester; 2 credit hours.

67, 68. Shakespeare.

A careful and detailed study of some of Shakespeare’s plays.
First semester; 3 credit hours.
69. The Appreciation of Poetry.
A study of the essential elements of poetry and of English verse forms; illustrations are drawn mainly from recent verse, and an opportunity for exercises in verse writing is offered those who wish it.
First semester; 3 credit hours.

70. Wordsworth and Coleridge.
Second semester; 2 credit hours.

71. Shelley, Keats, Byron.
First semester; 2 credit hours.

72. Tennyson and Browning.
Second semester; 2 credit hours.

73. Carlyle, Ruskin, Eliot.
First semester; 3 credit hours.

74, 75. Development of English Fiction.
A thorough and detailed study of English fiction from the Anglo-Saxon days to the present. This course traces the storytelling instinct among the English, not only in prose but in poetry, and students taking it should have some knowledge of Old and Middle English literature. The Instructor gives a number of lectures, especially on social conditions in the various periods. Importance is placed upon actual knowledge of the fiction itself rather than upon biographical data, and students should be prepared to read a large amount of literature. Much of the classroom work follows the seminar plan in which papers by the students are read and discussed. Open to graduates and undergraduates as the Instructor considers sufficiently prepared.
Both semesters; 3 credit hours.

FRENCH

26 and 27. Old French.
An introduction to the phonology and morphology of the Old French language. Suchier, Les voyelles toniques du vieux francais. Schwan Behrens, Grammatik des altfranzoesischen, Nyrop, Grammaire historique de la langue francaise. Texts to be read are: La Chanson de Roland, Aucassin et Nicolete, and one romance of Crestien de Troyes.
Both semesters; 3 credit hours; time to be arranged.
The following courses are primarily Graduate Courses. However, some of them may be elected by the more advanced undergraduate students. One or two new Instructors are to be added to the instructional force of the department, during the coming year, and it is fully expected that all of the courses herein outlined will be given.

31. Advanced Geology.

A more careful study of the principles of Geology. Field and laboratory work and a thorough review of past and recent geological literature.
First semester; 2 to 4 credit hours; time to be arranged.

32. History of Geology.

This course is intended for those specializing in geology. The basis of the course will be. "Founders of Geology," by Geikie; "History of Geology and Paleontology," by Zittel; and "History of Geology," by Woodward.
Second semester; 2 credit hours; time to be arranged.

33. Advanced Economic Geology.

This course should follow course 14, and is a careful study of the coals, oils, gas, etc., of the United States and other countries.
First semester; 2 credit hours; time to be arranged.

34. Genesis of Ore Deposits.

Lectures, assigned readings and mine examinations. The basis of the work will be such books as Van Hise on Metamorphism; Posepny and others on the Genesis of Ore Deposits; Kemp, Ore Deposits of the U. S. and Canada; Phillips and Louis. A Treatise on Ore Deposits; Weed (Beck's), The Nature of Ore Deposits; and many U. S. Geological Reports such as the Butte Special Folio; Geology and Ore Deposits of the Coeur d'Alene District, Idaho; The Leadville District; Enrichment of Sulphide Ores, by Emmons, etc.
Second semester; 2 or 4 credit hours; time to be arranged.

35. Causal Geology.

This course will deal more largely with the causes or theo-
retical causes underlying the various geological phenomena such as earthquakes, volcanoes, mountain making, etc.

2 hours credit.

36. Regional Geology.

A careful and systematic study of the geology of some particular region. The mapping of the special area and the interpretation of its past geologic history.

3 to 5 hours credit.

37. Mine Examination and Reports.

Near the City of Missoula are many mines, both coal or lignite and metal mines. A particular mine or group of mines is assigned to each student and an examination, study and interpretation of the geology, rocks, deposits, mining methods, etc., is made by him, together with a careful surface and underground map of each property. A careful report upon the property is written by the student and either re-visited by the student with the instructor or checked up carefully by the instructor.

38. Field Work in Economic and Mining Geology.

A study of the geology, theory of formation, value, transportation facilities, in fact, the general commercial and geological aspect of gypsum deposits, phosphate deposits, baryte deposits, coal and clay deposits, building stone, lime deposits, deposits for making Portland cement, etc., and outcrops and general reports on metallic prospects and reconnaissance work in mining regions.


This course deals with the origin of rocks, their localities in Montana, their megascopic and microscopic description, texture, weathering, etc. If at all feasible, a selected igneous region near Missoula will be assigned to each student, and a petrographic report upon this will be made by him.

40. Glacial Geology.

As the University of Montana stands within an old local glacier region, and Missoula Valley is the bed of an old glacial lake, with glacial evidences almost everywhere, the subject of glacial geology is of more interest to a student at the State University than it would be in many other localities. A student taking this course is expected to become familiar with the latest literature on the subject of glaciers, and will therefore do a great deal of reading. However, much field work will be done, enough
so as to enable each student to properly interpret and study with intelligence glacial deposits wherever found.

41. **Summer Field Work in Geology.**

A five-weeks’ course will be given in the systematic mapping and geologic study of a special area. A field camp will be established and the expense of each person will be nominal. Only a limited number of students may be admitted to this course.

3 hours credit.

42. **Research Work.**

Individual work upon selected subjects, but under the direction of the head of the department.

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**GERMAN**

26 and 27. **Survey of German Literature.**

Lectures, outside readings, from the beginning to Lessing. 1st semester. Second from Lessing through the Nineteenth Century. Essays, written reviews and criticisms in the German language.

Both semesters; 3 credit hours.

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**HISTORY AND POLITICAL SCIENCE**

22. **The Renaissance.**

Political, economic and intellectual conditions at close of Middle Ages; the papacy; beginnings of the Renaissance; geographical discoveries; inventions; Greek influence; a detailed study of the intellectual ideas of the Renaissance.

First semester; 2 credit hours; T. Th., 11:30.

Prerequisite: Six hours of college history.

23. **The Reformation.**

Social and ecclesiastical conditions underlying the Reformation; reform within and without the church; Luther and the reformation in Germany; religious wars; importance of the Reformation.

Second semester; 2 credit hours; T. Th., 11:30.

Prerequisite: Six hours of college history.
24. Revolution and Napoleonic Eras.

French society and state before the Revolution; estates general; reign of terror and reaction; Constitution of 1795 and Directory; Napoleon and the Empire; Napoleonic wars and the commercial struggle with the British Empire.

First semester; 3 credit hours; T. Th., 9:30.
Prerequisite: Six hours of history.

25. Europe in the Nineteenth Century.

A detailed study of the political and social conditions of Europe since 1815. Period of reaction and revolution; unification of Germany and Italy; development of the British Empire; international relations; arbitration and world politics.

Second semester; 3 credit hours; T. Th., 9:30.
Prerequisite: Six hours of history.


This course is designed as an introduction to contemporary American politics. It is presented from the point of view of present-day affairs. Such matters as our industrial system, capitalism and socialism, direct government, equal suffrage, the negro question, the labor movement, and the new nationalism are treated from an historical point of view.

First semester; 2 credit hours; T. Th., 11:30.
Prerequisite: History 21 or Political Science 16.


This will be a study of the social and economic origins of Montana, its development as a territory, its organization as a state, and the social and political influences in the commonwealth since 1889. Consideration will be given to the transformation of Montana from mining to agricultural and industrial interests, to the development of industry, and to general economic conditions. The state will be studied as a typical commonwealth in relation to the general course of American history.

Second semester; 2 credit hours; T. Th., 11:30.
Prerequisite: History 21.

32. Expansion of the United States.

In the first semester will be considered the westward development of the colonial period, the colonial policies of Great Britain, France and Spain, and the development of the Mississippi Valley to the period of the War of Secession. In the second semester
attention will be given chiefly to the development of the far West, in its social, economic, and political aspects, and to the recent colonial expansion of the United States. A continuous course throughout the year.

Two credit hours each semester; T. Th., 2:30.
Prerequisite: Thirty hours of college history.

33. The Teaching of History.

A course in the practical problems of teaching history in the secondary schools.
Second semester; 1 credit hour; F., 2:30.
Open only to advanced students.

50. Historical Methods.

A study of the methods of historical investigation. Students are required to make a study of historical bibliography and criticism and are given practice in the solution of a few typical problems in various fields.
Both semesters; once a week.

51. Seminar in American History.

The bibliography of American history and individual investigation by the student will comprise the scope of the course. In 1914-15 the work will be limited to the period from 1760 to 1789.
Both semesters; once a week.

52. Studies in Montana History.

Opportunities will be given students to investigate problems in the social, economic, and political history of Montana.
Both semesters; once a week.

MATHEMATICS

Advanced Degrees.

Candidates for the Master’s Degree must present as basis for graduate work an amount of elementary work equivalent to the major requirement in undergraduate work. For general requirements for the Master’s Degree, see page 38.

The mathematics library contains complete sets of all the American mathematical journals, and complete sets of several of the most important foreign journals, such as Crelle, Annalen, Fortschrritte and others. The current volumes of all the import-
ant mathematical journals are in the library. The important new books are being added. It is usually possible to add books not in the library as the need for them arises.

41. **Functions of Real Variables.**
   
   An introductory course. Prerequisite: Course 23 or 25.
   3 hours throughout the year.

42. **Functions of a Complex Variable.**
   
   An introductory course. Prerequisite: Course 23.
   3 hours throughout the year.

43. **Vector Analysis.**
   
   An introductory course with applications to geometry and physics. Prerequisite: Course 22.
   3 credit hours.

40. **Analytic Projective Geometry.**
   
   A study of the coordinate systems of projective geometry, the principle of duality, general introduction to the projective theory of conic sections and space. Prerequisite: Courses 17, 18 and 20.
   3 credit hours.

44. **Harmonic Motion.**
   
   The analytic treatment of vibratory and wave motion. Prerequisite: Courses 22 and 23.
   3 credit hours.

45. **The Theory of Sets of Points.**
   
   A general introduction to the modern theory of sets. Prerequisite: Courses 25 or its equivalent.
   2 credit hours.

46. **Theory of Numbers.**
   
   Elementary properties of numbers, theory of congruences, residues of powers, primitive roots, quadratic forms. Prerequisite: Course 27.
   3 credit hours.

47. **Finite Groups.**
   
   Elements of the theory of abstract groups; substitution groups. Prerequisite: Course 27.
   3 credit hours.
48. Continuous Groups.
   A study of the Lie Theory. Prerequisite: Course 47. 3 credit hours.

   The application of the differential calculus to the geometry of twisted curves and surfaces. Prerequisite: Courses 28 and 40. 3 hours throughout the year.

49. Projective Geometry.
   A course for advanced graduate students. Prerequisite: Course 40. 3 hours throughout the year.

50. Advanced Mechanics.
   Theory of the gyroscope and related problems. Prerequisite: Courses 20 and 22. 3 hours throughout the year.

51. Infinite Series.
   A course dealing with the modern aspects of infinite series. The important original memoirs will be read. Prerequisite: Courses 29, 41 and 42, and a reading knowledge of French and German. 3 hours throughout the year.

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**PSYCHOLOGY AND PHILOSOPHY**

   The work of this course will be directed towards sketching the evolution of mind. It follows naturally the course in genetic psychology and is a continuation of it. The emphasis will be laid upon the development of mind in men and so concern itself particularly with the study of children. The work will be given by lectures and readings with written theses.
   Second semester; 2 hours credit; T. Th., 10:30.

17. Psychology of Religion.
   This course will cover a discussion of the origin and development of religions among primitive peoples and aims to show the nature of religion among the cultured peoples of Europe and America. It will treat especially the phenomena of conversion, religious revivals, the meaning of the confessional, the fetich,
ancestor worship, nature worship, etc. Its standpoint will be that of sympathy and appreciation rather than that of criticism. It will aim to avoid entirely the whole field of dogmatic religion and theology. Its culminating point will be a treatment of the place of religion in the individual life.

First semester; time to be arranged.


A study of the psychological foundations of society. The main themes are the social instincts and emotions, the principles of leadership and the various factors in the environments of races that have been influential in fixing the psychological characteristics of the same. The work will be given by lectures and readings with papers.

Second semester; 3 credit hours; T. Th., 10:30.

19. Physiological Psychology.

In this course the structure and functions of the nervous system are studied in relation to mental phenomena. The aim of the work is to show the foundations especially of the plasticity of the nervous system and the educability of the human being. Open to all students that have taken work in biology or the first year's work in general psychology. The work is given by lectures and demonstrations in the laboratory.

First semester; 2 credit hours; M. W., or W. F., 2:30-4:30.

20. Mental Pathology or Abnormal Psychology.

This course undertakes a study of the morbid phenomena of mental action. The work begins with a study of feeblemindedness in children and of insanity and criminality in adults and leads up to a study of hysteria, hypnotism, alternating personalities, loss of memory and other forms of common mental disorders. The work is given by lectures, readings and demonstrations in the state hospitals. Open to all students that have taken course 11 and 12 and prerequisites. This course is especially valuable for teachers as it presents the principles for interpreting backward children and cases of bodily arrest and mental retardation.

Second semester; 2 credit hours; time to be arranged.


The seminary is open to all students of advanced attainments in psychology. The work will be chosen to suit the tastes and interests of those who wish to elect the course. In general it
may be said that the aim is a systematic study of special themes in psychology. Admission by special permit.

Both semesters; credit and time to be arranged.

28. Psychology of Thinking.

This course will attempt to analyze the general thought processes as they appear in daily activity. The work will be based upon such books as Dewey: How We Think; and Miller: Psychology of Thinking.

Second semester; 2 hours credit; W. and F. at 11:30.

29. Philosophical Seminary.

The work of this course will be arranged to suit the tastes and interests of the students who apply for admission and are doing their major work in philosophy.

Time and credit to be arranged with the professor in charge.
School of Law
SCHOOL OF LAW

FACULTY OF THE LAW SCHOOL

EDWIN BOONE CRAIGHEAD, M. A., LL. D., D. C. L.
President of the University.

Acting Dean and Professor of Law.

CHARLES MELVIN NEFF, Ph. B., LL. B. (Columbia)
Professor of Law.

LESLIE JAMES AYER, B. S., J. D. (Chicago)
Professor of Law.

CHARLES WILLIAM LEAPHART, A. M., LL. B. (Harvard)
Professor of Law.

Professor of Law.

JOHN B. CLAYBERG, LL.B. (Michigan)
Non-resident Lecturer on Mining and Irrigation Law,
and Consulting Dean.

HON. F. C. WEBSTER, LL. B. (Yale)
(Ex-Judge District Court). Lecturer on Probate Law
and Procedure.

C. L. F. KELLOGG, LL. B. (Wisconsin)
Lecturer on Abstracts and Examination of Titles.
THE SCHOOL OF LAW

The Law School was established as a department of the University of Montana at Missoula in 1911. Up to that time there had been no Law School in Montana.

The department offers a standard law course, covering three academic years, and gives special attention to practice court work, procedure, mining and irrigation law, and preparation for the practice of law in Montana and the Western States generally. The faculty is composed of carefully selected teachers, trained in the best law schools, who have had wide experience in actual practice and who, with one or two exceptions, devote their entire time to instruction.

The Law School occupies its new and more commodious quarters in the Library Building, where rooms for the law library, the offices of the faculty and the classes of the department occupy an entire floor. The library reading room is large and conveniently arranged and is equipped with large and well-lighted reading tables.

DONATIONS TO THE LAW LIBRARY.

The Law School is fortunate in having a good working library, composed in part of the private law library of the late Judge W. W. Dixon, in part of the library of the late Colonel T. C. Marshall, and other books purchased with funds generously donated by Mrs. Dixon and with state funds. The library thus established is known as the W. W. Dixon Memorial Library, in memory of Judge Dixon, and a professorship has been named after him. The library of over five thousand volumes is constantly being enlarged and brought down to date. It embraces several sets of state reports, the National Reporter system, the American Digest system, as well as the leading text books, encyclopedias, collections of statutes, legal periodicals, and sets of selected cases, such as the American Decisions, American Reports, American State Reports, Lawyers’ Reports Annotated (old and new series), the American and English Annotated Cases; also the decisions of the Interior Department on Public Lands. Consulting Dean Clayberg has presented a set of over two hundred volumes of English common law and chancery reports.

REQUIREMENTS FOR ADMISSION TO REGULAR AND SPECIAL STANDING

Students may register in the Department of Law either in
regular or in special standing. It is expected that all students will enter at the opening of the college year, September 8th. Students may by special permission enter at the beginning of the second semester. Regular students, who are candidates for the degree of Bachelor of Laws (LL.B.) must present credentials showing that they have completed substantially one-half (62 credit hours) or more of the work required for the degree of B. A. or B. S. in the University of Montana, or two years work in some other college or university.

Special students may be admitted to all the privileges and courses of the Law School the same as regular students, provided they are twenty-one years of age or over, and have diplomas from accredited high schools, or have evidence of an education equivalent to a four-year high school course. In exceptional cases of distinguished excellence in the three years of law work, special students may be granted a law degree, but in all ordinary cases will be given a certificate as to the work done, in lieu of the degree awarded to regular students.

Advanced standing in Law may be granted to students who present satisfactory credentials for equivalent courses taken in standard law schools. Also, in special cases, advanced standing may be granted upon examination satisfactory to the Faculty.

GRADUATION AND DEGREES.

Regular students who have satisfactorily completed courses in law, equivalent to three full years of professional study of the law, will be granted the degree of Bachelor of Laws, (LL.B.)

Undergraduate students in regular standing, candidates for the degree of Bachelor of Arts, electing Law as a major subject at the beginning of the Junior year may count not to exceed two years of the law course toward graduation and the degree of Bachelor of Arts. Those who have thus obtained the degree of Bachelor of Arts, conferred at the end of four years, may receive the degree of Bachelor of Laws at the end of the fifth year on the completion of the third year of the Law course.

FEES AND EXPENSES.

An incidental fee of $5.00 per year must be paid on the first day of registration in each academic year by every student. Tuition fees in the Law School are $40 per year, or $20 per semester. To those carrying less than ten semester credit hours of Law courses, the tuition charge will be $5.00 per course.
Tuition fees must be paid on the official registration day or the first day of registration in each semester. Pre-legal students are not required to pay tuition fees until they enter the Law courses. Regularly registered students in the Law School may take any course in the College of Arts and Sciences without additional cost, except the payment of laboratory fees.

The cost of books in the Law courses will average twenty-five dollars per year for the three years of the professional curriculum.

**SCHOLARSHIPS.**

By recent action of the State Board of Education, the Law School has been authorized to award thirty-five scholarships of free tuition in the Law School to deserving students from the different counties in the State. The basis upon which such scholarships are to be awarded will be decided by the faculty of the Law School and will be announced later. Further information regarding them may be obtained by communicating with the Dean of the Law School.

In addition to the scholarships above mentioned, the Law School is authorized to award a limited number of scholarships of free tuition to deserving students who distinguish themselves in any line of law school work. Such awards are to be made by the faculty of the Law School.

**CASE-SYSTEM AND PROBLEM METHOD.**

The case-study system, the discussion of law as applied to the facts of reported cases, is generally followed; but each instructor employs it according to his own method, conducting his classes by the problem method, or in any way that seems best adapted to the particular subject. Students are required to spend considerable time working out and preparing briefs upon legal problems submitted to them from time to time. It is believed that in many courses at least this is an important advance over the usual method of having the student passively read the ready-made solutions provided by the judicial opinions which are pre-selected and reprinted in the present case-books.

In the procedural courses, such as Pleading and Practice and Evidence, certain modifications of the case-system are employed.

**OFFICE AND COURT PRACTICE.**

A special effort is made to enable the student to acquire a
A creditable degree of skill and facility in conveyancing and the drawing of contracts, as well as in the art of pleading, practice and forensic activity. In connection with such courses as contracts, corporations, property, trusts, wills, the student will be expected to draft the ordinary legal documents of office practice. In the course on code pleading and in the practice court the actual pleadings and papers required in the different stages of actions and special proceedings will be prepared. Training in the examination of authorities, in the making of briefs, in the production and exclusion of evidence, and in the oral argument of cases on the law points involved will also be given.

THE PRACTICE COURT.

The law school graduate, even from the best law schools, is very apt to be much disappointed to find, on his admission to the bar, that he is almost entirely unfitted and unprepared to take up the ordinary practical work of his profession. He is ordinarily not even trained to use a law library or look up a point of law for himself, let alone taking up the trial of a lawsuit. All this is left to a post-graduate apprenticeship in a law office in order that the professors may have time to elaborate their legal theories on all possible subjects.

The Faculty of the Law School of the University of Montana while appreciating the necessity of theoretical knowledge of fundamental principles of substantive law, yet believe that it is the duty of the law school to do more than is ordinarily attempted to train the student for his every-day work and teach him how to handle himself well in court, manage the various phases of litigation, organize and conduct corporations, examine and pass on titles and execute the ordinary operations of actual practice.

The Law School attempts to perform its duty in these respects by giving marked attention to the "practice court," and also to the practical side in all the courses.

Only a comparatively few law schools make a "practice court" a regular part of the law school work. Most of them leave such work to voluntary clubs, wherein it is mostly confined to debates on law points carried on only during one year.

In the Law School of the University of Montana the practice court is put on the basis of a regular course, required during the first, second and third years. It is presided over by the regular professors, all of whom assist in the work and by practicing
lawyers who are invited from time to time to sit as presiding judges.

The first year court is largely occupied with authority work, briefing and the oral argument of questions of law, and the trial of criminal cases.

The second and third year courts devote themselves to the trial of issues of fact. In order to make the work realistic many of the cases are based upon actual occurrences and the witnesses and parties are University students. Thus the questions raised at the trial relate to what was really said and done, with sufficient local color to arouse interest and enthusiasm.

The student is required to prepare the evidence, collate the facts, interview witnesses and get up a careful trial brief. The course includes the entire conduct of actual cases from start to final judgment and also the appeal and presentation to the supreme court for review. This involves the issuance of summons, the drafting and filing of pleadings, the making of motions, the impaneling of the jury, the examination and cross-examination of witnesses, the arguments to court and jury, and all the other incidents of a contested trial.

Sessions of the courts are held weekly for two hours in the afternoon or evening, and between sessions the cases are being prepared and carried from stage to stage by the student-attorneys in charge under the supervision of the instructor, who gives personal guidance in the work.

CONVEYANCING.

In the course on conveyancing the work consists of the examination of a series of selected abstracts of title representing a great variety of transfers, such as probate and tax sales, as well as deeds and mortgages. A copy of each abstract is furnished to the members of the class, and written opinions are rendered on the defects and objections to title found, and the methods of curing the defects are worked out. Thorough work in this course equips the student as a practical conveyancer.

ARGUMENTATION AND DEBATE.

A course in the theory and practice of debate is required of first year students. A good text on the art of debate is in the hands of the students and a part of the time is given up to the mastery of the theory of debate. The course also includes practical work in the writing of briefs on questions of public interest,
and practice in extemporaneous argument of the leading political and economic questions of the day.

The aim is to develop readiness in speaking, to give freedom and ease on the platform, to teach careful and independent research, and to cultivate the logical processes of analysis and discrimination which underlie all law work. It is a mistake to suppose that excellence in public speaking is simply the gift of nature and not the result of patient and persistent labor and study.

**SPECIAL LAW LECTURES.**

Practical talks are given from time to time by prominent lawyers and judges of the state, designed to acquaint the student with matters that they will be called upon to meet in practice.

**COURSES OF INSTRUCTION.**

The course of study extends over a period of three full years, and is so arranged as to require a total of eighty-five (85) credits. All First Year work is required. Second and Third Year students are required to take fourteen (14) hours of work each semester, including Practice Court, which is required in all three years. The main body of this curriculum is of general application, designed to afford a preparation for the practice of law in any jurisdiction or state. At the same time special attention in all courses will be given to the codes and decisions of Montana and the Western States. The list of courses announced for the several semesters, with their credit hours, is as follows:

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<th>COURSES</th>
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<td><strong>First Year</strong></td>
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<td>Contracts and Quasi-Contracts</td>
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<td>Pleading and Practice</td>
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<td>Irrigation Law</td>
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<td>Probate and Administration</td>
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<td>Abstracts and Examination of Title</td>
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<td>Bailments and Carriers</td>
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### Third Year

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<td>Appellate Practice</td>
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<td>Suretyship and Mortgages</td>
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### Description of Law Courses

#### First Year

**Contracts and Quasi-Contracts**

Professor Ayer

Fundamental principles underlying all agreements, as preliminary to the subjects treated in separate courses having their foundation in contract. The course embraces mutual assent and consideration in the formation of simple contracts; parties affected by contracts, including contracts for the benefit of third persons; assignment of contracts; joint obligations; the Statute of Frauds, except contracts for the sale of goods; performance of contracts, including express and implied conditions and impossibility; illegal contracts, including contracts in restraint of trade, wagers and gaming contracts; and the performance and discharge of contracts including novation, release, accord and satisfaction, surrender and cancellation, etc.

The subject of Quasi-Contracts is treated briefly and in a general manner only, covering the subjects of unjust enrichment, benefits conferred voluntarily; benefits not conferred voluntarily, including mistake of fact and mistake of law; constraint, including constraint by fault of defendant and duress by defendant.
Acquisition of title to personal property by Statute of Limitations, accession, confusion and judgments. The bailee and finder’s rights in property, together with a consideration of the rules of Common Law liens and pledges. Introduction to the law of real property. Tenure, estates and conveyances. Fixtures and waste. Easements by grant and user. Covenants running with the land and for title. Acquisition of title to land by adverse possession. The forms of conveyances and the execution of deeds. Landlord and tenant. The endeavor will be made to present the entire subject as a living branch of the law from the point of view of the present-day lawyer.

Trespass to the person, to real property and to personal property; excuses for trespass; conversion; legal cause; negligence; contributory negligence; duties of landowners; nuisance; hazardous occupations; liability for animals; deceit; slander; libel; privilege; malice; malicious prosecution; interference with business, unfair competition, strikes, boycotts, business combinations.

Nature of relation; appointment; liabilities of master for servant’s torts; scope of authority to bind principal by contract; undisclosed principal doctrines; delegation of agency; termination; ratification.

Analysis of criminal act and criminal intent; causation; conditions of criminal responsibility; analysis of particular crimes with especial reference to the Penal Code of Montana. Criminal procedure under the code.

First year; library practice in the use of law books, and the search for authorities; brief-making and the oral argument of questions of law. Trial of criminal cases.

See English Department.
SECOND YEAR

Pleading and Trial Practice . . . . . . Professor Neff

Nothing is more difficult or embarrassing to the graduates of most law schools than to draw pleadings and prepare for the trial of a case. Unusual attention is given by an experienced practitioner to teaching both the science and the art of successful pleading, and the function it plays in the actual case itself, both at the trial and on appeal. By exercises and actual practice in the drawing of pleadings of all kinds the student acquires a practical knowledge of how to plead logically, accurately and scientifically. Upon all points Montana cases are frequently cited and reference made to the most interesting and instructive modern cases in other jurisdictions.

Equity . . . . . . . Professor Leaphart

Nature of Equity Jurisdiction. Specific performance of contracts; mutuality of remedies; want of mutuality; mutuality of performance; relief for and against third parties; consideration; Statute of Frauds; Laches; other acts of plaintiff barring remedies in equity; mistake; unfairness; bills for accounting; specific reparation and prevention of torts.

Negotiable Instruments . . . . . . Professor Ayer

After a brief history of the Law Merchant the subject is considered in the following order: form and interpretation of negotiable instruments, including the form required and its interpretation; consideration, including holder for value; want of consideration; accommodation parties; negotiation, including various kinds of indorsement and effect of the same; rights of holder; liability of parties; duties of holder, including presentment for payment and notice of dishonor; discharge; bills of exchange and promissory notes and checks.

The course deals with Negotiable Instruments Law as in force in most of the states, showing by illustrative cases what parts of the Negotiable Instruments Law are declaratory of the common law, and explaining reasons for changes where not declaratory. It also deals with the various interpretations of the Negotiable Instruments Act.

Evidence . . . . . . . Professor Whitlock

Theory of the law of evidence; method of introducing evidence; burden of proof; functions of judge and jury; relevancy,
admissibility, rules of exclusion. Practice or application of the rules of evidence; actual practice in the examination and impeachment of witnesses, the presentation of documents, and the raising of objections to the admission of evidence.

Irrigation Law . . . . . . . Professor Neff

This course traces the genesis and development of the law of water rights in the west; how rights to the use of water may be acquired and retained, and generally, the law of waters as applied to irrigation, mining, manufacturing and the generation of power. Special attention will be given to the preparation of water right litigation, and instruction as to the actual trial thereof.

Probate and Administration . . . . Judge Webster

Probate procedure; executors and administrators, appointment, powers and duties; sales and conveyances.

Sales . . . . . . . Professor Ayer

Covering the subject matter of sale, at law and in equity; conditional sales; bills of lading and transfer of title under various conditions; the effect of fraud; the specific rights and remedies of the seller, including actions for the recovery of the purchase price; liens and their enforcement, and stoppage in transitu; specific rights and remedies of the buyer, including express and implied warranties and remedies for the breach of the same, as well as rights and remedies of the buyer in the case of fraud; the Statute of Frauds as relating to the sale of goods.

The Second-Year Practice Court . . . Professor Langmaid

In this course very careful attention is paid to the actual preparation and trial of the more common and usual civil cases, such as torts (including trespass, negligence, libel and slander, nuisance, conversion, malicious prosecution, etc., etc.), contracts and property actions. The proper selection of the jury, the opening arguments of counsel, the examination and cross-examination of witnesses, the arguments for and against various demurrers, motions, instructions, etc., are critically gone through with and performed step by step by the student, so that he may learn how to try his cases in a skillful, experienced manner by actually doing it under proper criticism and supervision.
Abstracts and Examination of Title  C. L. F. Kellogg

Title to real property in general; title by descent; title by purchase; sources of information; analysis of abstract; inception of title; congressional and legislative grants; patents; surveys, plats and sub-divisions; formal parts of deeds, including errors, omissions and defects; conveyances, individual, official, special and agreements for conveyance; leases; mortgages; wills; liens, charges and incumbrances; *lis pendens* and attachment; judgments and decrees; judicial and execution sales; actions and proceedings; taxes and tax titles; descents; adverse title; all of the foregoing considered in the making of a correct abstract and also considered in the view of an examiner of title looking for defects; methods of examining title, including actual examinations of abstracts with criticisms showing objections and methods of curing same.

Bailments and Carriers  Professor Ayer

Treats in general of ordinary bailments; classification of bailments; rights, duties and liabilities of bailor and bailee; rights and liabilities of third parties, and termination of bailment; also rights and liabilities generally of pledgor and pledgee; rights and liabilities in general of inn-keepers.

The subject of Carriers deals with Carriers in general and Common Carriers; the liability of carriers relating to the carriage of goods, including the liability and restriction of liability by contract by bills of lading; the termination of the carrier’s liability; and in general the rights and liabilities of the carrier; also carriage of passengers; who are passengers; general principles governing liability; limitation of liability; actions against common carriers, both in relation to carriers of goods and carriers of passengers, including, in general, damages against the same.

THIRD YEAR.

Constitutional Law  Professor Neff

American constitutional law; state and federal; federal jurisdiction; citizenship; fundamental civil and political rights; due process of law; police power; eminent domain; taxation; ex post facto and retroactive laws; laws impairing the obligation of contracts; regulation of commerce; treaty making power; government of territories.

Open to well-prepared students in History, Economics and Political Science.
Appellate Practice  .................................................... Professor Neff

The course in appellate practice covers motions for a new trial as well as appellate practice proper; the ordinary proceedings for review being motions for a new trial in the court which rendered the decision, and appeals to a higher court. The course includes investigation into the grounds for new trial, the various papers upon which the motion may be made, and actual practice in the preparation of the motion and argument thereon. The appellate jurisdiction of the various courts is considered, what judgments, orders and proceedings may be appealed from, parties who may appeal, time within which appeal may be taken, and the various steps by which the appeal is taken. Actual practice will be given in preparing the record proper and the bills of exceptions. Besides this, other modes of review will be studied, such as Writ of Error, Writ of Certiorari, Writ of Prohibition, Writ of Mandamus, Writ of Habeas Corpus, and the Montana Writ of Supervisory Control.

Conflict of Laws ........................................................... Professor Langmaid

The extent of legislative power and the doctrine of the conflict of laws. Domicile and jurisdiction for taxation. The jurisdiction of courts. A consideration of the creation of rights, both of rights arising from contract and from tort. The law of capacity and other personal rights. The doctrine of conflict of laws as to rights of property, both by transfer \textit{inter vivos} and by inheritance. The recognition and enforcement of rights; foreign executors and administrators; the nature, obligation and effect of judgments.

Corporations ........................................................... Professor Leaphart

Powers obtainable without incorporation; corporate acts; \textit{de facto} corporations; \textit{ultra vires} acts of corporations; rights and liabilities of directors; promoters, creditors and shareholders; rights of minority shareholders; shares of stock; transfer; assessment; voting trusts; foreign corporations; corporate firms.

Mining Law ............................................................ Judge Clayberg

The course will cover the history of mining in the west; the law relating to the acquisition of mining rights and claims upon the public domain; how such rights may be retained and continued; the perfecting of full legal title thereto. Also the law relative to incidental rights growing out of a location or patent of a
mining claim—including the law of cross veins, tunnel claims, extralateral rights, etc. And generally, the law relative to the operation of such mines. Field practice in the location of mining claims. Applications for patent.

**Bankruptcy** . . . . . . . Professor Langmaid

The respective jurisdictions of the United States and of the several states. Who may be a bankrupt and who may be petitioning creditors. Fraudulent conveyances, preferences and general assignments. Property passing to the trustee. Proof of claims, exemption and discharge.

**Municipal Corporations** . . . . . Professor Langmaid

Nature of municipal corporations; corporate capacity; self-government; creation, annexation, division; dissolution; succession; legislative control; officers and agents; government functions; municipal police power; quasi-governmental and commercial functions; local improvements and services, including special assessments; public streets; liability for torts; liability for contract; indebtedness and its constitutional limit; remedies of creditors.

**Third-Year Practice Court** . . . . . Judge Webster

Preparation of transcripts and briefs in cases on appeal, and argument of cases in the Supreme Court. Cases tried by the second year court are appealed by the third year court.

**Trusts** . . . . . . . . . . . . . Professor Langmaid

Nature and requisites of trusts with respect to consideration, subject matter of trust *res*, the trustee, the *cestui que* trust; sufficiency of language in wills and deeds to create trusts; kinds of trusts; express, constructive and resulting; private and charitable trusts; transfer of the respective interests of trustee and *cestui que* trust by act of party, by death, etc., rights and remedies of creditors of the trustee and *cestui que* trust; priorities and bona fide purchase for value; resignation or removal of the trustee; dissolution of the trust by consent; duties of the trustee as to general execution of the trust and as to investment of the trust funds.

**Suretyship and Mortgages** . . . . . Professor Leaphart

Guaranty; defenses of surety; rights of surety against principal or co-surety; subrogation, reimbursement, exoneration; con-
P a r t n e r s h i p ....................................................................................... Professor Ayer

Creation or formation of partnerships; essential characteristics of same, comparing and distinguishing same from similar relations. Quasi or nominal partnerships or partnership by estoppel. Property, real and personal of a partnership, including its transfer and the legal and equitable title to same. Interest of an individual partner in partnership property. Rights of creditors against separate and joint property. Partnership in bankruptcy, and in general the rights, duties and liabilities of partners and the partnership.

D a m a g e s ..................................................................................... Professor Ayer

Following cases illustrating general principles and the nature and theory of damages, the subjects treated more in detail are nominal damages, compensatory damages, including proximate and remote, direct and consequential; certainty; profits; past and future losses; aggravated damages, and mitigation of damages; liquidated damages; following which are considered damages in special subjects such as contracts, carriers, personal injuries, real property, etc.
School of Forestry
SCHOOL OF FORESTRY

FACULTY.

EDWIN BOONE CRAIGHEAD, M. A., LL.D., D. C. L.
President of the University.

DORR SKEELS, Logging Engineer.
Dean and Professor of Forestry and Lumbering.

MORTON JOHN ELROD, Ph. D.
Professor of Biology.

JESSE PERRY ROWE, Ph. D.
Professor of Geology.

JOSEPH EDWARD KIRKWOOD, A. M., Ph. D.
Professor of Botany.

GEORGE FULMER REYNOLDS, Ph. D.
Professor of English and Rhetoric.

RICHARD HENRY JESSE, Jr., Ph. D.
Professor of Chemistry.

NELS J. LENNES, Ph. D.
Professor of Mathematics.

*Professor of Forestry and Silviculture.

ROBERT NEAL THOMPSON, B. S.
Assistant Professor of Physics.

*Assistant Professor of Forestry.

EUGENE F. A. CAREY, B. S.
Assistant Professor of Mathematics.

WILLIAM GEORGE BATEMAN, A. M.
Assistant Professor of Chemistry.

JAMES HENRY BONNER, B. S.
Instructor in Engineering.

CORNELIUS BOL,
Instructor in Shops.

WILLIAM W. H. MUSTAINE, B. S.
Director of Physical Education.

*To be appointed.

SPECIAL LECTURERS.

F. A. SILCOX, M. F.
District Forester
District 1, United States Forest Service.
Lecturer in Forest Administration.

P. R. HICKS, B. S.
Engineer in Forest Products
Lecturer in Wood Uses, Wood Preservation, Timber Testing
and Forest Products.
E. W. KRAMER, C. E.  .  .  .  .  .  .  .  .  .  .  District Engineer
Lecturer in Forest Engineering.

J. F. PRESTON, A. B.  .  .  .  .  .  Assistant District Forester
Lecturer in Fire Protection.

D. T. MASON, M. F.  .  .  .  .  .  .  Assistant District Forester
Lecturer in Silviculture and Forest Management.

F. E. BONNER  .  .  .  .  .  .  .  .  .  .  Geographer
Lecturer in Reconnaissance and Forest Maps.

JAMES R. WEIR, Ph. D.  .  .  .  .  Consulting Pathologist
Lecturer in Forest Protection and Forest Pathology.

R. H. RUTLEDGE  .  .  .  .  .  .  .  Assistant District Forester
Lecturer in Forest Claims, Agricultural Settlements, Land
Valuations and Classifications.

C. E. KNOUF  .  .  .  .  .  .  .  .  .  .  Forest Scaler
Lecturer and Instructor in Forest Mensuration and Log Scaling.

C. H. GREGORY  .  .  .  .  .  .  .  .  Forest Lumberman
Lecturer and Instructor in Lumbering and Log Scaling.

EARL H. TANNER  .  .  .  .  .  .  .  .  Forest Lumberman
Lecturer and Instructor in Lumber and Log Scaling.

J. A. URBANOWICZ  .  .  .  .  .  .  .  Fiscal Agent
Lecturer in Forest Accounts and Cost Keeping.

H. H. FARQUHAR  .  .  .  .  .  .  .  .  Forest Examiner
Lecturer in Forest Planting and Extension.

S. S. MALVEN, A. B.  .  .  .  .  .  .  .  Forest Examiner
Lecturer in Forest Protection and Insect Control.

C. H. ADAMS, E. M.  .  .  .  .  .  .  Assistant District Forester
Lecturer in Grazing.

R. B. ADAMS  .  .  .  Superintendent of Telephone Construction
Lecturer in Forest Improvements.

W. W. WHITE, M. S. F.  .  .  .  .  .  .  Forest Supervisor
Lecturer in the Practice of Forestry.

ELERS KOCH, M. F.  .  .  .  .  .  .  .  Forest Supervisor
Lecturer in the Practice of Forestry.

RUTLEDGE PARKER  .  .  .  .  .  .  .  Forest Supervisor
Lecturer in the Practice of Forestry.

J. W. BUTLER, D. V. S.  .  .  .  .  .  State Veterinarian
Lecturer in Veterinary Science.

HON. J. W. KENNEDY  .  .  .  .  .  .  .  State Commissioner of Agriculture and Publicity
Lecturer in Industrial and Community Development.

SIDNEY MILLER  .  .  .  .  Register State Land Department
Lecturer in Forest Valuation and Taxation.

C. W. COGSWELL, M. D.  .  .  .  .  .  State Health Officer
Lecturer in Camp Sanitation.

W. J. SWINDLEHURST, State Commissioner of Industry and Labor
Lecturer in Relations of Labor and Industry.
THE OPPORTUNITY IN FORESTRY AND LOGGING ENGINEERING

By an act of the Thirteenth Legislative Assembly (1913) a State School of Forestry has been established at Missoula, as a department of the University of Montana. This enables the University to offer a four years' course of study in Forestry in which the professional training of men for the management and utilization of western forests may be carried on in a western environment and with the forests of the west for class rooms and laboratory.

The courses, as now prescribed, follow largely the recommendations and directions of prominent lumbermen and the administrative officers of the national forests located in the west, and are essentially planned to give men a practical training in the actual field work of forest management and in logging and lumbering and other means of forest utilization.

This action of the Legislature of Montana recognizes the need of western schools for western men. The West has its own forest types and its peculiar forest problems; the most efficient man in western forestry, other things being equal, is the man familiar with western conditions by experience and training. The development of the lumber industry in Montana and in other parts of the Pacific Northwest, the boundless timber resources of the West, and the location of the National Forests almost entirely in the West, all point to the conclusion that the West is to be, in the not distant future, the scene of the principal education in forestry as well as of the practice in forestry of the nation.

The need of proper training for this work becomes ever more apparent. Never before have the lumbermen of the West so strongly urged and demanded combination of professional training, practical ability, and familiarity with woods work for the handling of their difficult operations; and again, never before were the private, state, and national forests of the West so greatly in need of professional foresters with both practical ability and knowledge of the woods as well as technical training.

The location of the School of Forestry in the University of Montana is ideal for its purpose. Missoula is in the heart of the great Inland Empire timber region. The largest white pine forest in the world extends westward almost from the gateway of the campus. To the north and south stretch the great mountain
forests of Montana and Idaho. The headquarters of District One of the United States Forest Service, governing the administration of more than twenty National Forests, are located here. The supervisors' offices and headquarters of three of these National Forests are also in Missoula, and some twenty other National Forests are closely located around this center.

Thus the practical operations of the management and administration of the National Forests are available for study the year round; the valuable assistance of the expert foresters, engineers and specialists of the Forest Service is freely given in lectures, instruction, field demonstration and in the direction of training and planning of courses of study.

In the region closely surrounding the school are many large logging and lumber manufacturing operations. Some of the largest lumbering operations in the Northwest are within a few hours' travel by rail, and several of these may be reached in an hour by interurban trolley line or automobile.

At this meeting place of the plain, foothills, and mountains are merged nearly all the important commercial forests types of the West, affording a region replete with the interesting problems of Western forest management. The great variety of topographical conditions offers every problem in those difficult means of mountain logging which are taxing the ingenuity of the western lumberman; bringing forth that rapid improvement in method, and evolution in logging and manufacturing equipment and transportation facilities, which has created the need for logging engineers and established the profession of forest engineering.

The special opportunities for the study of forestry at the State University consist not only in the splendid endowments of nature and the unique location of the School of Forestry in a region of intensive forestry practice, but also in the practical nature of the courses of study which are offered, and in the high professional standing of the faculty and their many years' record of successful practice in private, state and national forest work. A large part of the instruction is given in the shops, mills, field, and forest. This practice is followed not only through short field trips during the school year, but also a portion of one semester of each year is spent in camp, and the student is required to spend six weeks of the vacation period at the end of the Junior year in a summer school carried on in the camps and mills of nearby lumbering operations.
The student is expected to spend his vacations, so far as possible, in practical work in the forest and woods operations. Profitable remunerative employment at this work is made available to all students who have shown earnestness and diligence in the school.

PLAN AND SCOPE OF THE SCHOOL OF FORESTRY

The School of Forestry in the University of Montana is founded to meet a great and growing demand on the part of lumber companies, large timber holding corporations and the national and state governments for logging engineers, forest engineers, and men of professional training in the practical administration of western forests. The school is maintained in the University to give a professional training to its graduates along those lines which most fit them to meet this need in a region where lumbering, the care, protection and use of forest, the wood using industries, and industries dependent upon or greatly influenced by the forests are most important in the industrial welfare of the State and community. It is proposed that after the completion of a four years' training along these lines, its graduates will be prepared to undertake work in all the branches of forest administration, both in the State and National Forests, and in private forests and corporate timber holdings, and in all branches of logging and lumbering operations.

There is particularly felt a great need of lumber companies for men trained in logging engineering and in more economical and efficient methods of forest utilization. This need is so strongly felt by the lumbermen of the Northwest that they have called upon the colleges and universities of the Northwestern States to train men for the profession of logging engineering, and so far as possible the college is organized and equipped to respond to this demand.

The administration of western forests and especially of the National Forests and State Forests, is seriously handicapped by the lack of men of professional training in the practical work of forest administration, management, care and protection and utilization.

The headquarters of District One of the United States Forest Service are located in Missoula, as are also the offices of three Forest Supervisors.

The Lolo National Forest, the Bitter Root National Forest
and the Missoula National Forest are closely adjacent to Missoula and the headquarters of some twenty other National Forests are reached in a day’s travel from the University.

The School of Forestry aims to keep closely in touch with the administrative offices of the National Forests, and in the training of its graduates to respond as closely and fully as possible to the requirements for properly trained men in the National Forest work.

In addition to the regular faculty of the School of Forestry in the University, the course of instruction is strongly supplemented by lectures given on the practical phases of the work, and the direction of training which should be pursued by prominent lumbermen, timber owners, the district forester and assistant district foresters, engineers, specialists, and forest supervisors of the United States Forest Service and by state officials.

Courses in Logging Engineering, Forest Engineering, the natural sciences, and care, protection, and management of forests are given prominence in order to give that practical training which is necessary to meet the need for men of professional training in the forests and lumbering operations of the western region of the United States.

Specialization of Forests and Logging Engineering or in the practice of Technical Forestry may be pursued in the second, third and fourth years, the studies in the first year of work being identical. The degree of Forest Engineer is conferred upon students successfully completing the four years’ course and specializing in Forest and Logging Engineering, while the Degree of Bachelor of Science in Forestry is conferred upon students successfully completing the four years’ course and specializing in the practice of Technical Forestry.

**SPECIAL COURSES**

Special courses of one year and two years are offered in Forestry and Forest Engineering. These courses are designed to meet the practical needs of forest rangers, practicing foresters, superintendents of parks and estates, teachers in natural sciences and forestry, and of lumbermen and loggers and other persons related to woods operations.

Careful personal consideration of the individual needs and requirements of students in special courses will be given and courses of studies will be arranged so far as possible to conform to the needs of the student and to the time available for the work.
Opportunity will be given such students to correct deficiencies in English, Mathematics, or other studies of preliminary training, and, subject to the rules and requirements established for the other departments, schools or colleges of the University, unlimited access will be given to all the libraries, laboratories, museums, shops and classrooms of the University.

**SHORT COURSE FOR FOREST RANGERS.**

A short course for Forest Rangers is offered during the first part of the second semester of each year. This course is provided in co-operation with the officials of the Forest Service and is open to men in the Service and to others who may wish to apply. This course covers about twelve weeks, beginning about the 1st of January and closing in March. Instruction is given by members of the University Faculty, with special lectures by officers of the Service.

It is the purpose of the Short Course to offer such studies as will be most serviceable to the ranger in his work, or, in other words, to provide an opportunity whereby employes of the Service may obtain the knowledge required of them in the satisfactory discharge of their duties. Advancement is won by ambition and energy wisely directed, and the Short Forestry Course gives men the chance to increase their knowledge and consequently their efficiency in the business which concerns them. While the course is planned primarily for men in the Service, it is also of great value to those wishing to obtain permanent positions with the government, and who are preparing to pass Civil Service examinations. It is likewise of importance to any who, for whatever reasons, may desire a brief and practical course in Forestry.

The studies offered are such as can be carried by anyone having a common school education. No previous special training is required. No man of serious purpose need fail to understand all of the subjects presented.

The expenses of the course are very small. No tuition is charged. A laboratory fee of $3.00 is required to cover incidental expenses. A nominal matriculation fee of $2.00 is also required. Board and room can be obtained in Missoula at from $25.00 to $30.00 per month.

**REQUIREMENTS FOR ADMISSION.**

The completion of a four years' preparatory or high school course is the standard for regular entrance to the School of For-
estry in the University, as in the other regular courses of the University.

Students in high schools and preparatory schools who plan to enter the School of Forestry should preferably include Elementary Biology, Botany and Zoology, English and Mathematics in their training. Students intending to elect the course leading to the Degree of Forest Engineer should include English, Physics, Chemistry and four years of Mathematics in their preparation. Candidates for either the Degree of Bachelor of Science in Forestry or Forest Engineering will be required to make up any deficiency in their preparatory training in English or Mathematics.

Any person over 19 years of age, of good character, and who gives sufficient evidence of his ability to pursue the studies will be given entrance to one and two year special courses in Forestry or Forest Engineering, or to the Short Course given in the second semester of each year for Forest Rangers.

**CHARACTER OF THE REGULAR COURSES**

**TECHNICAL FORESTRY.**

The School of Forestry proposes in the courses leading to the Degree of Bachelor of Science in Forestry, to train its students to meet the requirements of practical administrative work in the National and State forests, and in private timber holdings. Its aim will be to graduate students schooled in a western environment and so trained by practical work in western forests that they shall be able to undertake with understanding and ability the care, protection, and management of the forests of the Western United States and the administration of their uses.

Specialization is given to the natural sciences, Zoology, Geology, the higher branches of Botany, and Dendrology or the botany of trees, since a knowledge of these sciences is necessary to an understanding of the conditions and influences which affect the life history, reproduction, growth and development of trees and forests.

**FOREST ENGINEERING.**

It is the purpose of the courses leading to the Degree of Forest Engineer to prepare students for work in practical woods operations and especially in Logging and Forest Engineering, both for the service of lumbermen and in the administration of public and private forests. The school will aim to develop in its
students ability in the planning and carrying on of logging and lumbering operations with especial attention to cost factors, and efficiencies of methods and a comprehensive understanding of the uses of woods and forest products and particularly of lumber, its manufacture, grading and marketing. Familiarity with woods operations will be given by practical work in the logging camps, sawmills and private, state and national forests in the region surrounding the University. Its students will be trained in a working knowledge of motive powers, donkey engines, steam and electric skidders, aerial tramways and overhead skidders, loaders and jammers, and other equipment used in power logging; and to proficiency in the location, design and construction of improvements for the use and administration of the forest.

Students in this course will give special attention to mathematics and mechanics to lay that broad foundation necessary to a basic training in engineering sciences and to undertake with understanding, work in the constructing branches of Forest and Logging Engineering, planning and designing, and cost estimating.

Seven courses of study extending through a full four years are prescribed for regular students in both departments of the School of Forestry. In the freshmen year courses in both departments are the same.

Through the last three years six courses of study are the same, the student deciding for the seventh course whether he shall elect mathematics, leading to specialization in Forest Engineering and the Degree of Forest Engineer, or natural sciences leading to specialization in the practice of Technical Forestry and the Degree of Bachelor of Science in Forestry.

COURSES IN TECHNICAL FORESTRY AND FOREST ENGINEERING.

FRESHMAN YEAR

<table>
<thead>
<tr>
<th>First Semester.</th>
<th>Second Semester.</th>
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<tbody>
<tr>
<td>No. of</td>
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<td>Course</td>
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<tr>
<td>Forestry ..........</td>
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<tr>
<td>Silviculture ......</td>
<td>F 21 2</td>
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<tr>
<td>Lumbering ..........</td>
<td>F 31 2</td>
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<tr>
<td>Surveying ..........</td>
<td>F 41a 2</td>
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<tr>
<td>Drawing ..........</td>
<td>F 41b 1</td>
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<tr>
<td>Shop work, wood ...</td>
<td>F 41c 1</td>
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<tr>
<td>Geology ..........</td>
<td>F 51 2</td>
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<tr>
<td>English ..........</td>
<td>F 61 3</td>
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<tr>
<td>Mathematics ......</td>
<td>F 71 2</td>
</tr>
<tr>
<td>Physical Culture</td>
<td>½</td>
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### SOPHOMORE YEAR

#### First Semester.
- Forest Mensuration ..........F 13 2
- Silviculture Management F 23 2
- Lumbering ........................F 33 2
- Surveying ..........................F 43a 2
- Drawing ..............................F 43b 2
- Botany ...............................F 53 3
- Chemistry ............................F 63 3
- Mathematics, elective....FE 73 2
- Zoology, elective ..............TF 73 2
- Physical Culture .................. ½

#### Second Semester.
- Forest Mensuration ..........F 14 2
- Silviculture, Protection .....F 24 2
- Lumbering .........................F 34 2
- R. R. Surveying.................F 44a 2
- Drawing ..............................F 44b 2
- Botany ...............................F 54 3
- Chemistry ............................F 64 3
- Mathematics, elective....FE 74 2
- Zoology, elective ..............TF 74 2
- ½ Physical Culture ..............

### JUNIOR YEAR

#### First Semester.
- Forest Administration ......F 15 2
- Silviculture, Protection....F 25 2
- Lumbering, Logging ..........F 35 2
- Forest Reconnaissance ....F 45a 2
- Drawing ..............................F 45b 2
- Botany, Histology ............F 55 3
- Physics ..............................F 65 3
- Mechanics, elective ...FE 75 2
- Zoology, elective ..........TF 75 2

#### Second Semester.
- Forest Administration ......F 16 2
- Silviculture, Protection....F 26 2
- Lumbering, Logging ..........F 36 2
- Highways and Bridges.....F 46a 2
- Improvement Construction ..F 46b 2
- Botany, Physiology ..........F 56 3
- Physics ..............................F 66 3
- Mechanics, elective .....FE 76 2
- Dendrology, elective ....TF 76 2
- ½ Physical Culture ..............

### SENIOR YEAR

#### First Semester.
- Forest Administration ......F 17 2
- Management, Forest Problems ....F 18 2
- Logging Engineering ..........F 19 2
- Forest Engineering ..........F 20 2
- Improvement Construction ..F 21b 2
- Botany, Pathology ............F 22 3
- Motive Powers ....................F 23 3
- Applied Mechanics, elective ...FE 24 2
- Dendrology, elective ....TF 25 2

#### Second Semester.
- Forest Administration ......F 18 2
- Management, Forest Problems ....F 19 2
- Logging Engineering ..........F 20 2
- Forest Engineering ..........F 21a 2
- Improvement Construction ..F 21b 2
- Botany, Ecology .................F 22 3
- Motive Powers ....................F 23 3
- Applied Mechanics, elective ...FE 24 2
- Dendrology, elective ....TF 25 2

### GENERAL APPLIED FORESTRY

**F 11. Introduction to Forestry.**

The relation of forests to the welfare of nations. Distribution of forests, their influences and usefulness. Forestry in the civilized nations, their practices in forestry. Forestry in the United States. Relation to the conservation movement. Forest statistics. Relation of forestry to other industries. The wood using industries of the United States. The lumber industry. Lumber statistics. The work of the Forest Service. Outline of the branches of forestry practice. Forest administration and

First semester; Freshmen year; 2 credit hours.

**F 12. Forest Mensuration.**


Second semester; Freshmen year; 2 credit hours.

**F 13. Forest Mensuration.**

A continuation of the work of the preceding semester. Measurements of wood products. Cordwood, shingle bolts; poles, posts and piling; stulls and props, linear and cubic foot contents, weight units. Measurements of logs, log scales. Practice in log scaling in logging camps.

First semester; Sophomore year; 2 credit hours.

**F 14. Forest Mensuration.**

A continuation of the work of the preceding semester. Log scaling, defects of logs in lumber, lumber grades. Relation of mill lumber tally to log scale, mill overrun. Relation of log size-classes, quality, and defects to lumber grades and mill overrun. Practice in log scaling, lumber tallying and lumber grading in northwestern sawmills.

Second semester; Sophomore year; 2 credit hours.

**F 15. Forest Administration.**


First semester; Junior year; two credit hours.

**F 16. Forest Administration.**


Second semester; Junior year; 2 credit hours.
F 17. Forest Administration.


First semester; Senior year; 2 credit hours.

F 18. Forest Administration.


Second semester; Senior year; 2 credit hours.

SILVICULTURE


First semester; Freshmen year; two credit hours.

F 22. Silviculture.


Second semester; Freshmen year; 2 credit hours.

F 23. Silviculture.

Systems of European silvicultural treatment. Silvicultural treatment as applicable to forests of Western America. The relation of timber sales, timber removal, and forest utilization to silvicultural management and regulation of the yield. Silvicultural working plans. Field practice in national forests.

First semester; Sophomore year; 2 credit hours.


Care and protection of forests. Relation of animal life to forest protection. Regulation of grazing for forest protection. Influence of predatory animals. Control of insect devastation.
Protection against fungus infection. Protection against the influence of man. Protective measures in the regulation of forest uses. Field practice in National Forests.

Second semester; Sophomore year; two credit hours.

F 25. Silviculture.


First semester; Junior year; 2 credit hours.


Second semester; Junior year; 2 credit hours.

F 27. Management.


Forest problems. Problems in administrative management.
Organization of forests. Relations of personnel, routing of authority and responsibility. Local administrative policies, co-operative policies, relations with forest users. Relation of forest uses and care, protection and forest management. Revenue and disbursements. Problems in comparative values. Working plans for management of national forests. Practices in offices and field of the National Forests.

Second semester; Senior year; 2 credit hours.

LUMBERING

F 31. Lumbering.


First semester; Freshman year; 2 credit hours.

F 32. Lumbering.


Second semester; Freshman year; 2 credit hours.

F 33. Lumbering.


First semester; Sophomore year; 2 credit hours.

F 34. Lumbering.

value. Relation of stumpage, log cost, manufacturing cost, shipping and marketing costs, mill run values. Practical work in lumber manufacturing plants of the Northwest.

Second semester; Sophomore year; 2 credit hours.

F 35. Lumbering.


First semester; Junior year; 2 credit hours.

F 36. Lumbering.


Second semester; Junior year; 2 credit hours.

F 37. Lumbering—Logging Engineering.

Analysis of operative cost factors. Factors affecting cost of cutting, swamping, skidding, drying, chuting, fluming, etc., loading, trucking and sleigh hauling, railroad and tramway transportation, stream driving, etc. Analysis of conditions affecting relative efficiencies and choice of methods. Preparation of cost estimates, logging plans and logging engineering reports. Field work in western logging operations. This course is supplemented by courses of study in applied mechanics, motive powers and forest engineering carried out in the same semester.

First semester; Senior year; 2 credit hours.
F 38. Lumbering.—Logging Engineering.

A continuation of the work of the preceding semester. Design, location and construction of logging improvements. Railroads, flumes, trams, tramways, bridges, chutes, roads, etc. Location surveys for transportation improvements. Plans and designs for improvement construction. Construction methods, materials, cost estimates. Field practice in western logging operations. This course is supplemented by courses of study in applied mechanics, motive powers and forest engineering carried on in the same semester.

Second semester; Senior year; 2 credit hours.

SURVEYING AND FOREST ENGINEERING

F 41a. Surveying.

The proper methods of land subdivisions as prescribed by the Department of the Interior; (a) by compass and chain; (b) by transit and tape; exercises in surveying and computing areas of irregular tracts of land. Freshmen; 1st semester; 2 credit hours.

F 41b. Drawing.

Elementary map making and lettering; U. S. Forest Service standards for same; practice with "Rusts" lettering scale.

Freshmen; first semester; 1 credit hour.

F 41c. Shop Work.

Practice in wood working. Bench and lathe work. Camp carpentry.

Freshmen; first semester; 1 credit hour.

F 42a. Surveying.

Continuation of work of preceding semester. Triangulation; traverse board and plane table survey; determination of true meridian by Solar and Polaris observations.

Freshmen; 2nd semester; 2 credit hours.

F 42b. Drawing.

Compiling of maps from notes taken in the field by surveying class; reproduction methods, blue printing, Van Dyke printing, photography, photo-lithographing.

Freshmen; 2nd semester; 1 credit hour.

F 42c. Shop Work.

Practice in ironworking, forge, foundary and machine shop practice. Camp blacksmithing.

Freshmen; 2nd semester; 1 credit hour.
F 43a. Surveying.
Stadia surveys; differential and profile leveling; use of slide rule and planimeter; geodesy.
Sophomores; 1st semester; 2 credit hours.

F 43b. Drawing.
Standard Forest Service methods of compiling large maps; conventional signs for same; contour maps.
Sophomores; 1st semester; 2 credit hours.

F 44a. Surveying.
Railroad location and construction as applied to logging railroads; establishing grades; field location of simple, compound and transition curves; the spiral.
Sophomores; 2nd semester; 2 credit hours.

F 44b. Drawing.
Profiles of highways and bridge sites from field notes; cost estimates as figured from cross-section sheets for railroads and highways.
Sophomores; 2nd semester; 2 credit hours.

F 45a. Forest Reconnaissance.
Standard reconnaissance methods used by the U. S. Forest Service in surveying, mapping large timbered areas, burned over districts, etc., supplemented by special lectures by specialists in the Forest Service.
Juniors; 1st semester; 2 credit hours.

F 45b. Drawing.
Compiling topographical maps from field notes; fire control and special use maps. General forest maps.
Juniors; 1st semester; 2 credit hours.

F 46a. Highways and Bridges.
Details of the design and construction of highways and bridges as constructed for forest improvement; trail building; field practice in laying out same. Maintenance. Supplemented by lectures by specialists in the Forest Service.
Juniors; 2nd semester; 2 credit hours.

F 46b. Improvement Construction.
Cost data and actual field experience in the building of roads and trails; emergency bridges and trails; visits to adjacent road construction camps and efficiency and cost reports on same.
Juniors; 2nd semester; 2 credit hours.
F 47a. Forest Engineering.

Hydraulics; steam guaging; relation of runoff to (a) drainage area, (b) rainfall; field study of effect of timber drainage areas on runoff.

Seniors; 1st semester; 2 credit hours.

F 47b. Improvement Construction.

Forest Service standard for (a) administrative headquarters, (b) pole and tree telephone lines, (c) wireless telegraphy and long-distance signalling.

Seniors; 1st semester; 2 credit hours.

F 48a. Forest Engineering.

Water power engineering; design and construction of dam; power plants, turbines, Pelton wheels; efficiency tests of water motors; regulations and requirements governing power plants on National Forests. Inspection of hydro-electric plants and reports on same.

Seniors; 2nd semester; 2 credit hours.

F 48b. Improvement Construction.

Students will be required to make surveys, designs, and complete application for preliminary and final special use permits for the building of either a reservoir or dam for hydro-electric plant on a National Forest, with horse power and cost estimates.

Seniors; 2nd semester; 2 credit hours.

GEOLOGY

F 51. Geology Elementary.

A course arranged primarily for students of the Forestry School, and devoted to the study of dynamic and structural geology.

First semester; Freshmen year; 2 credit hours.

F 52. Geology, Rocks and Soils.

The composition of the principal rocks which contribute to the formation of soils in different forest regions of the United States. The general composition of soils, their physical and chemical properties as related to vegetation.

Second semester; Freshmen year; 2 credit hours.

BOTANY

F 53. General Botany. (Botany 11).

This course is offered with the object of giving a general re-
view of the vegetable kingdom. It consists of lectures and laboratory work on typical plants representing the various natural groups, such as the algae, fungi, mosses, ferns, etc. The work of the first semester deals with the lower forms of plant life up to the ferns, and will involve a study of the form, structure and habits of these plants from the standpoint of adaptation, and of their relationship from the standpoint of evolution. This course forms with 2 the continuous work of a year.

First semester; Sophomore year; 3 credit hours; T., 9:30; laboratory, M. W., 1:30.

F 54. General Botany (Botany 12).

The second course takes up the seed plants from the same point of view as course 1. Typical members of various families and genera are studied, outlining the classification of the principal groups. Field trips will constitute a part of the work.

Second semester; Sophomore year; 3 credit hours; T. 9:30; laboratory M. W., 1:30.

F 55. Histology (Botany 15) (with special reference to woody stems.)

The structure and composition of lignified tissues, the minute structure of plants as related to forest physiology and ecology. The aim of this course is to present the anatomy of the tree so as to prepare the way for a fuller study of the functions of its organs and tissues. Prerequisite: F 53 and F 54.

First semester; Junior year; 3 credit hours.

F 56. Plant Physiology (Botany 16) (with especial attention to functions of the organs of woody plants.)

This course follows F 55, and constitutes with it the continuous work of a year.

Second semester; Junior year; 3 credit hours.

F 57. Forest Pathology. (Botany 23).

A course dealing mainly with diseases of timber, their recognition and treatment. The various organisms which affect living trees and structural timbers studied from a systematic and biological standpoint. Lectures, laboratory and field work.

First semester; 3 credit hours.


The side of forest botany presented in this course deals with the effect of climate and soils upon distribution, local and gen-
eral, and such factors as have to do with the growth and life histories of different species of forest trees.

Second semester; 3 credit hours.

**TF. 76. Dendrology. (Botany 20a).**

(Elective required of students in department of technical forestry.)

The work contemplated under this subject is the study of the classification of the forest trees of the United States and Canada, their form, characteristics and distribution, and the morphological features upon which their classification is based. Includes also the study of the characteristics of the woods of the various species. Special attention is given to western species.

Second semester; Junior year; 2 credit hours.

**TF. 77. Dendrology. (Botany 20b).**

(Elective required of students in department of technical forestry. A continuation of TF. 77.

**TF. 78. Dendrology. (Botany 20c).**

(Elective required of students in department of technical forestry.) A continuation of TF. 78.

Second semester; Senior year; 2 credit hours.

**ENGLISH.**

**F 61. English.**

Studies in English composition, oral and written themes, outside readings, quotations.

First semester; Freshmen year; 3 credit hours.

**F 62. English.**

Studies in English composition with particular attention to the use of clear concise English in the preparation of reports, technical papers, and the like.

Second semester; Freshmen year; 3 credit hours.

**CHEMISTRY.**

**F 53. Chemistry. Elementary. (Chemistry 11).**

A study of the fundamental laws of chemistry and of the properties and the relations of the more common elements and their compounds. Text, Alexander Smith’s Chemistry for Colleges. Lectures, laboratory work and quizzes. Prerequisite: High school physics.

First semester; Sophomore year; 3 credit hours.
F 64. Chemistry. General. (Chemistry 12).
Continuation of F 53.
Second semester; Sophomore year; 3 credit hours.

PHYSICS

1. Mechanics, Molecular Physics and Heat. The course comprises about twenty-five of the fundamental and representative problems which, experimentally, will yield quantitative results. It is required of all students in Engineering. Prerequisite: Courses A and B, or equivalent; Mathematics 1a.
First semester; Junior year; 3 credit hours.

2. Electricity, Sound, and Light. This course is a continuation of course 1, and with it constitutes a general survey of the subject. It is required of all students in Engineering. Prerequisite: Physics 1.
Second semester; Junior year; 3 credit hours.

MOTIVE POWERS

A study of electric motors, steam engines, gas combustion engines and other motive powers.
First semester; Senior year; 3 credit hours.

F 68. Motive Powers.
A study of power appliances and equipment used in logging.
Second semester; Senior year; 3 credit hours.

MATHEMATICS

F 71. Trigonometry.
Definitions of the trigonometric functions as ratios; their line representations; their graphical representations; proof of the principal formulas; trigonometric transformations; circular measure of angles; inverse trigonometric functions; proofs of formulas of right and oblique triangles; theory and use of logarithms; areas and solution of right and oblique triangles.
First semester; Freshmen year; 3 credit hours.

F 72. Algebra, Elements of Analytic Geometry and Calculus.
Second semester; Freshmen year; 3 credit hours.
FE 73. Integral Calculus.
   (Elective required of students in department of forest engineering.)
   First semester; Sophomore year; 2 credit hours.

FE 74. Solid Analytic Geometry, Calculus, Differential Equations.
   (Elective required of students in department of forest engineering.)
   Second semester; Sophomore year; 2 credit hours.

FE 75. Analytic Mechanics.
   (Elective required of students in department of forest engineering.)
   First semester; Junior year; 2 credit hours.

FE 76. Analytic Mechanics.
   (Elective required of students in department of forest engineering.)
   Second semester; Junior year; 2 credit hours.

FE 77. Applied Mechanics.
   (Elective required of students in department of forest engineering.)
   First semester; Senior year; 2 credit hours.

FE 78. Applied Mechanics.
   (Elective required of students in department of forest engineering.)
   Second semester; Senior year; 2 credit hours.

ZOOLOGY.

   (Elective required of students in department of technical forestry.) A study of structure and the outlines of classification.
   First semester; Sophomore year; 2 credit hours.

   (Elective required of students in department of technical forestry.) A study of the insects infecting the forests, identification, recognition, treatment of infested areas, etc.
   Second semester; Sophomore year; 2 credit hours.
TF 75. Zoology. Vertebrates. (Biology 29).

(Elective required of students in department of technical forestry.) A study of the fauna of the forests with particular attention to fish, game and predatory animals.

First semester; Junior year; 2 credit hours.

TF 76 7-8. (See Botany, Dendrology.)
School of Pharmacy
SCHOOL OF PHARMACY

FACULTY

EDWIN BOONE CRAIGHEAD, M. A., LL. D., D. C. L.
President of the University.

CHARLES E. MOLLET, Ph. C. (University of Kansas)
Director of the School and Professor of Pharmacy.

W. M. ABER, A. B. (Yale)
Professor of Latin and Greek.

FREDERICK C. SCHEUCH, M. E., A. C. (Purdue University)
Professor of Modern Languages.

M. J. ELROD, Ph. D. (Illinois Wesleyan University)
Professor of Biology and Physiology.

JOSEPH EDWARD KIRKWOOD, Ph. D. (Columbia University)
Professor of Botany.

GEORGE FULLMER REYNOLDS, Ph. D. (University of Chicago)
Professor of English and Rhetoric.

RICHARD HENRY JESSE, Jr., Ph. D. (Harvard University)
Professor of Chemistry.

ROBERT NEAL THOMPSON, B. S., (University of Nashville)
Assistant Professor of Physics.

WILLIAM GEORGE BATEMAN, A. M. (Stanford University)
Assistant Professor of Chemistry.

LESLIE JAMES AYER, B. S., J. D. (University of Chicago)
Professor of Law.

A. GEORGE HEILMAN, Ph. B. (Franklin-Marshall), M. D. (University
of Pennsylvania)
Instructor in Bacteriology and Physiology.

CARL HOLLIDAY, B. S., M. A. (University of Tennessee.)
Assistant Professor of English.

GEORGE R. COFFMAN, Ph. D. (University of Chicago)
Assistant Professor of English.

HENRY HAXO, Ph. D. (University of Chicago).
Assistant Professor of Romanic Languages.

A. W. L. BRAY, B. S., A. B. (Cambridge University)
Instructor in Biology.

JAMES DENTON DUNLOP,
Registrar.
SCHOOL OF PHARMACY

ORGANIZATION.

The School of Pharmacy was established by the State Board of Education September, 1907, as a department of the Montana State College of Agriculture and Mechanic Arts at Bozeman; from where it was transferred to the University of Montana at Missoula, July 17, 1913.

The work of this School includes instruction in the Departments of Pharmacy, Chemistry, Biology, Physics, English, Modern Languages, Latin and Law. It is the only Pharmacy School in the state.

PURPOSE.

To afford opportunities for students within the state to obtain a thorough technical education which will equip them for a life of efficient service in the profession of pharmacy. This will result beneficially for the people of the state, and to the profession of medicine, in which pharmacy occupies a necessary, separate and distinct field, which comprises the collection, preservation, standardization and dispensing of preventative and remedial agents.

OPPORTUNITIES

Splendid opportunities exist in this state for men and women who are well trained in the principles of the science and art of pharmacy and their practical application. The public through the passage of national and state pure-drugs and anti-narcotic drugs acts, is placing particular strain and emphasis upon pharmacy, which is increasing its requirements for practice by requiring a better preliminary and professional education; which fact is most clearly shown by the passing of state laws or by the adoption of rules or recommendations by state pharmacy boards, in the following states: New York, Pennsylvania, Wisconsin, Ohio, Louisiana, Michigan, Oregon, North Dakota, Washington and Montana.

Pharmacy must keep pace with kindred professions in this way in order to meet its responsibilities and maintain for itself the public confidence and respect that it merits.

All of the graduates of this School are occupying responsible positions, and there has been a greater demand for clerks than the school has been able to meet.
STANDING OF THE SCHOOL.

The Montana Pharmaceutical Association reviewed the work of the school in 1909 and recommended it to the people of the state and to those wishing a good pharmacy education. The State Pharmacy Board, in April, 1910, officially recognized the school, registering as pharmacists its graduates without examination upon payment of the regular fee and presentation of the evidence of having had all the professional qualifications of age, practical experience, etc. This board consists of three members, appointed by the governor. It meets in April and October of each year and examines applicants who wish to practice pharmacy in this state. At the meeting, October, 1913, the board adopted the following recommendations for the qualification of applicants wishing to take the examinations for registered and assistant pharmacists, in addition to the regular requirements of age, experience, etc.; that applicants in 1914 furnish evidence of having completed at least two years of high school work or its equivalent; in 1915, three years of high school work or its equivalent; in 1916, four years of high school work or its equivalent, and thereafter a two-year course in a recognized pharmacy school.

The Educational Department of the State of New York, at the meeting held November 20, 1913, formally recognized the school and gave it full registration as meeting all requirements under the regents’ revised rules.

ENTRANCE REQUIREMENTS

Students planning to enter pharmacy should include physics in subjects offered for matriculation. Those who do not present one unit of high school physics and register in the three or four year course must elect Physics A and B.

Applicants for the four-year course in pharmacy must be at least sixteen years old and present fifteen units for admission.

Applicants for the three-year course must be at least seventeen years old and present at least eleven units for admission, in 1914, and fifteen units in 1915.

Applicants for the two-year course must be at least eighteen years old and present the following requirements for admission: In 1914, two years of high school work or its educational equivalent, and in 1915, three years of high school work or its educational equivalent, and in 1916, four years of high school work or its educational equivalent.
Drug store experience is not required for entrance nor for graduation, but the past has shown that students who have spent one or two years in a drug store find it much easier to master the work.

COURSES AND DEGREES OFFERED

1. A two-year course, comprising four semesters of eighteen weeks each, which leads to the degree of Graduate in Pharmacy (Ph. G.) and prepares the foundation for the practice of the drug business. This course meets the requirements of the New York Educational Department and the prerequisite educational requirements of state pharmacy boards.

2. A three-year course, comprising six semesters of eighteen weeks each, leading to the degree of Pharmaceutical Chemist (Ph. C.).

Candidates for this degree must elect one year of German, French or Spanish.

3. A four-year course of eight semesters of eighteen weeks each, leading to the degree of Bachelor of Science in Pharmacy (B. S.) which includes the prescribed work of the three-year course and one year of elective work, which in all must total not less than 122 credits.

The three and four-year courses give greater breadth of training and prepare for the more strictly professional positions.

OUTLINE OF STUDIES.

TWO YEAR COURSE

First Year.

FIRST SEMESTER.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
<th>Lecture and Recitation Hours</th>
<th>Hours in Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Botany (Bot. 10)</td>
<td>3</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>General Chemistry (Chem. 10)</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Pharmacy Latin</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Introductory Pharmacy (Phar. 11)</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Pharmaceutical Arithmetic (Phar. 12)</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Physical Education</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Per Week .................................... 15 1/2
Per Semester ................................ 160 240
Total hours, per semester, 400.

SECOND SEMESTER.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
<th>Lecture and Recitation Hours</th>
<th>Hours in Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Botany (Bot. 11)</td>
<td>3</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>General Chemistry (Chem. 11)</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Physiology (Biol. 10)</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Manufacturing Pharmacy (Phar. 13)</td>
<td>5</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Pharmacognosy (Phar. 14)</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Physical Education</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Per Week .................................... 18 1/2
Per Semester ................................ 192 288
Total hours, per semester, 480.
Total hours, per year, 880.
## SECOND YEAR.

### FIRST SEMESTER.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
<th>Lecture and Recitation Hours</th>
<th>Hours in Laboratory</th>
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</thead>
<tbody>
<tr>
<td>Histology and Microscopical Technique</td>
<td>3</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Qualitative Analysis (Chem. 12)</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Organic Chemistry (Chem. 14)</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Bacteriology (Biol. 9)</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Pharmacopeial Salts (Phar. 15)</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Prescription Reading and Dispensing (Phar. 17)</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Pharmaceutical Jurisprudence</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Physical Education</td>
<td>½</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Per Week</strong></td>
<td><strong>17½</strong></td>
<td><strong>12</strong></td>
<td><strong>17</strong></td>
</tr>
<tr>
<td><strong>Per Semester</strong></td>
<td><strong>192</strong></td>
<td><strong>272</strong></td>
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</tr>
<tr>
<td><strong>Total hours, per semester, 464.</strong></td>
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### SECOND SEMESTER.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
<th>Lecture and Recitation Hours</th>
<th>Hours in Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative Analysis (Chem. 13)</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Physiological Chemistry (Chem. 19)</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Pharmacopeial Salts (Phar. 16)</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Powdered Vegetable Drugs (Phar. 18)</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Materia Medica, Therapeutics and Toxicology (Phar. 19)</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Drug Analysis (Phar. 20)</td>
<td>3</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Physical Education</td>
<td>½</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Per Week</strong></td>
<td><strong>16½</strong></td>
<td><strong>11</strong></td>
<td><strong>16</strong></td>
</tr>
<tr>
<td><strong>Per Semester</strong></td>
<td><strong>176</strong></td>
<td><strong>256</strong></td>
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<tr>
<td><strong>Total hours, per semester, 482.</strong></td>
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<tr>
<td><strong>Total hours, per year, 896.</strong></td>
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<tr>
<td><strong>Totals for the two years, Credits, 68; Lecture, Recitation and Laboratory Hours, 1776.</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Weeks of registration and examinations not included in these calculations.</strong></td>
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### THREE YEAR COURSE

#### First Year.

<table>
<thead>
<tr>
<th>First Semester Hours</th>
<th>Credit</th>
<th>First Semester Hours</th>
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<tbody>
<tr>
<td>English (Eng. 11)</td>
<td>3</td>
<td>3</td>
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<tr>
<td>General Botany (Bot. 10)</td>
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<tr>
<td>General Chemistry (Chem. 10)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Pharmacy Latin</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Pharmaceutical Arithmetic (Phar. 2)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education</td>
<td>½</td>
<td>17½</td>
</tr>
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</table>

#### Second Year.

<table>
<thead>
<tr>
<th>Second Semester Hours</th>
<th>Credit</th>
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<tbody>
<tr>
<td>English (Eng. 12)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>General Botany (Bot. 11)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>General Chemistry (Chem. 12)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Pharmacognosy (Phar. 14)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education</td>
<td>½</td>
<td>18½</td>
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</table>
## Third Year.

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic Chemistry (Chem. 14)</td>
<td>4</td>
</tr>
<tr>
<td>Bacteriology (Biol. 9)</td>
<td>5</td>
</tr>
<tr>
<td>Pharmacopeial Salts (Phar. 15)</td>
<td>3</td>
</tr>
<tr>
<td>Prescription Reading and Dispensing (Phar. 17)</td>
<td>3</td>
</tr>
<tr>
<td>Pharmaceutical Jurisprudence</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiological Chemistry (Chem. 19)</td>
<td>3</td>
</tr>
<tr>
<td>Pharmacopeial Salts (Phar. 16)</td>
<td>2</td>
</tr>
<tr>
<td>Powdered Vegetable Drugs (Phar. 18)</td>
<td>1</td>
</tr>
<tr>
<td>Materia Medica, Therapeutics and Toxicology (Phar. 19)</td>
<td>4</td>
</tr>
<tr>
<td>Drug Analysis (Phar. 20)</td>
<td>3</td>
</tr>
<tr>
<td>Stomach and Urine Analysis (Phar. 21)</td>
<td>2</td>
</tr>
<tr>
<td>Pharmaceutical Jurisprudence</td>
<td>1</td>
</tr>
</tbody>
</table>

**16**

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### PHARMACY

The pharmacy department is located on the first floor in Science hall. The rooms are well lighted and are equipped with lecture desks, tables, laboratory desks, electric lights, gas, water, distilled water, hydrogen sulphide, hoods, and air and water baths. The building is heated by steam and ventilated by a direct system.

The lecture rooms contain specimens of the official drugs and chemicals for student use, displays of alkaloids, biological products and pharmaceutical preparations; and the lecture desks are supplied with the necessary apparatus for demonstrating all the common processes.

The laboratories are supplied with the following apparatus: Pill, tablet and suppository machines, drug mills, accurate sieves, hydrometers, specific gravity apparatus, centrifuge, blast lamps, tincture presses, nitrometers, counter, dispensing and analytical balances, microscopes and accessories for powdered drug and urinalysis work and a balopticon for use in pharmacognosy and prescription practice.

The stock room is supplied with official and non-official drugs, chemicals, fixed and volatile oils, reagents, and large and small apparatus which are furnished to students upon requisition.

The following pharmacy magazines and journals are found in the department and are for student use: American Journal of Pharmacy, Apotheker Zeitung, New Idea, North Western Druggist, Western Druggist, Modern Pharmacist, Bulletin of Pharmacy, Druggists’ Circular, Merck’s Report, Meyer Brothers’ Druggist, Pharmaceutical Era, Journal of the American Pharmaceutical Association, Journal of the National Association of Retail Druggists, and sets of bound volumes of the majority...
of these journals dating back a number of years, as well as other literature valuable to pharmacy students.

The department is amply supplied with the latest standard text and reference works.

Donations of a pharmaceutical character are always gratefully received and those who are about to destroy old books, especially pharmacopoeias, dispensatories and formularies, back volumes of pharmacy journals, pictures, papers or articles relating to early Montana pharmacy or pharmacists are reminded that the department can preserve and make use of such material. New, old or unique apparatus, odd or extraordinary samples of drugs, pharmaceutical chemicals and preparations are solicited for display.

DESCRIPTION OF WORK IN PHARMACY

11. Introductory Pharmacy.

This course consists of a study of the authoritative guides; the theory in the use of the common apparatus and processes used in pharmacy; together with practical laboratory training in the use of this apparatus and these processes. Lectures and recitations, 3; laboratory, 1. I, 4.


Two hours per week devoted to the study of the principles of pharmaceutical arithmetic and to practical problems involving weights and measures, relationship of systems, specific gravity and specific volume, reducing and enlarging formulas, percentage solutions, concentration and dilution, alligation and thermometric scales. Recitations. I, 2.


A continuation of course 11 and must be preceded by it; consisting of a thorough scientific study of the galenical preparations in the United States Pharmacopoeia and National Formulary. These are carefully considered with regard to classification, nomenclature, mode of preparation, preservation and percentage composition. The course includes laboratory training in the manufacture of many of these preparations, especially the typical representatives of each class of galenicals, viz: waters, liquors, decoctions, infusions, syrups, mucilages, honeys, glycerites, elixirs, spirits, tinctures, wines, vinegars, fluidextracts, extracts, oleoresins, resins, collodions, emulsions, mixtures, pills, powders, granular effervescent salts, cerates, ointments, lini-
ments, oleats, plasters and suppositories. Lectures and recita-
tions, 3; laboratories, 2. II, 5.


A study of the natural history and important features of
 crude drugs; the means of identification and selection; constitu-
 ents and official names and synonyms. The official organic
drugs and some of the commonly used non-official ones will be
studied in the following order: (a) Plant drugs—roots, rhizomes,
tubers, bulbs, corms, herbs, barks, twigs, woods, leaves, flowers,
fruits, seeds, gums, resins, balsams, etc.; (b) Animal drugs.
The student has access to the typical specimens in the
materia medica laboratory. Lectures, recitations, and laboratory
exercises. II, 3.


The official organic and inorganic salts, acids and the offi-
cial alkaloids, alkaloidal salts and glucosides are studied with
especial reference to nomenclature, source, manufacture, phys-
ical and chemical properties. Lectures and recitations. I, 3 and
II, 2.

18. Powdered Vegetable Drugs.

A technical study of all phases of the prescription, practical
exercises at sight reading and in the art of extemporaneous com-
ounding. I, 4.

18. Powdered Vegetable Drugs.

This is a continuation of course (14) in Pharmacognosy and
follows the Botany courses, 10, 11 and 12, and consists of a
study of the most important roots, barks, woods, flowers, seeds,
etc.; in powdered form; from which slides and drawings are
made. The student will use the various schemes for identifying
unknown specimens and will be required to verify his results by
the aid of the compound microscope. The characters of pow-
dered drugs, their substitutes and adulterants, the causes which
modify their characteristics and methods of avoiding deteriora-
tion will receive special attention. 2. II, 2.

19. Materia Medica; Therapeutics and Toxicology.

Lectures and recitations from the view point of the phar-
macist upon the official and common materials used in medicine,
Special attention is also given to methods of detection, antidotes
and posology of the commonly used toxic remedies. II, 4.
20. **Drug Analysis.**

This is chiefly a practical laboratory course in the analysis and standardization of the official inorganic medicines, chemicals, organic drugs and preparations, according to the methods of the United States Pharmacopoeia. Recitations, 1; laboratory, 2. II, 3. I, 3.

21. **Stomach and Urine Analysis.**

Two credits per week devoted to the study and estimation of the normal and pathological constituents of urine and the analysis of stomach content. Microscopic examinations will be made of urinary deposits. Text, The Urine, Stomach and Poisons, etc., Holland. II, 2.

The above subjects are listed in proper sequence and those which precede are prerequisite for those which follow, according to the schedule of the two-year course.

**LAW.**

**Pharmaceutical Jurisprudence.**

One lecture per week covering the subjects of contracts, commercial paper and banking, agency, partnership, property, insurance. Statutory regulations for the practice of pharmacy. I and II, 2 credits.

**LATIN**

**Pharmaceutical Latin.**

An elementary course in Latin grammar, with a study of Latin pharmaceutical terms. Text, Sturmer’s Pharmaceutical Latin. I, 2 credits.
Department of Commerce and Accounting
DEPARTMENT OF COMMERCE AND ACCOUNTING

FACULTY

(In order of official seniority.)

EDWIN BOONE CRAIGHEAD, LL.D. (University of Missouri),
D. C. L. (University of the South)
President.

FREDERICK C. SCHEUCH, M. E., A. C. (Purdue University)
Professor of Modern Languages.

JESSE PERRY ROWE, Ph. D. (University of Nebraska)
Professor of Geology.

JOSEPH HARDING UNDERWOOD, Ph. D., LL.D.
(Columbia University)
Professor of History and Economics.

GEORGE FULLMER REYNOLDS, Ph. D. (University of Chicago)
Professor of English and Rhetoric.

WILLIAM WEBB KEMP, Ph. D. (Columbia University)
Professor of Education.

THADDEUS L. BOLTON, Ph. D. (Clark University)
Professor of Psychology.

EUGENE F. A. CAREY, B. S. (University of California)
Assistant Professor of Mathematics.

PAUL CHRISLER PHILLIPS, Ph. D. (University of Illinois)
Assistant Professor of History.

W. WALTER H. MUSTaine, B. S. (Centre College of Kentucky)
Director of Physical Education.

ALICE W. MACLEOD, B. S. (Oregon Agricultural College),
B. O. (Cumnock School of Oratory)
Instructor in Public Speaking.

N. J. LENNES, Ph. D. (University of Chicago)
Professor of Mathematics.

H. A. TREXLER, Ph. D. (Candidate) (Johns Hopkins University)
Acting Professor of Political Economy.

CARL HOLLIDAY, M. A., (University of Tennessee)
Assistant Professor of English.

GEORGE R. COFFMAN, Ph. D. (University of Chicago)
Assistant Professor of English.

LESLIE J. AYER, B. S., J. D. (University of Chicago)
Professor of Law.

CHARLES WILLIAM LEAPHART, A. M., LL.B. (Harvard)
Professor of Law.

Professor of Law.

CHARLES C. STAELING, Ph. B. (University of Chicago)
Assistant Professor of Commerce and Accounting.

HENRY HAXO, Ph. D. (University of Chicago)
Assistant Professor of Romanic Languages.
The Department of Commerce and Accounting was established in the University of Montana in response to a great and growing demand for preparation and thorough training for general and specific business careers. The University believes that it ought to serve the community with the greatest possible efficiency and is ready to take the necessary steps to keep in the front ranks of progressive movements.

The work of the department is founded on the principle that through a thorough study of business methods and the underlying principles of industry and economic progress, a student may acquire not only a decidedly practical knowledge, through which he can make himself economically productive, but gain a habit of thought, a mental development that will enable him to think logically and accurately on problems that confront him in his life's career.

**ENTRANCE REQUIREMENTS.**

In general the admission requirements for work in the Department of Commerce and Accounting are the same as for any other department. It is suggested, however, that entering students include in their preparation four years of English and Mathematics and at least two years of Science, History and Modern Language, and have a good foundation of Commercial Arithmetic and Bookkeeping.

In case students offer for admission subjects equivalent to the beginning subjects in the outline of required work for the first and second years, especially in Accounting and Modern Languages, they will continue such work with the course next in order, provided such students are able to do so advantageously. Adjustments and substitutions may be made only with the consent of the head of the department.

**VOCATIONAL GUIDANCE**

The Bureau of Vocational Guidance, conducted by the department of Commerce and Accounting, exists for the sole benefit of the students who wish to take advantage of its assistance. The purpose of this organization is to assist students in the study of their personal characteristics, natural abilities, interests and special aptitudes in order to properly determine their particular qualifications and fitness, and to guide them in the selection of the career for which they are best adapted. The
bureau also offers assistance in planning courses and in the selection of the subjects offering the most valuable preparation for the chosen vocation.

In addition to this, the Bureau of Vocational Guidance assists in securing for worthy candidates positions for which they are properly fitted. It keeps in touch with the commercial world, its progress and future tendencies and has on file information concerning the available openings and data pertaining to conditions and remunerations, and qualifications necessary to properly fill such positions. The aim of the bureau is to promote efficiency and to render to the University and the community the most practical service possible.

**COURSE OF STUDY.**

The course of study extends through a period of four years and like other departments in the University, requires a minimum of 122 credit hours for graduation.

**PLAN OF ORGANIZATION**

The subjects, as outlined, are designed to prepare for one of several particular fields of work, thus allowing a student considerable range of choice, not only in selecting a career, but in the selection of particular subjects that seem especially applicable to the phase of commercial activity that he has chosen.

It is regarded as absolutely essential that a broad foundation be laid before the work of specialization is begun. For this reason the first two years of the course are mainly required. Suggested courses from the departments of English, Law, French, German or Spanish, Mathematics, Political Science, History, Economics, Geography, Physics, or Chemistry and others, correlated with various commercial subjects, form the basis of this foundational work. During the last two years the special line of work for which the student seems most adapted is carefully pursued. These groups are Accountancy, Public Service, Secretarial Work, General Business or Commercial Teaching. In the last named field certain courses in Psychology and Education are required, upon completion of which the University certificate to teach is granted. The degree of B. S. in Economics is given upon graduation.

**GROUP ARRANGEMENT OF ELECTIVES**

The arrangement of subjects in the groups named above is made on the basis of the special adaptability and bearing of
subjects upon particular phases of commercial life. While this is not absolute, and can, when conditions demand, be adjusted to serve the special purpose of the individual student, it is suggested that the electives be chosen wisely and carefully, and with particular emphasis upon the value of the subject in its relation to the career for which it is intended to prepare. These selections should be made with the advice of the head of the department. Subjects may be chosen from any group to make up the total number of credits necessary for graduation.

COURSE PLANS

It is recommended that third-year students make an effort to decide as definitely as possible the career they wish to follow, and then, with the assistance of the adviser, prepare an outline containing the subjects that apply particularly to that phase of work. This outline should be followed carefully; for by so doing, irregularities may be reduced to a minimum and the work pursued to the best advantage.

ACCOUNTANCY

Accountancy as a profession offers many and varied opportunities. Experts are more in demand today than ever before, and this is true particularly of public accounting. The increased number and the rapid growth of large commercial organizations are enlarging the field for the accountant, auditor and business manager and offering inducement for the clerks and bookkeepers to fit themselves for promotion. In the first year of the course in accounting the student receives a thorough preparation in fundamental principles, which are applied and made real by the practical work required in addition. Later, accounting principles are applied to various lines of business, special fields and problems. This advanced work is designed to prepare the student for the examination for a certificate as Certified Public Accountant and to enter the professional field.

GENERAL BUSINESS

The courses in commerce are outlined to be of practical value, to those who plan a general business career. A thorough preparation is given in economic principles of production, transportation, manufacturing and distribution of products and the various problems that accompany these processes. Efficiency and elimination of waste are carefully emphasized. The marketing problem, with its salesmanship and advertising phases,
the methods of making collections and the application of credit systems are made a very important part of the course. The subjects in this course are selected from the various groups according to their particular adaptability and value.

PUBLIC SERVICE

Every properly trained business man ought to be familiar with the general functions of government and the relations of government to business activities. The department of Commerce and Accounting endeavors to train people not only to take an interest in politics and government affairs, but to prepare for active service in city, state and federal governmental work. There is a great demand for properly trained men in this growing field and the opportunities offered are excellent.

SECRETARIAL DUTIES

Secretaryship as a profession is being developed very rapidly in this country as a response to a great demand from large corporation managers and executives, for men with the proper training in business organization, methods and business practice. There is a dearth of good private secretaries and the opportunities in this field are practically unlimited. People in these positions come in direct contact with the very heart of the business and in personal touch with the directors and managers. This phase of our work is being particularly emphasized for it is a step in advance into a new field of opportunity, especially for the progressive type of student.

COMMERCIAL TEACHING

There is a great demand for properly trained people as instructors of commercial subjects. The commercial department is a very prominent part of the curriculum of nearly every high school and college, and the demand for teachers of this work far exceeds the supply. It is practically a new field and the opportunities for advancement are extremely encouraging. The University offers excellent facilities for preparation in this work, not only with reference to subject matter, but the professional training available in the Department of Education and Psychology.
# OUTLINE OF COURSES

## REQUIRED WORK

### FIRST YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>No.</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Com. and Ind. Geography</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Accounting</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>English</td>
<td>11</td>
<td>3</td>
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<tr>
<td>History</td>
<td>14</td>
<td>3</td>
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<tr>
<td>German, French, Spanish</td>
<td>3</td>
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<tr>
<td>Physical Education</td>
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### SECOND YEAR

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<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Money and Banking</td>
<td>12</td>
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<tr>
<td>Accounting</td>
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<tr>
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<td>German, French, Spanish</td>
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<td>Public Speaking</td>
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### THIRD AND FOURTH YEAR GROUP ELECTIVES

<table>
<thead>
<tr>
<th>Dept. and Course No.</th>
<th>Subject.</th>
<th>Semesters</th>
<th>Credit</th>
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<tr>
<td>ACCOUNTING</td>
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<td>C. and A. 15</td>
<td>Cost Accounting</td>
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<td>&quot; 16</td>
<td>Auditing</td>
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<td>&quot; 17 and 18</td>
<td>Practical Accounting Systems</td>
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<td>&quot; 19 &quot; 20</td>
<td>C. P. A. Course</td>
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<td>&quot; 21</td>
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<td>&quot; 22</td>
<td>Public Utilities Accounting</td>
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### PUBLIC SERVICE

<table>
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<tr>
<th>Dept. and Course No.</th>
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<th>Semesters</th>
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<tr>
<td>Econ. 23 and 24</td>
<td>Social and Economic Problems</td>
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<td>C. and A. 31</td>
<td>Diplomatic and Consular Service</td>
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<td>History 19</td>
<td>Comparative Governments</td>
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<td>Law</td>
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<td>History of Commerce</td>
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<td>History 12</td>
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<td>History 17</td>
<td>State and Local Government</td>
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<td>C. and A. 25</td>
<td>Transportation</td>
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SECRETARIAL DUTIES

Office Organizations & Management 1 2
Advertising and Business Cor... 1 2
Statistics ........................................... 1
General Psychology ..................... 2 3
Social Psychology ..................... 1 2
Corporations .................................... 3 3
Sociology ........................................... 2 2
American Business Methods .......... 1 2
Stenography ..................................... 2 3
Typewriting ..................................... 2 1

GENERAL BUSINESS

Investments ....................................... 2 2
Contracts ........................................... 3 3
Labor Problems ................................... 2 2
Trust Problem ................................... 1 2
Salesmanship ..................................... 1 2
Insurance ......................................... 1 2
Mathematics of Insurance ............ 1
Bailments and Carriers ................ 1 3
Negotiable Instruments ............... 1 3
Credits and Collections ................ 1 2

COMMERCIAL TEACHING

Theory and Methods in Com. Work 1 2
Psychology ........................................... 2 3
History of Education .................... 1 4
Principles of Education ................ 1 2
Educational Psychology ............... 1 2
School Hygiene ..................... 1 2
High School ..................................... 1 3
Observation Work ....................... 1 4

DESCRIPTION OF COURSES

ACCOUNTING

11. BOOKKEEPING— This course involves the theory of debits and credits, posting, preparation of trial balances, financial statements, closing the ledger, special books of original entry, the bank account, cash proof, commercial papers, the bill book, opening and closing of double entry books. Practical sets of transactions representing a proprietary business, and later a retail partnership are used to illustrate the principles brought out in this course. Students are required to record these transactions in blank books accompanying the text.

One semester. Time to be arranged. Two credit hours.
12 WHOLESALE PARTNERSHIP ACCOUNTING—A knowledge of bookkeeping is presupposed in this course. It covers the method of procedure in taking in a partner, articles of co-partnership, adjustment of interest between the partners, the dissolution of partnership, use of auxiliary ledgers, special column cash book and journal, suspense account, and controlling accounts. The student is required to record practical transactions in a set of books and handle the business paper involved.

One semester. Time to be arranged. Two credit hours.

13. CORPORATION ACCOUNTING—This course involves the study of the organization and management of corporations; special accounts and books used in corporation accounting; classification and method of issuing, transferring and cancelling stock; opening corporation books; classification and interpretation of accounts; significance of various items represented in the statement; dividends; reserve fund; depreciation and surplus; voucher system. In addition to a regular set of business transactions which the student is required to enter in blank books, reference and papers on special topics are assigned.

One semester. Time to be arranged. Two credit hours.

14. BANK ACCOUNTING—This course presupposes a knowledge of bookkeeping and involves a study of the organization and management of banks, emphasizing the national bank particularly. Methods of accounting forms and books used in various departments of the national bank are carefully considered. Banking customs and various details in the routine of the banking business, bringing out the interdependence and the close relation existing between the departments, are emphasized. A set of transactions representing the actual business of a national bank, involving the duties, forms and records of the various clerks in the organization, is entered in blanks especially prepared for the purpose. These are then properly closed and a financial statement rendered.

One semester. Time to be arranged. Two credit hours.

15. COST ACCOUNTING—This course takes up that phase of accountancy concerned in the determination and recording of the actual cost of manufacturing any article or product. Emphasis is placed upon the elements and principles concerned in the cost of material; labor and factory expense; the classification of accounts under cost system; the cost formula; advan-
tages of the cost system; distribution of indirect expenses, wage systems; cost method of manufacturing accounts; manufacturing statements; forms. A set of business transactions covering the work of a manufacturing concern for a period of time is used to illustrate the principles set forth, and the special problems are given to emphasize certain important elements.

Both semesters. Time to be arranged. Two credit hours.

16. AUDITING—This course deals with the qualifications, duties and responsibilities of a public auditor and the proper method of procedure in conducting an audit. The various details involved are carefully considered. The methods of detecting errors and the remedial steps toward removing the possibilities of fraud are discussed. The writing of reports and statements of financial condition is emphasized.

Both semesters. Time to be arranged. Two credit hours.

17 & 18. PRACTICAL ACCOUNTING SYSTEMS—This is a study of the systems used in various business organizations and the principles underlying them. The essential points in the details involved in planning, preparing and installing a system are carefully studied. Lectures and investigations are supplemented by practical problems, which are intended to develop originality and discrimination, and lend an opportunity to apply the principles.

Both semesters. Time to be arranged. Two credit hours.

19 & 20. This course covers the general field of accounting, placing special attention upon the requirements for C. P. A. examination. Practical accounting problems from various lines of business are taken up and papers on special topics are assigned. Open to students who have had Accounting 11, 12 and 13.

Both semesters. Time to be arranged. Two credit hours.

21. MUNICIPAL ACCOUNTING—This course deals with the forms, methods and systems of keeping the records in various departments of municipal organizations. In the course of lectures and class discussions, accounting forms of various cities and public institutions are used as models. Consideration is also given to city budget making.

One semester. Time to be arranged. Two credit hours.
22. PUBLIC UTILITIES ACCOUNTING— This course aims to cover methods of accounting in various public service organizations such as railroads, electric light and power companies. Reports of various organizations are analyzed with reference to sources of income, expense, capital, revenue, statistics, liabilities, securities, and the method of accounting connected with each. Accounting 11, 12 and 13 are required for this course.

One semester. Time to be arranged. Two credit hours.

23. OFFICE ORGANIZATION AND MANAGEMENT— This is a study of the principles underlying the organization and management of office forces and touches upon the following subjects: The physical offices, equipment, heating, lighting and ventilation; office employes, their selection, training and salaries; office appliances, mechanical aids in office work, relation between manager and employes, salary plans, enthusiasm, human touch, welfare work; office records and systems, correspondence filing, order systems, credits, collections, advertising, and sales, purchasing and handling supplies. Sociology and Psychology should precede this course. In addition to lectures, students are required to write papers on assigned topics.

One semester. Time to be arranged. Two credit hours.

24. TRANSPORTATION— This course takes up a brief survey of the development of transportation as to routes, source of commodities, and facilities. Development of railroad traffic, relation of water to rail transportation, and methods of handling freight. Later a study of tariffs, classification of shipments and special rates, and the basis of determining the rate system. Relation of government to transportation. Interstate Commerce Commission; Freight Rate Commission.

One semester. Time to be arranged. Two credit hours.

25. BUSINESS ORGANIZATION Financial institutions, savings banks, trust companies, building associations, insurance, etc.; corporations, organization and problems, as capitalization, bonding, reserves, monopoly; stock exchanges, brokerage, speculation; legislation and reform; investments.

First semester; 2 credit hours; T. Th., 10:30.

26. SALESMANSHIP— This course presents the theory and principles underlying the problems of salesmanship. Methods of analyzing territory, market and goods; selling argument,
methods of presentation, planning canvasses, meeting prospects; objections and organization of selling force together with other details are covered. This study is supplemented by practical work on the part of the students.

One semester. Time to be arranged. Two credit hours.

27. INVESTMENTS—This is a study of the general laws, nature and methods of investment with reference to various forms of values. The influence of speculation on investment is considered and the various securities, such as railway and other corporation stocks, bonds, mortgages on real estate, public service securities, and municipal bonds are compared and studied from the investment point of view.

Both semesters. Time to be arranged. Two credit hours.

28. INSURANCE—In this course the general principles of insurance are first studied. Later the application of these principles is taken up with reference to the various phases of insurance, life, fire, casualty, accident, marine, fidelity, liability, etc., and the conditions connected with them. The nature of the policies of various companies, and the basis of estimating the premiums are considered.

One semester. Time to be arranged. Two credit hours.

29. DIPLOMATIC & CONSULAR SERVICE—This study is introduced by a brief history of Consuls and Consular Service in the United States and the countries of Europe. The organization of the United States Consular Service, consular appointments, preparation for consular duties both here and at the post, diplomatic functions of officers, consular reports, relation of consular officers to judicial and commercial affairs are carefully treated. In general it touches upon the qualifications, duties and opportunities in consular work.

One semester. Time to be arranged. Three credit hours.

30. AMERICAN BUSINESS METHODS—This is a study of the most modern and efficient methods of record now in use in the representative business enterprises of our country. It treats of the following subjects: the credit man’s department, and the various ways of making collections; the corporation secretary and his duties in every phase of corporate routine; the filing department, and the methods of indexing, filing, and tracing; the manufacturer’s department, and the cost methods for the various
lines of manufacturing enterprises, payroll systems, depreciation and shop orders; the purchasing department, voucher system, the purchasing agent’s order system; the sales department, manufacturer’s orders, order filing systems, mail orders, card systems; the stores department, perpetual inventories, business enterprises; retail and general stores, departmentalization of general stores. This work is introduced by a study of the use and efficiency of business papers and the various legal documents that apply to business affairs.

One semester. Time to be arranged. Two credit hours.

31. **ADVERTISING AND BUSINESS CORRESPONDENCE**— This course presents the fundamental principles of advertising, its place and relation to the business, methods and mediums of display. Some individual work in advertising problems is expected in connection with the class discussions. About half the semester’s work is devoted to the subject of business correspondence, the purpose of which is to drill students in the proper use of effective expression applied to business affairs. Special attention is placed upon the various forms of business correspondence with reference to composition and purpose.

One semester. Time to be arranged. Two hours credit.

32. **CREDITS AND COLLECTIONS**— This is a practical study of the factors involved in the granting of credit and the methods of obtaining satisfactory information from various sources. Methods of collections are carefully considered. Credit organizations are studied and analyzed and the routine of the credit and collection departments of certain lines of business are investigated.

One semester. Time to be arranged. Two credit hours.

33. **ELEMENTARY STENOGRAPHY**— The purpose of the course is to master the principles of Gregg shorthand. A careful study is made of consonants, vowels, and their combinations, phrasing, word signs, compound words, abbreviations, prefixes, affixes and the development of vocabulary. Special emphasis is placed upon accuracy and legibility. Sufficient work in dictation is given to put into practice all the principles involved in the course.

One semester. Time to be arranged. Three credit hours.
34. **ADVANCED STENOGRAPHY** This course takes up a review of advanced phrasing and some of the abbreviation principles as an introduction. Dictation from various lines of business is given for the purpose of developing a large working vocabulary, drill in writing unfamiliar words, accuracy of outline, application of principles and speed. Considerable time is devoted to the reading of shorthand for the purpose of developing accurate and rapid interpretation.

One semester. Time to be arranged. Three hours credit.

35. **ELEMENTARY TYPEWRITING** The chief object of this course is to master the keyboard thoroughly and to develop uniformity of touch and accuracy. The absolute necessity of careful mental direction in the development of proper co-ordinations and correct habits is emphasized and constructive suggestions are regularly given.

One semester. Time to be arranged. One credit hour.

36. **ADVANCED TYPEWRITING** In this course the transcription of shorthand notes, proper use of the mechanical devices on the machine, carbon copies, stencil work, tabulation, legal forms and other miscellaneous activities connected with stenographic work are emphasized. From time to time suggestions as to the proper care of the machine and the adjustment of the working mechanism are given.

One semester. Time to be arranged. One credit hour.

37. **THEORY AND METHODS IN COMMERCIAL TEACHING** This course is intended for those who are preparing for the teaching of commercial subjects. It involves a study of the psychology, methods of presentation and problems peculiar to the subject of shorthand, typewriting and penmanship. The details involved in the organization, course of study and equipment of commercial departments are discussed carefully. In addition to the lectures and class discussions, papers on assigned topics are required. General Psychology and Educational Psychology are prerequisites for this course.

One semester. Time to be arranged. Two credit hours.

**CERTIFIED PUBLIC ACCOUNTANCY**

Chapter 39 of the Session Laws of 1909 provided for the regulation of the practice of public accounting in Montana. The
State University administers this law and issues certificates of competency to any person who:

(1) Is a citizen of the United States or who has in good faith and in the manner required by law declared his intention of so becoming;
(2) Is of the age of 21 years;
(3) Is of good moral character;
(4) Is a graduate of an accredited High School or has had an equivalent education;
(5) Has had three years' practical experience in accounting acquired in practice on his own account, or in the office of a public accountant, or in a responsible accounting position in the employ of a business corporation, firm or individual;
(6) Has successfully passed certain written and oral examinations prescribed by the law, or
(7) Is exempt under the section of the law applicable to persons having certificates of other states or countries, or under the temporary provision for the exemption of experienced accountants already practicing in the State; and
(8) Has paid in advance the fee of twenty-five dollars, as prescribed by the law.

The above mentioned examinations are held at least once each year in December, or semi-annually in June and December, and at least thirty days' notice of the time and place of holding is given by advertisement in three representative daily newspapers of the state.

Candidates for the examinations may obtain circulars of information and application blanks from the University or from any member of the Board of Examiners.

The application blank must be filled out in the candidate's own handwriting and signed and sworn to by the candidate in the presence of some one authorized under the laws of Montana to administer an oath, and, together with a bank draft or money order for twenty-five ($25.00) dollars, payable to "University of Montana," be mailed to the University at Missoula.

If the University approves the application the candidate will receive a card of admission to the examination, and if he succeeds in passing the examination he will in due course receive a certificate.

If the University does not approve the application, the candidate will be duly notified of that fact and the fee will be returned.

In no event will the fee of twenty-five ($25.00) dollars be returned to the applicant after his application has been approved, but any candidate failing to pass the examination is entitled to take any one subsequent examination without payment of a second fee.

To insure consideration, applications should be in the hands of the University at least two weeks before the date set for the examination.

The provisions of the law are carried out by:

(a) A University Committee on Accountancy—consisting of Professors A. N. Whitlock, C. C. Staehling and Registrar J. D. Dunlop.

(b) A Board of Examiners—consisting of three certified public accountants of the State of Montana, appointed by the President of the University. The members of the present board are J. C. Phillips, W. D. Mangam, and Donald Arthur (Secretary), of Butte.

The law provides for the revocation of certificates for unprofessional conduct or other sufficient cause and for the punishment of any person falsely representing himself as being a Certified Public Accountant or as holding such a certificate.
QUALIFICATIONS FOR EXAMINATIONS

The following qualifications should insure the successful passing of the examinations:

1. A good mathematical foundation.
2. A comprehensive knowledge of bookkeeping.
3. A knowledge of the fundamental principles of commercial law and the rules of evidence.
4. A knowledge of business organization and management.
5. Ability to speak and to write the English language clearly and concisely.
6. Familiarity with the theory and practice of analytical accounting.
7. Familiarity with the theory and practice of constructive accounting.
8. A knowledge of the subjects of commercial arithmetic, commercial geography, industrial history, business ethics and the elements of constitutional law.
9. The personal qualifications of integrity, business acumen and logical reasoning.

APPLICATIONS UNDER THE WAIVER CLAUSE

The law (Section 4) exempts from examination the following applicants:

First, those who hold certificates as “Certified Public Accountant” in another state extending like privilege to this state; provided, that in the opinion of the Board of Examiners the requirements for such certificates are equivalent to the requirements in this state.

Second, those holding similar certificates of another country, the requirements for which are equivalent to those in this state; provided, that the applicant is either a citizen or has declared his intention to become such.

Third, persons of at least twenty-five years of age, whose qualifications were equal to those prescribed for applicants for examination, who were known to the Board of Examiners as competent and skilled accountants; provided, they applied for certificates within one hundred and eighty days after the passage of the act.

Applicants under any of these provisions may obtain blanks from the University or the Board of Examiners and must pay the fee of twenty-five dollars as prescribed. These applications will be acted upon in the same manner as those for examination.
School of Music
FACULTY

DE LOSS SMITH . . Head of the School and Professor of Voice
JOSEPHINE SWENSON . . Assistant Professor of Piano
SCHOOL OF MUSIC

PURPOSE.

The fundamental purpose of those in charge has been to make the School of Music complete and thorough in every respect and to advance the pupils rapidly, yet carefully. The student of music is taught how to study, how to memorize, and how to attain a thorough understanding and appreciation of the world of music. The Department has obtained instructors who by their association with affairs musical, both in teaching and in public performance, have secured and are securing high success. The University believes that for those desiring a thorough familiarity and mastery of music, either instrumental or vocal, the department now offers the best advantages to be found in the Northwest.

DEPARTMENT OF VOICE.

Fixed adherence to a given list of studies is not required. The needs of the individual student are considered and the studies varied accordingly. Two credits per semester is allowed for each course.

Course I.

Correct breathing as the foundation for all singing; true intonation and pure tone; correct pronunciation and phrasing exercises for the equalization of the registers; scales, major and minor, elementary vocalises by Gilchrist, Concone and Vaceai; easy songs by American, English and German composers for the early development of strictly classic taste.

Course II.

Continuation of work of course I; broadening and developing tone; intervals; scales, diatonic and chromatic; arpeggios; advanced vocalises by Concone, Lutgen, Lamperti, etc., English ballads, Italian, French and German songs.

Course III.

Scales, arpeggios, turns and trills; difficult studies by Marchesi, Abt, Garcias and Concone; arias by old masters; oratorios.
Course IV.

The work of this course is devoted to developing and perfecting the voice in singing oratorio roles, scenes from operas, various songs and arias in preparation for individual recitals and ensemble.

PUBLIC SCHOOL MUSIC

Sight Singing.

The class meets twice each week. In it is offered some preliminary work in harmony, ear training, tone thinking and notation in their particular relation to singing. The "movable Do" is used. This work is required of vocal students. A charge of $5.00 per semester is made. This course is recommended as a preliminary to beginners in voice.

A complete course in musical history, theory and harmony will be given. Two credits per semester.

DEPARTMENT OF PIANO

It has not been deemed advisable to select a set of studies to be used arbitrarily, but rather to select a course to suit the needs of the individual pupil.

Course I.

Theory of technique, simple exercises; little studies by Gurlitt, Czerny and Loeschorn; elementary pieces by Clementi, Mozart, Gurlitt and others.

Course II.

Czerny’s School of Velocity; Studies by Duvernoy, Heller, Loeschorn; Sonatinas of Clementi and Kuhlau; Pieces by Reinecke, Gurlitt, Heller and Schumann.

Course III.

Loeschorn Studies, op. 66.; Czerny School of Velocity; Bach’s Inventions (two voice); Octave Studies by Kullak, Easier Studies of Cramer; easier Sonatas of Haydn, Mozart, Beethoven; Pieces by Lack, Godard, Chaminade and others.

Course IV.

Czerny’s School of Velocity; Clementi’s Gradus ad Parnassum; Cramer Studies; Octave Studies; Kullak; Bach Inventions (three voice); Sonatas by Mozart and Beethoven. Selections from Mendelssohn, Chopin, Schubert, Schumann, Raff, Schar-
wenka, Godard, Chaminade, Leschetizsky, Tschaikowsky and others.

Two credits per semester is allowed for each course.

**ORCHESTRA**

Students of orchestral instruments will be admitted to membership in the University Orchestra. Weekly rehearsals are held in the auditorium. The work includes the study of symphonies, overtures, and other orchestral compositions. All students who are sufficiently advanced may join this class free of charge. One-half credit hour per semester.

**CHORUS WORK**

A Male Chorus and a Ladies' Glee Club have been organized to which all students possessing good voices are admitted free. Oratorios, cantatas, and part songs by the best composers are studied and are performed in recitals and concerts during the season. One-half credit hour per semester.

**RECIPIALS**

Student recitals are given at intervals during the year. The object is to afford opportunity for the student to apply in public the proficiency that has been developed in the studio. The advantage derived from these recitals cannot be over-estimated.

**TUITION**

One term (18 weeks) two lessons per week, piano or voice...$36.00

One lesson per week, piano or voice ..... $18.00

An extra fee will be charged if less than one semester is taken.

No absence from lessons will be excused. Lessons lost through fault of teacher will be made up.

**PIANO PRACTICE**

Pupils can arrange at a very moderate expense to do their daily practicing at the University.
Summer School
SUMMER SCHOOL

OFFICERS OF ADMINISTRATION

EDWIN BOONE CRAIGHEAD
President of the University.

WILLIAM WEBB KEMP
Director of the Summer School.

JAMES DENTON DUNLOP
Registrar.

SUMMER SCHOOL FACULTY

EDWIN BOONE CRAIGHEAD, LL.D., D. C. L.,
President.

FREDERICK C. SCHEUCH, M. E., A. C.
Professor of Modern Languages.

MORTON JOHN ELROD, Ph. D.,
Professor of Biology.

FRANCES CORBIN, B. L.
Professor of Literature.

JESSE PERRY ROWE, Ph. D.
Professor of Geology.

WILLIAM WEBB KEMP, Ph. D.
Professor of Education.

W. W. H. MUSTAINE, B. S.,
Director of Physical Education.

WILLIAM G. BATEMAN, M. A.
Assistant Professor of Chemistry.

LESLIE J. AYER, J. D.
Professor of Law.

C. W. LEAPHART, LL.B.
Professor of Law.

NELS JOHANN LENNES, Ph. D.
Professor of Mathematics.

Professor of Psychology.

DE LOSS SMITH
Professor of Music.

ROBERT NEAL THOMPSON, B. S.
Assistant Professor of Physics.

PAUL CHRISLER PHILLIPS, Ph. D.
Assistant Professor of History.

CARL HOLLIDAY, M. A.
Assistant Professor of English.

GEORGE R. COFFMAN, Ph. D.
Assistant Professor of English.
HENRY HAXO, Ph. D.
Assistant Professor of French.

H. A. TREXLER, Ph. D.
Acting Professor of Economics.

EUGENE F. A. CAREY, B. S.
Assistant Professor of Mathematics.

MARY E. EDMUNDS, B. S.
Instructor in Domestic Science.

BELLE KEMP BATEMAN, A. B.
Instructor in Fine Arts.

ALICE M. McLEOD, B. O.
Instructor in Public Speaking.

CHARLES C. STAELING, Ph. B.
Assistant Professor of Commerce and Accounting.

A. W. L. BRAY, B. A., B. S.
Instructor in Biology.

JOSEPHINE SWENSON
Assistant Professor of Piano.

JAMES H. BONNER, B. S.
Instructor in Manual Arts.

NON-RESIDENT LECTURERS

DR. LIGHTNER WITMER,
Lecturer on the Education of Exceptional Children.

ALMA L. BINZEL, Missoula, Montana.
Lecturer in Education.

HELEN HERRON, New Orleans, Louisiana.
Lecturer in Education.

KATHERYN M. RAY, Roswell, New Mexico.
Lecturer in Education.

LAURA L. RUNYON, Warrensburg, Missouri.
Lecturer in Education.

SUPT. S. R. LOGAN,
Lecturer in Rural Education.

H. H. SWAIN, Ph. D.
Lecturer in Civics and History.

Lecturer in Fine Arts.

Instructor in Manual Training.

Instructor in Playground Work.

Instructor in Sewing.

Assistant, Biological Station.
SPECIAL LECTURERS

HON. JOSEPH M. DIXON,
Ex-United States Senator from Montana.

DR. HAROLD W. FOGHT,

DR. PHILANDER P. CLAXTON,
U. S. Commissioner of Education, Washington, D. C.

DR. LOTUS D. COFFMAN,
Professor of Education.
University of Illinois, Urbana, Ills.

J. ADAMS PUFFER,
Director Vocation Bureau, Boston, Mass.

GEORGE W. BROWN,
Supt. of Schools, Edgar County, Illinois.

It is impossible at this time to give a complete list of special lecturers of the Summer School. A number of eminent Educators of the United States have been invited to participate in the session, but complete arrangements have not yet been effected.

GENERAL INFORMATION.

Location and Climate.

The City of Missoula is beautifully located on the Missoula River at the mouth of the Bitter Root Valley. The elevation of 3,200 feet, the immediate proximity to mountains, forests and beautiful streams, give the University of Montana exceptional climatic advantages for the holding of a Summer School.

The Northern Pacific and the Chicago, Milwaukee and Puget Sound Railways bring Missoula in close touch with all parts of Montana.

Purposes of the Summer School.

The Summer School is intended to meet the needs of all persons who wish to spend part of the long vacation in intellectual acquisition, using the equipment, organization and faculty of the State University. It especially appeals to:

Superintendents, Principals and Teachers who wish (1) to improve their professional equipment; (2) to do residence work for credits towards degrees; (3) to increase their knowledge and renew their enthusiasm. They may take courses applying on the University Certificate of Qualification to Teach. This certificate
renders teachers' examinations unnecessary for graduates of the University of Montana.

Graduate Students who wish to study in residence for higher degrees with the exceptional privileges of direct and personal contact with professors in libraries and laboratories. Courses more advanced than those herein listed may be arranged upon application.

Undergraduates who wish (1) to shorten their university course, by using the Summer School to complete the four years' course of the University in three and one-half or even three years; (2) to broaden the field of their studies; (3) to meet the requirements of University Certificates of Qualification to Teach; (4) to overcome handicaps of preparation and entrance conditions.

High School Students who wish (1) to complete a high school course, already almost finished; (2) to begin University work without waiting until September.

Correspondence Students who wish to do some work in residence.

Any person who wishes to spend vacation weeks in intellectual acquisition.

The Faculty.

A corps of forty-four or more professors and instructors, two-thirds from the University staff, and one-third from other institutions, will give courses in thirty-two fields of work.

Session of 1914.

The Summer School of 1914 will begin its session on Monday, June 8, and continue through Friday, July 17, a period of six weeks.

Registration.

As far as possible students should enroll at the office of the Registrar on Monday, June 8. Instruction begins at 8 a.m. the following day, Tuesday, June 9.

Admission.

There are no formal requirements for admission to the Summer School. Its courses are open to all persons qualified to pursue them to advantage.

Credits.

University credits toward degrees will be given only to those persons who present certificates and other credentials in satis-
faction of regular requirements. A maximum of six semester credit hours may be obtained by a student who devotes his whole time to courses of University grade. Credit may be given at the rate of one semester hour for fifteen exercises, the courses meeting five periods per week having credit value of two semester hours.

Certificates of Attendance.

Students of the Summer School who are not eligible to receive University credits will, upon request to the Registrar, receive certificates of attendance and of courses satisfactorily completed.

COURSES

Biology
Commerce and Accounting
Education
Fine Arts
Household Arts
Law
Manual Training
Modern Languages
Public Speaking
Physics
Physiography
Botany
Domestic Science
Education of Defectives
Geology
History
Library Science
Mathematics
Music
Physical Education
Playgrounds
Chemistry
Economics
English
Home Decoration
Civics
History of Montana
Literature
Mechanical Drawing
Psychology
Physical Training
Supervised Play

All subjects taught in the modern high school for which there is any demand.

(Detailed Announcements of Courses will be given in the regular Summer School Bulletin to be issued April 10th, 1914).

LECTURES AND ENTERTAINMENTS

A series of free public lectures, many of them illustrated, as well as musical and dramatic entertainments, will be provided for students of the Summer Session. Arrangements are under way to offer an especially attractive program by members of the faculty, eminent educators, and others.

A full announcement of the work of the Summer School will be issued about April 10th. For further information address Dr. Edwin B. Craighead, President of the University, or W. W. Kemp, Director of the Summer School.
EXPENSES
REGISTRATION

A general registration fee of $10.00 will be charged for any or all courses.

ROOM AND BOARD

The University will undertake to provide accommodations (including room and board) at the rate of $30.00 for the six weeks' session for all students who make application before May 30th, and who forward therewith a deposit of $5.00. The dormitories on the campus will be reserved for women. For further particulars, address the Secretary of the University. Students who wish to secure accommodations in private families may do so, making their own arrangements. Rooms may be had for from $6.00 to $12.00 per month. Such persons may secure board at the University dining hall at the rate of $4.50 per week, or for $24.00 per six weeks, if paid in advance. At these rates students should provide their own blankets and sheets.

TRAVEL

The authorities of the university wish to place the Summer School within the reach of all the teachers and students of Montana. In view of this, the cost of round-trip railway fare (based on cheapest route and not including meals or sleeper) less $5.00 will be refunded to those persons regularly enrolled. This privilege cannot be extended to persons living outside of the state, who, however, may find it advantageous to buy tickets via Glacier Park or Yellowstone Park. Hence for Montana teachers and students it will be seen that the total expense of the Summer School need not exceed the following: Registration, $10.00; Board and Room for the session, $35.00; Railway Fare, $5.00. Total, $45.00.

RAILWAY RATES IN MONTANA

By agreement of the Chicago, Milwaukee & St. Paul, the Great Northern and the Northern Pacific Railways, one and one-third round trip rates will be allowed in Montana, on the certificate plan. Tickets will be on sale June 4th to 10th, inclusive, and June 25th to July 1st, inclusive; and are good for return travel up to and including July 27. To take advantage of this, every student must get a receipt when purchasing ticket. If a student travels over two railway lines in reaching Missoula, receipts should be procured from both roads.
SUMMER TOURIST FARES

Summer tourist fares will be in effect via the Chicago, Milwaukee & St. Paul Railway, the Great Northern Railway, and the Northern Pacific Railway from eastern territory to western destinations June 1st to September 15th, inclusive, final return limit October 31st, 1914. Stopovers will be allowed in both directions within the final limit and diverse routes will be available; i.e. tickets can read on the going trip via one line, returning via some other line, or vice versa.

Yellowstone National Park is open to visitors June 15th to September 15th, 1914. The Park trip can be made in connection with through coast tickets from Livingston, Montana. Tickets are on sale at that station, as well as from other principal points, during the Park Season.

The tourist season of Glacier National Park, Uncle Sam's newest playground, is from June 15th to October 1st. The Park is located in Northwestern Montana, the entrance being Glacier Park Station on the East and Belton on the West side of the Continental Divide. All tickets allow stopovers at these points, permitting passengers to make side trips in the Park.

Make inquiry relative to rates before buying tickets. For full particulars concerning cost and length of time of trips, write any representative of the railways, or any of the following:

George W. Hibbard, General Passenger Agent, C. M. & St. P. R. R., Seattle, Wash.
H. A. Noble, General Passenger Agent, Great Northern Railroad, St. Paul, Minn.
A. M. Cleland, General Passenger Agent, Northern Pacific Railroad, St. Paul, Minn.

TO THE TEACHERS OF MONTANA AND OF OTHER STATES

The importance of Education in Montana is realized more keenly than ever before by the citizenship of the State. The effect of this awakening is already evident, while its promises for the future are most encouraging. Not only are salaries increasing, but a higher social recognition is being accorded to the teacher. Even more promising for the future is the fact that teachers among themselves are feeling, as never before, a common bond of service, whether that service is given in the grades or in the high schools, or in the colleges. No better illustration of a common profession bond can be cited than the unprecedentedly
large attendance at the recent meetings of the Yellowstone Valley Teachers' Association and the Montana State Teachers' Association. As never before, the time is critical for genuine, high-minded leadership. An opportunity for rapid progress toward better educational conditions has come, and the University wishes to serve effectively toward such achievement. To this end the University asks the attention of teachers to the following:

1. Provision will be made more liberally than ever to meet the needs of teachers. In addition to many courses in the distinct departments, a large number of teachers' courses will be provided next summer session and succeeding summer sessions, so that students may do consecutive work through a series of years. Furthermore, a special effort will be made to provide graduate students with the proper facilities for continuous work.

2. The State Board of Education has recently made provision whereby the University of Montana may grant to worthy students a series of fellowships and scholarships. The following ones are of special interest to teachers and students of education:

   Ten fellowships, valued at $250, including tuition and fees. Open to graduates of the University and of other colleges and universities maintaining good standards.

   Twenty-five scholarships, valued at $100, including tuition and fees. Open to college, university and normal school graduates, or to advanced students of promise. These scholarships are not open to students who may be able to enter the Junior year of the Arts and Science College.

   Twenty scholarships in the Department of Education, open to graduates of normal schools and colleges who wish to pursue advanced work in the Department of Education, these scholarships to be worth $50 a year, including free tuition.

   These honors will be available for the University year beginning September, 1914, a fact that should prove of interest to prospective Summer School students.

   In the Department of Psychology and Education will be offered a rich variety of courses designed for those teachers of Montana or other States, who desire to pursue work for professional advancement. The department is able to announce thus early the re-appointment of four of the leading specialists in education in this country: Miss Helen Herron of New Orleans; Miss L. L. Runyon of Warrensburg, Missouri; Miss Alma Binzel of Missoula, Montana, and Dr. Lightner Witmer of the University
of Pennsylvania, probably the foremost authority on the training of exceptional children. The faculty of the department will be augmented by the addition of a number of eminent professors from other universities in the United States; and by special lecturers selected from a large list of persons who have attained great leadership in one or another field of education.

The department will attempt to arrange courses that are most desired by teachers. The following courses can be announced at this time: General Psychology; Educational Psychology, History and Principles of Education, School Hygiene, Modern Educational Problems, Recent Development of Rural High Schools, School Playgrounds and Playground Work, The Development of Household Arts in the School, Administration and Supervision of School Systems, Psychology of Abnormal and Defective Types, Secondary Education, The Place and Possibilities of Music in Education, The Development and Future of Manual Arts in Education.

TEACHERS' CERTIFICATES

Teachers preparing for state certificates will find many subjects of direct value, among them the following: Algebra, child study, civics, American language and literature, English language and literature, geometry, history of education, methods of teaching, physics, physiography, political economy, principles of education, psychology, school hygiene, school management and supervision, general history, United States history. Students who need work in psychology and education to meet the requirements for the state certificate may devote all their time to either or both of those subjects.

TEACHERS' POSITIONS

The University maintains a bureau for the purpose of assisting students to secure desirable positions. During the past season the University has placed practically all of its graduates in the schools of the state. The Summer Session of 1913 was the means of assisting a number of teachers from other states to secure places in Montana. The Summer Session is a good time for teachers to meet superintendents.

SUMMER SCHOOL—LAW

Arrangements have been made in response to numerous requests to conduct a Summer School in Law. The courses will be
so arranged that regular work will be given, with regular credits, so that attendance at the Summer School during successive Summer Sessions will eventually enable students to complete the entire course in law, or better, to take a large part of the course in Summer School sessions and then complete the course at the University. This will enable a great many to take up a profession in life who are for various reasons unable to attend three years in regular attendance. The courses will also be adapted for students who wish to shorten their actual residence in the University, and for extra work that is to be carried; and a number of courses will be given in advance subjects which will be of great value to practicing lawyers. The courses will be so conducted as to complete the various subjects during the six weeks' session. As it is necessary that case-books be ordered in advance, all those interested in or contemplating taking this work are requested to write Law Department, Summer School Session, University of Montana.

SUMMER SCHOOL—COMMERCE AND ACCOUNTING

The teaching of commercial subjects in secondary schools is growing very rapidly and there is consequently a great demand for instructors in this phase of our educational field. The opportunities in this line of work are exceptional, and it may be that many who are now teaching other subjects would be glad to take up commercial work with a view of teaching it.

To such people, and commercial teachers, who wish to review or take advanced work, students now in the department wishing to shorten their college course, and others desiring to take special courses, the Summer School offers an excellent opportunity. Regular courses in Commerce and Accounting will be offered and college credit allowed for work satisfactorily completed. Elementary and Advanced Stenography, Bookkeeping, Wholesale Partnership, Corporation, Cost and Bank Accounting will be given provided the demand is sufficient. No course will be given unless five or more register for it. Therefore it is necessary for those who wish to take work in this department to make their wishes known as soon as possible. For information write to Department of Commerce and Accounting, Summer School, University of Montana, Missoula.
Biological Station
BIOLOGICAL STATION

OUTLINE FOR SEASON 1914.

A Station for instruction and research in Biology will be maintained by the University of Montana for the twelfth season, as a part of its regular summer session, during the six weeks from June 16th to July 30th. Students may stay as much later as they desire.

LOCATION

The Station is located at Yellow Bay on Flathead Lake, which is about midway on the eastern shore. At this place, the University owns eighty-seven acres, with nearly a mile and a half of shore line, given by act of congress. The station building is about a mile and a half from the postoffice Glen. The distance from Somers, the terminus of the Great Northern railroad, is about twenty miles; from Bigfork at the upper end of the lake on the mouth of Swan River, seventeen miles; and from Polson, on the lower end of the lake, about sixteen miles. Connection is made from these places by boat. An automobile road is under construction along the east lake shore, and has been completed from the north end almost to the Station grounds.

The region is a virgin forest. The Mission Mountains rise abruptly from Flathead Lake on the east, reaching an elevation of almost 8,500 feet near the station, or a mile in vertical distance above the water. These mountains present a variety of collecting fields, from the dense woods at the lake to alpine vegetation and talus meadows. A trail has been blazed to one of the summits. By boat, it is possible to reach in a short time the swampy delta of Flathead River, where it enters the lake, the swamp at the southern end of the lake, prairie country in several locations, and numerous islands. The lake itself covers more than three hundred and fifty square miles and is three hundred feet deep.

The beach at the Station is fine gravel or sand. There is no dust at any time. The bay is a perfect harbor for boats, making a pleasant pastime for rowing. The beach is excellent for bathing.

Besides this tract the Station has two other sites of forty acres each, one on Idlewilde Island, the other on Wild Horse Island. Both of these are used during the summer.

The topography near the Station is such as to afford a variety of floral and faunal conditions. From the deep lake to
high mountain top is an extreme which few places can present. From virgin prairie to virgin forest the distance is but a few miles. Rock cliffs and talus slopes and large swamps present marked contrasts for study and collecting. In these places are many rare forms of animal and vegetable life. Bear, deer, even moose, have been seen close to the Station, as have the puma, lynx and other small animals. In such rich field there is much pioneer work yet to be done.

BUILDINGS AND EQUIPMENT

The Station building is a two-story brick structure, thirty by forty feet, with a cement floor below and rooms for investigators and others on the second floor. It is situated in a beautiful grove of native yellow-pine and tamarack several hundred years old, is above high-water mark, and commands a magnificent view in every direction. A mountain stream furnishes an abundance of pure and ice cold water. There is a dark room for photography. A big fireplace makes the place cheerful on cool evenings.

The Station has a boat thirty feet long and seven feet beam, with a twelve horse power gasoline engine. It is capable of carrying fifteen people. There is a second smaller boat, sixteen feet long, with gasoline engine, a rowboat and two canvas boats. There is the usual collecting apparatus of various kinds. The fees mentioned later cover all expenses connected with the use of the boats and material.

PLAN OF WORK

It is not the purpose of the Station to duplicate the work offered at the University, but to provide facilities for field work of a kind that cannot be well carried on with limited hours for a schedule. Each person may select the study he wishes to pursue, and give to it all or a portion of his time. Instruction will be limited to certain courses for beginners, but qualified students may elect special work and pursue any line of investigation or study they desire. Provision will be made for both elementary and advanced study in botany and zoology in its various fields. Credit for equivalent university work will be given to those requesting it to the amount of six hours. This requires full work for the entire six weeks.

REGISTRATION

The number to be accommodated is limited. Hence imme-
ate registration is necessary to insure admission and accommodations. There is a limited number of tents. There are no boarding places near. It is impossible to supply and equip a large number of tents, for it is impossible to anticipate the attendance. Applications should be addressed to the Director of the Biological Station, University of Montana, and should indicate the courses the student intends to pursue, his preparation for them, and whether he will bring his own camp equipment or use that provided by the station.

FEES AND EXPENSES

Students will pay the regular Summer Session fee of twelve dollars for the six weeks, and will be entitled to take courses aggregating six hours’ University credit. If students wish to stay later and use the buildings and material for further study, they may do so without further pay. A charge of five dollars is made for the use of the scientific equipment and the boats. A further charge of five dollars is made to each person occupying a tent. These charges are not increased, no matter how long the person may stay. Students may, however, provide their own camp equipment of such sort as they may choose. Board at the Camp Mess Tent is provided at cost, which will be about six dollars per week.

COURSES

Elementary Zoology.

A course of lectures, accompanied by suitable laboratory exercises and field work intended to meet the needs of students who have had no previous training in Zoology.

General Ecology.

A study of the animals found in the region including their collection, classification, distribution and habits. Field work with lectures and photographic records of ecological phenomena.

Ornithology.

A study of the birds of the region, their classification, modes of identification, nesting habits, songs, distribution, with methods of making and preserving skins for future study.

Entomology.

By lectures, book references and field work a fairly comprehensive study of the insects will be given, including representa-
tives of the various orders. Attention will be given to forest insects.

Plankton.

In this course will be given a systematic and ecological study of the organisms of Flathead Lake.

Research.

Advanced students wishing to engage in research work in botany or zoology will be given problems for investigation to be conducted under the direction of the several members of the staff.

Nature Study.

While no definite courses will be outlined, those desiring it, will be given help and instruction in collecting and preparing material for use in any grade of work and will be given methods of study in connection with such material.

Photography.

Those desiring help will be given instruction in the use of both plates and films, in exposing, developing and printing. Those who know little of the subject and those who may be more proficient will alike profit from the experience and help at their disposal. It is expected that students will furnish their own cameras, with plates or films and paper.

Physiography.

High School teachers and pupils, and others will be aided in methods of study of the earth's surface by lectures and field work. Mountain formation and erosion, glacial action, river deposit, lake beaches, stream erosion, the causes producing forest and prairie, and many other phenomena, may be illustrated and studied in the region about the station.

Elementary Botany.

An introduction to the study of plants, presented by lectures and field work adapted to the needs of students who have had no previous training and who wish to pursue the study for its own sake or for credit.

Forestry.

This will include the identification of trees and shrubs, a study of the forest floor in its various aspects, distribution with respect to both moisture and altitude, the succession of timber
growths, parasitic and other forest enemies, and the like, from lectures and field work.

**EXCURSIONS**

Frequent excursions to various parts of the lake, and to the mountains will be made. Such trips will be to points of scientific and scenic interest, which are abundant. Excursions to nearby places by boat or on foot will be of almost daily occurrence. Camping trips will be arranged during which informal instruction in camping and woodcraft will be given.

**LECTURES**

In addition to the lectures to be given in connection with the various courses popular evening lectures will be presented in the laboratory for all who are present. There will be two or more each week, given by members of the staff and others who may be invited. These lectures have in the past been very popular. Some of them have been published in a bulletin.

**RECREATION**

It is possible to do full work in hours, sleep all the time that is needed, and still have an abundance of time for recreation. But recreation will not be permitted to interfere with the regular work to be done. Boating, fishing, swimming, forest rambling, and mountain climbing may be indulged in to the heart's content. The location of the Station is in the midst of a mountain and forest wilderness, extending for miles. It is possible to combine with study the pleasure of a summer outing which will invigorate the jaded teacher, student or others of sedentary occupation, and return them to work in the fall with renewed vigor, a stock of rich experience and a wealth of information which money cannot buy and which no one can take away. Many testimonials could be given of the great gain in health, knowledge and practical experience from such a summer, as much as is possible in regular university attendance.

For further particulars regarding the work of the Biological Station, write Dr. M. J. Elrod, Director Biological Station, University of Montana, Missoula, Montana.
University Extension Department
UNIVERSITY EXTENSION

FACULTY

Officers of Administration.

EDWIN BOONE CRAIGHEAD, LL. D., D. C. L.
President of the University.

GEORGE F. REYNOLDS, Ph. D.
Director of University Extension and Chairman of the Committee on University Extension.

M. J. ELROD, Ph. D., W. W. KEMP, Ph. D., De LOSS SMITH, CARL HOLLIDIAY, M. A.
Committee on University Extension.

Officers of Instruction.

EDWIN BOONE CRAIGHEAD, LL.D. (University of Missouri)
D. C. L. (University of the South) President of the University of Montana.

M. J. ELROD, Ph. D. (Illinois Wesleyan University)
Professor of Biology.

JESSE PERRY ROWE, Ph. D., (University of Nebraska)
Professor of Geology.

JOSEPH EDWARD KIRKWOOD, Ph. D. (Columbia University)
Professor of Botany.

GEORGE FULLMER REYNOLDS, Ph. D. (University of Chicago)
Professor of English and Rhetoric.

A. N. WHITLOCK, LL.B. (Harvard Law School)
Acting Dean and Professor of Law.

CHARLES MELVIN NEFF, LL. B. (Columbia University)
Professor of Law.

WILLIAM WEBB KEMP, Ph. D. (Columbia University)
Professor of Education.

THADDEUS L. BOLTON, Ph. D. (Clark University)
Professor of Psychology.

N. J. LENNES, Ph. D. (University of Chicago)
Professor of Mathematics.

W. WALTER H. MUSTAINE, B. S. (Centre College of Kentucky)
Director of Physical Education.

DE LOSS SMITH, (Pupil of Mehan, New York; sometime Teacher of Tone Production and Interpretation, Summer School, Columbia University)
Professor of Music.

LESLIE J. AYER, J. D. (University of Chicago)
Professor of Law.

ELOISE KNOWLES, Ph. M. (University of Chicago)
Assistant Professor in Fine Arts.
WHAT THE UNIVERSITY OF MONTANA HAS DONE IN UNIVERSITY EXTENSION

The University of Montana has been engaged in University Extension work in a more or less consistent way for several years. Some of this work has not been conducted under this title, but has nevertheless served to carry the University to the people, and to make it an institution of public service. Perhaps the most apparent of these services has been that rendered by the Interscholastic Meet, with its connected activities of Debate, the Essay Contest and the Declamation Contest. For ten years, this meet has been stirring the boys and the girls of the State to interest themselves in physical and mental exercise, with far-reaching and beneficial results.

These various activities, however, lie outside the usual field
of the Department of University Extension. Until January, 1914, no specific organization was in charge of the lectures and addresses made by the members of the faculty. In spite of this fact, in the three years between 1911, when this work was authorized by the Legislature, and 1914, when it was taken up by this Department, Extension lectures had been delivered in twenty-five cities and towns of the State, and 21,460 persons had been reached by them.

In the three months since the University has been actively engaged in this work, twenty-seven lectures have been delivered to audiences aggregating 5,000 people. In addition to these, eleven addresses have been delivered by members of the faculty, under other auspices, to audiences numbering 2,700. Declamations and lists of plays have been supplied to forty persons. A dozen clubs have been assisted in the preparation of their programs.

Already several courses of University Extension work have been arranged for 1914 to 1915, and a supplementary bulletin of new announcements will be issued in September.


In University Extension this year the University of Montana will offer the following assistance. For detailed information see the pages referred to:

1. It will furnish lectures and entertainments to any town in the state on the payment of a nominal fee and the assurance of proper support. These may be arranged for singly, in miscellaneous courses by various members of the faculty, (See page 244) or on related subjects by a single instructor. (See page 258).

2. By fulfilling certain additional requirements persons who attend the last sort of courses mentioned above, may secure University credit. (See page 259).

3. It will furnish speakers on educational subjects and assist in movements for educational progress and reform. (See page 267.)

4. It will supply to those requesting them classified declamations suitable for the Interscholastic contests.

5. It will assist clubs and other organizations in the preparation of study programs and plans of work for the year 1914-1915.
6. It will assist High Schools and other organizations in the presentation of plays, and it will give specific advice in the coaching of High School athletics and declamations, and in the arrangement of High School and town libraries. (See page 268).

7. It has issued an annotated list of plays suitable for High School and other amateur use, and will so far as possible supply copies for examination from the University Library.

8. It will furnish debaters' and students' material in the form of package libraries. Detailed announcements of this will be issued in the University Extension Bulletin in September.

GENERAL INFORMATION

The only limitations placed upon this work are those arising from the limitations of the appropriations for it. The Legislature of 1913 responded generously to the request for funds and granted all that was asked. A new departure must demonstrate its usefulness before it has a right to make large demands. But citizens must not expect that they can receive the same service here as in the states where the idea of University Extension is older and the appropriations for it are many times larger. The work of University Extension in Montana is particularly expensive because of the great distances to be traversed, and the funds appropriated for it must be administered with care to secure the largest benefits. Early in the fall letters were sent to the High School principals in the state asking for suggestions as to how the work could be made most useful. The plans for the year have been made in accordance with these suggestions.

It must be remembered, moreover, that the faculty are all carrying full work at the University and that anything done in the way of lectures away from the University is an addition to that work. No person is engaged especially for University Extension. Whatever the faculty do in this way is done because of their desire to forward the best interests of the University and of the state. But however great their desire to be of service, their first duty is of course to their regular classes at the University and thus each member of the faculty can deliver only a limited number of University Extension lectures. But the University will do all in its power to meet the wishes of citizens; requests will in general be honored in the order in which they are received.

Perhaps some short explanation is desirable concerning the nominal fee of $10 charged for all lectures, since in the past this has not been required in Montana. In every other state concern-
ing which we have obtained information—Minnesota, North Dakota, Washington, Kansas, Wisconsin among them—such fees are charged; in most states the fees are higher than here, arising in individual cases as high as fifty dollars a lecture. It must be clear that the University in asking its nominal fee is not in any sense attempting to make money; when no fee was charged and the communities had nothing in particular at stake, it was found that the lectures in many cases were not properly advertised nor consistently supported. University instructors cannot be asked to leave their regular work at the University to go to places where there is so little interest that the small fees required cannot be met. It should be noted, moreover, that the University is willing for the local communities to charge any admission they may see fit for the University lectures, and to retain any profits which may be made, provided they are to be used for the good of the community and not for some individual person.

All inquiries concerning lectures and other forms of University Extension should be addressed to G. F. Reynolds, Department of University Extension, University of Montana. Applications for lectures should be made as early as possible and two or three choices should be indicated.

WHAT THE UNIVERSITY OF MONTANA HOPES TO DO IN UNIVERSITY EXTENSION

The service outlined in the preceding pages by no means comprehends all that could be done by the University of Montana, nor all that will be attempted as soon as sufficient funds are available. Among the plans of future expansion are the following. The University will appreciate suggestions or opinions from citizens in the state on them or on any other forms of public service which seem desirable:

1. Many High Schools have stereopticons, but few slides to use with them. Collections of slides are expensive to form, and when formed can be used in any school scarcely more than once in a year. The same is true of exhibit collections of pictures, house furnishings, etc. A state service of this kind would prove of great convenience. New York, before its disastrous fire at Albany, had a collection of pictures and slides valued at $600,000 and is now replacing it as rapidly as possible. These collections are arranged on all sorts of subjects and are used by clubs, grade schools, high schools and other educational institutions. Wiscon-
sin is even making moving picture films of an educational nature on such everyday subjects as correct table manners for example, which are to be exhibited for the grade schools throughout the state. It is easy to recognize the great influence of this visual instruction. Only through state co-operation will it be possible in Montana.

2. A similar form of instruction, but as yet scarcely made use of at all, is the phonograph. Through collections fine records played at different schools in the state more could be done to build up a real appreciation of good music than in almost any other way. This method is also in use in Wisconsin. It has proved popular with clubs as well as schools. A state collection of records would make this possible for many clubs and schools now denied the opportunity.

3. The state needs a loan collection of plays suitable for High Schools. Publishers will not send such material on approval and it is almost impossible to judge it from published catalogues. The increasing emphasis given dramatic work in education makes the formation of such a collection from which plays could be loaned without expense, a desirable undertaking.

4. Among the most useful agencies in furthering the progress of a state would be a Bureau of General Information. It is the function of such bureaus to gather information on such points as these: pure food, hygiene, sanitation, the prevention and cure of disease, economic, social and ethical questions, conservation of natural resources, recreation and social health, commercial condition, municipal problems, water supply, garbage disposal, public service rates, municipal employment, city planning, paving, etc. These bureaus promote community life, assist towns in "getting together," encourage and arrange for organizations in rural districts for the free, non-partisan, non-sectarian discussion of public questions, plan and carry out statewide meetings of various professions and industries. Such bureaus form a state center of information, and bring the body politic into self-consciousness. In a growing state like Montana a bureau co-operating with the various towns and their chambers of commerce could be of tremendous influence in inciting and directing growth along the most significant and valuable channels.

Thus it must be evident that University Extension operated in ways no longer experimental, but proved practical in one or more states of the Union, could be made of the greatest signifi-
cance in this state also. It is a larger thing than merely the giving of lectures or the answering of letters. It can become the most powerful of instruments for good. That the University does not venture into these various channels of helpfulness is not because it is not aware of them, but because it would make haste slowly and because its appropriations do not as yet allow such expansion. As the idea proves its value the University believes the state will come to its support. Meanwhile the University hopes to improve every opportunity offered to it and to make itself felt in every corner of the state.

UNIVERSITY LECTURES, READINGS AND RECITALS FOR MISCELLANEOUS COURSES

There is a distinct need in Montana for lectures and entertainments of an elevating but interesting nature. To meet this legitimate demand the University offers the following list of popular programs. Its purpose in doing so is to assist the forces of good in a community in raising the popular taste. These lectures may be secured for any town in the state which will provide a suitable place of meeting, pay the local expenses of the speaker, and a fee of $10 for each lecture.

For illustrated lectures and for entertainments requiring the services of more than one person, a somewhat higher fee will be necessary. Towns owning their own lanterns will be expected to provide an operator. Where there is no lantern, one may be secured from the University, for which a small fee will be charged to cover the expenses of transportation, and in some cases it may be necessary to bring an operator from the University. For recitals in which two persons are required, a fee of $15.00 will be charged, and the local expenses of both persons. When a piano is necessary, the local authorities are expected to provide one of international pitch, properly tuned.

The University pays the traveling expenses and furnishes tickets of admission and a limited amount of advertising matter. An effort will be made to arrange for the same speaker to appear on successive evenings in neighboring towns. So far as possible the wishes of towns as to speakers and subjects will be met, but since each member of the faculty can offer only a limited number of these evenings, towns desiring special speakers or subjects should enter their applications early in the season.

These University evenings offer an admirable opportunity
to churches, schools and clubs for the formation of high-class lecture courses. Especially in towns which have not before been able to support them, a whole course is made possible, through the co-operation of the University, for the price of the usual single lecture. Or University lectures may be added to other lecture courses; such addresses offered as cheaply as these are, will often assist towns in meeting their expenses, and at the same time keep the University in touch with the people. Single lectures will be provided or lectures in course, but not more than six speakers can be sent to one town.

Beside the subjects offered here, others may be found for single lectures in the courses announced on page 258. Most of the instructors, if requested to do so, will consent to speak on special phases of these larger subjects.

Lectures illustrated with the stereopticon are starred (*).

(The names of the lecturers, except the President, are arranged alphabetically.)

EDWIN BOONE CRAIGHEAD, LL.D., D.C.L.  President of the University

President Craighead may be secured for a limited number of addresses on educational or other subjects.

LESLIE J. AYER, J. D.  Professor of Law

Special lectures dealing with The Law may be arranged for if sufficient notice is given. See page 265 for suggested subjects.

W. G. BATEMAN, A. M.  Assistant Professor of Chemistry

Pure Food.

The careful manufacturer buys his coal on the chemist’s analysis, so that his grates may not burn out; he sees that his water supply is pure, so that the life of his boilers may be prolonged. But at night he sits down to dinner not knowing whence comes his food, which by devious routes may have passed the chemist by. Pure food, its necessity, how to get it, simple tests for quality and possible adulterations—these are some of the points discussed in this lecture.

Experience in China.

For two years Mr. Bateman was professor of chemistry in a Chinese University and thus had excellent opportunities for observing this interesting people. During this time the country passed through a flood, an epidemic of bubonic plague and the revolution which made China a republic. The daily life of the
common people, their conventions, joys, sorrows and struggles form the theme for a lecture which shows that in spite of the contrast between the two civilizations the westerner may still learn something of manners and morals from this ancient people.

**Modern Opera.**

Recent developments in opera is the subject of this lecture. The older form of the opera is contrasted with those of the latest composers. The "leit-motiv," the wedding of sense and sound, the necessity for acting on the part of the singers, the important place now held by the orchestra, the innovations of Strauss, are some of the topics. The various points will be illustrated on the piano, and selections from "Carmen," "La Boheme," "Madame Butterfly," "Trovatore," etc., will be played.

**Music and Reading, with Mrs. G. F. Reynolds.**

A combined program of original music by Mr. Bateman, and a short play read by Mrs. Reynolds, concluding with a reading of Longfellow's *King Robert of Sicily* accompanied by music composed especially for it by Mr. Bateman.

**THADDEUS L. BOLTON, Ph. D.**

Professor of Psychology

**The Significance of Pleasure and Pain for Growth and Mental Health.**

This lecture will deal with the effect upon the body of the states of pleasure and pain. It is a popular exposition of the advance that has been made in modern psychology in the study of human life as it is affected by agreeable and disagreeable experiences.

**On the Metamorphosis or Molting of Boys and Girls.**

This is a study of adolescence. It presents the processes of change that take place in boys and girls as they transform themselves from children into men and women and it attempts to show the dangers that beset life at this critical period.

**The Psychology of the American People.**

The development of those traits of mind that characterize the American people is worked out historically and on the principles of modern psychology. We should be ashamed of ourselves if we were not Americans.

**Psychological Aspects of Literature and Literary Appeal.**

This lecture attempts to analyze literature from the stand-
point of psychology and evaluate the various elements that enter into it as to their power to appear or to entertain. It is a study of the psychological foundations of the art of writing.

**The Social Value of Self Effacement and Self Surrender.**

This is a popular lecture, suitable for schools and churches, upon the development of moral consciousness.

*Our Peculiar and Backward Children.*

This lecture is given with a stereopticon. It deals especially with the laggards and sub-normal children in our schools. The various types of physical defect and arrested growth as they affect mental development will be shown on lantern slides and the nature and causes of these disorders will be explained.

M. G. BUCKHOUS, B. S.

**Library Methods.**

Methods and systems for the administration and organization of a small collection of books; classification; cataloging; the most valuable reference books for a small library; the essentials of book selection.

**Reference Work and Bibliography.**

Instruction in the use of a library in debating and the preparation of papers, leading up to the point where the construction of a brief or the writing the paper begins. Sources for the compiling of bibliographies will be considered and suggestions on note-taking given. The value of United States Government documents will be presented and instruction given as to the methods of obtaining this material.

GEORGE R. COFFMAN, Ph. D.

**Modern Cultural and Economic Forces in the Middle Ages.**

One of the most significant periods of renaissance in the history of western civilization is that of the twelfth and thirteenth centuries. This applies to economic progress in commercial relations to intellectual progress in art and literature, and to social and religious progress in such organizations as those of St. Francis and his followers. As one writer has put it: "The twelfth century stands beside the eighteenth as one of the greatest creative centuries in human history. The thirteenth, like the nineteenth, applied these creations in the transformation of society."
The lecture will consider some of these cultural and economic forces, and show that in a sense they mark a turn to a modern point of view in problems involved and ways of thinking.

The Miracle or Saints' Plays.

Just as the short story is a popular literary fashion today, so was the Miracle Play during the Middle Ages.

This lecture will consider the relation of the Miracle Play to the life of the medieval people; the audience itself; the setting of the play; the subject matter; a modern Miracle Play, Maurice Maeterlinck's *Sister Beatrice*. (This last will be read in part.)

An Evening With Stevenson.

Robert Louis Stevenson is one of the most human of nineteenth century writers. It is the purpose of this lecture to tell a little of his fine spirit of adventure and optimism, and to discuss in part his contribution to literature.

MARY E. EDMONDS, B. S. Instructor in Home Economics

Nutritive Value of Foods.

A discussion of the needs of the body which food can satisfy. Classification of food principles as tissue builders or heat and energy yielders and their occurrence in ordinary foods. Methods of combining foods to produce a balanced ration and adaptation of the diet to the individual will also be taken up.

Women and the Home.

A brief study of some of the sciences and arts about which a woman must know in order to be a successful homekeeper; for example, selecting, preparing and serving foods; sanitary conditions in and around the house; furnishing and decorating the home; organization of the household and division of the income.

M. J. ELROD, Ph. D. Professor of Biology

*The Glacier National Park.*

Illustrated with over one hundred stereopticon slides, mostly colored.

Five trips to the park during the past ten years have been made by the lecturer. Several of these expeditions were undertaken before the park was established by the government. The lecture is descriptive of the mountains, lakes, glaciers, waterfalls, trails and passes of this wonderland. The slides are from origi-
inal negatives from all parts of the park. Most of the places shown in the pictures are not visited by tourists, and hence are seen by few.

*The Trail of Lewis and Clark in Montana.*

Illustrated by over one hundred stereopticon slides, mostly colored.

The lecture deals only with that part of the Lewis and Clark trail which lies within the State of Montana. A brief account of the trip is given to make clear the plan of the expedition. Conditions at the beginning of the last century and the beginning of the present century are compared, showing the great advancement that has been made. The slides represent in part Montana scenery as it is today, in part copies of illustrations used a century ago. A summary of the scientific work of the expedition is given.

*An Evening Among Montana's Mountains.*

Illustrated by over one hundred stereopticon slides, mostly colored.

Fifteen seasons have been spent in scientific work in the hills and mountains of Montana, and a camera is always in the pack. The result is a collection of several thousand negatives from which a hundred or more slides not used in the other lectures are made use of in this entertainment. The lecture deals with the uses of mountains as affecting climatic conditions and their value as snow-holders, with the forests and their uses, and with many suggestions about life at higher elevations. The display of so many pictures from different places in the state makes the evening pass very pleasantly, yet the lecture is educational and instructive from beginning to end.

*Game Animals and Birds of Montana.*

Illustrated by the stereopticon; sixty or seventy slides, many of these colored, will be used.

Our game animals are fast disappearing. Most people, consciously or unconsciously, help them along a little in their passage. In another generation the national parks and zoological gardens will be the only places where they may be seen. Every man should lend a little aid toward saving wild life. The lecture deals with the animals and their habits, the places in which they live, their enemies and their protection. The pic-
tures will show the animals and typical places in which they live. Many of the pictures will therefore be of scenery. The lecture is educational, and should foster a spirit favorable to the vanishing wild life. It was through the efforts of the lecturer that the Montana National Bison range was established.

A. GEORGE HEILMAN, Ph. B., M. D.

Instructor in Biology and Physiology

**Bacteriology and Hygiene of White Plague or Tuberculosis.**

This will be treated from different standpoints—history, bacillus causing disease, relation of bovine and human tuberculosis, exciting and predisposing causes, modes and routes of infection, organs and tissues affected, results, etc.; also to show what steps have been taken by legislation, state and city boards of health towards the prevention, care and treatment of this dreaded disease.

**Bacillus or Disease Carriers.**

Their influence in the dissemination of infections, relative to typhoid fever, diphtheria and influenza. The hygienic and sanitary principles for the prevention and control of epidemics, including houses, streets, water and milk supply, disposal of waste, work done by legislation and boards of health in this direction.

**Contagious Diseases.**

The bacteriology and hygiene of the most important and common diseases, such as smallpox, scarlet fever, etc., will be discussed with reference to their history, source, transmission and dissemination, vaccination, etc.; the good done by state and city officials towards controlling the spread of contagious diseases; the relation of the doctor, the patient, the community and the health boards under such conditions.

**Physiology of Sleep.**

Dealing with the normal and abnormal states of mind, as to personality, self-consciousness, sub-consciousness and unconsciousness; meaning of sleep; external phenomenon associated with the sleeping state; chief causes of sleep, and physiological theory of sleep; amount of sleep required and effects of insufficient sleep; hypnosis as an artificial form, with its legal dangers.
Under this title will be offered either a general lecture on the entire subject of American Humor or on some special period or famous humorist. In the former instance, the development of American wit and humor will be traced from the earliest colonial specimens to those of the present time, and the influence of humor will be shown on American customs, politics, literature, and life in general. If a lecture on a special humorist is desired, his life as well as his writings will be discussed.

When Our Forefathers Went to School.

This lecture deals with early educational conditions in America, and describes, along with many other items, the peculiar school books used in public schools and colleges; the strange conditions under which students studied and lived in the older universities, and the rules enforced, not only by the faculties, but by the students. The lecture deals not only with the well known colleges of New England but also with the preparatory schools and colleges of the South and Middle West. The influence of the training given by these institutions will be compared with that given by the schools of modern days. Various humorous and indeed ridiculous customs and ideas of early school days will be presented.

Changes in American Life and Education.

Contrast between colonial and modern life; the age of invention, manufacture and industrial expansion; problems of immigration, specialization and economic pressure; the schools of the nineteenth century; the schools of the future.

Modern Educational Problems.
A summary of the discussions, conclusions and results of current educational investigation.

Conservation of Boys and Girls.

A single lecture dealing with some of the results of human wastage, the hereditary background, the health movement in school administration, the relation of the school to sex and social hygiene, and the relation of these problems to morality and religion, and to the home and the church, in the training of boys and girls.
Gems From the Opera.

An introduction describing the origin of the opera, followed by a description of selections from the modern operas; illustrated by means of Victrola records. (Towns desiring this lecture should arrange for a suitable instrument.)

JOSEPH EDWARD KIRKWOOD, Ph. D. Professor of Botany

*Mexican Plants and People.

A lecture descriptive of the plateau region of Central Mexico—a country rich in interest from the standpoint of its natural features, mountains, landscapes, plants and animals, and from the standpoint of its people, their primitive customs, institutions, estates, etc. This region is occupied by many large private domains which date back to the time of the conquest. The country is covered with a growth of peculiar and interesting vegetation, many forms of cactus, century plants, the mesquite and other shrubs, with a varied flora of smaller forms of plant life. The substance of this lecture presents a phase of Mexican life not usually met by the tourist; fully illustrated.

*Forest Trees of Montana.

A lecture descriptive of the various species of the coniferous trees of the northern Rocky Mountains. These are shown in their native habits and their peculiar distinctive features are presented so that one not familiar with their distinctive marks would be enabled to recognize the different types. Their distribution is also presented and their relative values, their peculiar requirements and other features of interest. The views are from photographs taken by the lecturer in different parts of the state.

*Arizona—Desert Life of the Southwest.

The desert region of the Southwest is a part of our country little known or appreciated by northern residents. Its landscapes, its mountains and valleys, its climate, its vegetation, its animal life and native people are of fascinating interest. The lecture presents the problems peculiar to life in a desert region, and is illustrated by many excellent views of the plant life, topography and people, taken during the lecturer’s sojourn in southern Arizona.
ELOISE KNOWLES, Ph. M.  Assistant Professor of Fine Arts

*Some Phases of Modern Art.

This lecture treats of recent developments in figure and landscape painting, discusses the various phases of technique in tone and color, contrasts European and American art of the present day, and touches upon the dawning struggle between idealism and realism as manifested in recent freak productions. Illustrated with abundant lantern slides.

N. J. LENNES, Ph. D.  Professor of Mathematics

*Wonders of Modern Astronomy.

Slides made at Yerkes observatory during the past four years will be shown showing the surface of the moon with its "craters," some of them miles in diameter; the sun with its "spots" and its envelopes of flame and gases; Jupiter and Saturn with their satelites; and some of the most interesting spots of the Milky Way.

MRS. ALICE W. MACLEOD, B. S., B. O. Instructor in Public Speaking

"Strife," by John Galsworthy.

A play presenting in an unusually forceful way, but without taking sides with either party, the struggle between capital and labor.


One of Fitch's most delightful comedies of American life.

"Molly Make-Believe," by Eleanor Abbott.

A convincing love story—tender, human, whimsical.

"In a Balcony," by Robert Browning.

A poetic play presenting in beautiful form a romantically tragic story.


A dramatized morality.


An one-act comedy, scintillating with subtle humor.

A Miscellaneous Program.

Readings from various modern authors.
This lecture will take up the various questions now arising between states as to the right of the inhabitants of one state to the use of water in streams flowing into other states, and as to the right of such inhabitants to tap water sheds belonging wholly or partly to other states.

G. F. REYNOLDS, Ph. D.  
Professor of English and Rhetoric

The Greatest Invention of the English Race.

A presentation of the humors, the intricacies, the peculiarities of the English language as an instrument for the expression of thought.

An Afternoon in Shakespeare's Theater.

A description of the theater in which Shakespeare's plays were first given, the audiences that attended them, and the way in which they were performed. As a special illustration any play may be chosen which may be desired. If the club or school has been interested in some particular play, the lecture will especially discuss its performance; if no particular play is desired illustrations will be taken from typical Elizabethan plays.

The American Short Story.

A brief account of its rise with a reading of a few recent stories, especially illustrative of American character.

"Cyrano de Bergerac," by Edmond Rostand.

An heroic comedy portraying the wonderful adventures and romantic life of one of the most strikingly conceived of dramatic characters.

"The Voysey Inheritance," by Granville Barker.

A representative of the later type of drama by one of the leaders of the London stage. This play presents a modern business problem, and an unusually realistic and humorous picture of a typical English middle class family.


An Irish comedy rich in humor satirizing the village politician.

A poetic drama, written by an American woman, emphasizing the importance of the child.

MRS. G. F. REYNOLDS, M. A. Director of University Plays

Paul Lawrence Dunbar.

A brief account of the tragic life of this negro poet and a reading of several of his typical poems.

James Whitcomb Riley.

His life and his poems with interpreted readings.

The Irish Plays and the Irish Players.

The rise of this remarkable national drama with the reading of two short plays.


A classic comedy, too well known for its rich humor to require description.

"Hannele" by Gerhart Hauptman.

A symbolic dream play, combining intense realism with poetic beauty.


This play, which was produced only a few years ago, has already won its place among the few really great modern tragedies. As a drama dealing with the life of every-day people, it is not surpassed by any other play in English.


These two short plays together make up a program for an evening, or either may be chosen to be used by itself with a miscellaneous program. The first is a delicately conceived bit of pleasantry. The Riders to the Sea, by the greatest modern Irish writer, sums up in brief form the tragic meaning of the sea to those who gain their livelihood from it.

Miscellaneous Program.

Readings from modern representative authors.

Music and Readings with W. G. Bateman.

A program of original music by Mr. Bateman, with readings by Mrs. Reynolds, concluding with a reading of Longfellow's King Robert of Sicily, accompanied by music composed especially for it by Mr. Bateman.
In this lecture the various hypotheses accounting for the earth's formation will be explained, together with the position of the Earth in the Solar System, and the relation of the Solar Systems to the other like systems in the universe; also a general discussion of the evolution of the land forms and the past life that has existed thereon. Many lantern slides will be used to show the various past animals, some of which are very large and peculiar indeed. Such animals as the half fish and half reptile; half reptile and half bird; and the largest and most spectacular reptiles that ever lived will have their likeness projected upon the screen.

*Glaciers, Mountains and Volcanoes.

In this lecture a general discussion of the kinds, localities, theories of cause, etc., of glaciers, mountains and volcanoes will be given. In the discussion of glaciers, the various types will be shown; their rate of movement, size, work done, where found, etc. Mountains and volcanoes, their geological age, belt, size, height, etc., will be considered, together with many other interesting and instructive features concerning each. About 125 splendid lantern slides will be shown. Each one will tell its own story and typically illustrate some feature of a glacier, mountain, or volcano.


This lecture will deal entirely with Montana. Coal, metal, gypsum, sapphire and other mines will be discussed, with excellent lantern slides to illustrate each. The various mineral deposits other than those mined for ore, and the kinds, character and location of many building stones in the State will be given. In other words, the lecture will be a general survey of the kinds, occurrence, geology, and value of Montana's mineral wealth.

DE LOSS SMITH  
Professor of Music

Accompanied by Florence Marion Smith.

Recital; the following is a typical program:

Two American Indian Songs..................................................Cadman
From the Land of the Sky Blue Water.
The Moon Drops Low.
The Just So Songs..........................................................Kipling-German
When the Cabin Portholes.
The Camel's Hump.
Rolling Down to Rio.

Polish Dance ............................................................ X. Scharwenka
Mit einer Wasserlilie .................................................. Greig
Zweignung .................................................................. Strauss
It Is Enough ............................................................... Handel
Valse Chromatique ........................................................ Godard
Cavatina, Dio possente (Faust) ........................................... Gounod
Love's Rhapsody .......................................................... D'Hardelot
Because ....................................................................... D'Hardelot
To Lucastra .................................................................. Harriet Ware
Witches Dance .................................................................. MacDowell
To My First Love ................................................................ Lohr
Supposin' ...................................................................... Trevalso
A Creole Love Song ........................................................ Smith
Second Mazurka ................................................................ Godard
Time Enough .................................................................... Nevin
Sunset .............................................................................. Russell

MARY STEWART, A. B. Dean of Women and Instructor in English

Jean Valjean.

Selected readings from Victor Hugo's masterpiece, Les Miserables, tracing the dramatic life of Jean Valjean, with an interpretation of its significance as an "Epic of the Soul of Man."

"The Blue Bird."

Readings from Maeterlink's fairy play, with a description of its scenic effects as represented in London and an interpretation of its philosophy.

Woman and Democracy.

An uncontrovertial analysis of the so-called feminist movement, its place in the social evolution, and its significance to the individual.

*Paris.

The lecture discusses reminiscently, life in Paris with its side lights on French characteristics, illustrated by pictures of the most famous and interesting buildings, streets and parks of the city, together with the well-known pictures, statues, and other art works of its museums.
H. A. TREXLER, (Candidate) Ph. D. Acting Professor of Economics

*Student Life in a German University.

The lecturer has his own pictures of the famous German professors, of the old university buildings, of the fraternity houses, of the inter-fraternity duels, and of the beautiful Rhineland scenery where the students wander through quaint vineyards, past ruined castles and over historic mountains. We follow the merry German student from his lecture to the duel and then to the antique little inn nestling among the Rhineland hills.

A. N. WHITLOCK, LL.B. Acting Dean and Professor of Law

Some Tendencies in the Law.

UNIVERSITY LECTURE COURSES ON RELATED SUBJECTS

The form of university extension work which has proved most generally successful is found where groups of people already organized into clubs or joining together especially for this purpose, arrange for a series of lectures by a single instructor on some single subject. Such courses have been given by the University of Montana in Helena (9 courses), in Bozeman (1 course), in Great Falls (1 course), in Missoula (5 courses), in Butte (1 course), and in Deer Lodge (1 course). This service will be continued.

With certain necessary modifications the courses outlined below are regular university lectures designed for mature persons, but not so technical or narrow in their appeal as to be uninteresting to the average auditor. They are especially valuable in bringing to their hearers fresh points of view or new facts in their respective subjects. This form of service the university especially wishes to encourage; lectures will therefore be sent so far as possible to every town desiring them, the university paying the traveling expenses and the expenses of local entertainment, the local organization paying a fee of $10 for each lecture and providing a suitable place of meeting. Enough persons can usually be found who will join such a course to make the expense for each a merely nominal one. Lectures must as a rule occur on Fridays or Saturdays and preferably at intervals of two weeks since the instructors cannot interrupt their regular university classes.

Most of the courses consist of six lectures, but usually a less number may be arranged for on application. It will be impossi-
ble for any instructor to give such courses at more than one town; application should therefore be made at once.

**University Extension Work for Credit.**

It is not unlikely that where these courses of six related lectures described above are given, there will be certain persons who will wish to use them for university credit. Such credit to the amount of one hour may be secured by registration as a university extension student, by faithful attendance at the lectures, by meeting the instructor for such conferences as he may appoint, by reading assigned books, by the preparation of assigned papers, and by passing a set examination. Generally speaking fifty hours of work will be necessary for one hour of credit. At the successful conclusion of such a course, a credit card will be issued to the student; credit will be recorded at the university whenever the student matriculates. No person enrolled as a student at any other educational institution will be allowed to do university extension work for credit.

The payment of the fee of sixty dollars for the course of six lectures allows the registration for credit of twenty persons; each additional person desiring credit will be required to pay a fee of three dollars.

(The courses are arranged alphabetically by departments.)

**ART.**

**ELOISE KNOWLES, Ph. M.** Assistant Professor in Fine Arts

E. 1. **Greek Sculpture.** This course gives a general survey of the development of Greek Sculpture from its crudest forms through its highest expression to its diversification and decline. All lectures are abundantly illustrated with stereopticon views.

1. The Pre-Historic Civilization of Crete, Troy, Tiryns and Mycenae.

2. The Sculptures of the Archaic and Transitional Periods.


4. Phidias and the Parthenon.

5. The Fourth Century; Praxiteles, Scopas, and Lysippus.

6. Hellenistic and Graeco-Roman Sculpture.
BIOLOGY.

M. J. ELROD, Ph. D.  
Professor of Biology

E. 1. Biology. The lectures deals with the beneficial and injurious effects of Bacteria, Protozoa, Insects, Viruses, Amphibians and Reptiles, Birds and Mammals.

An outline will be prepared and distributed at each lecture. The outline will contain a summary of the lecture, a list of available references, suggestions for study, etc. While the lectures are eminently practical they are also instructive and educational. Each lecture will be illustrated by specimens, which may be examined and studied by the class. In some cases the stereopticon will be used.

BOTANY AND FORESTRY.

J. E. KIRKWOOD, Ph. D.  
Professor of Botany

E. 1. Montana Flora. This course is designed especially for teachers, to whom it should be of considerable assistance in school work, and for other persons who may wish to learn something of plant life. Such subjects as ferns, mosses, fungi, trees and their habits, natural plant groups conspicuous in the Montana flora, insects in relation to plant life, collection, care and use of material, school room equipment for use in nature study, presentation of the subject and its point of view—these and other phases of the study will be presented. The content of the course may be modified somewhat to meet local needs. Some of these discussions will be illustrated by stereopticon or other means.

E. 2. Forestry. (Its Meaning and Importance in Our National Life). Lectures on the forests in their relation to the welfare of the nation. The distribution of forests, their utilization and treatment, the national forests, the work of the Forest Service, and the development of the present conservation policy in relation to forests, are subjects included in this course, which is designed to be cultural in character.

JAMES H. BONNER, B. S.  
Instructor in Surveying

E. 3. Drafting and Surveying. For persons preparing for Civil Service positions in the Forest Service.
HOME ECONOMICS.

MARY E. EDMONDS, B. S.  Instructor in Home Economics

E. 1. DOMESTIC SCIENCE. From the following list six subjects may be chosen for a course. Each lecture is accompanied by demonstrations.

I (a). NUTRITIVE VALUE OF FOODS. A study of the needs of the body which food can answer and classification of foods according to the food principles which they contain. Digestion and assimilation of food will also be discussed.

(b). BEVERAGES. The composition of tea, coffee, cocoa and chocolate will be taken up, also their food value and general effect upon the health. The making of these beverages will be demonstrated.

II. CEREAL AND VEGETABLE FOODS. The cooking, nutritive and money value of cereals and cereal products; the selection, care, cooking and nutritive value of vegetables. Practical demonstration.

III. BATTERS AND DOUGHS. Discussion of ingredients used and methods of manipulation in preparing and baking griddle cakes, muffins, biscuit, cake, etc. Composition and behavior of the various leavening agents. Practical demonstration.

IV. BREADS. Spring and winter wheat flours and different varieties of yeast discussed. Making of bread, loaf cake and rolls.

V. MILK AND EGGS. Production, care and food value of milk and eggs. Practical demonstration—cream soups, omelets, souffles, custards, etc. Some time will also be given to the discussion of the nutritive value of cheese and its place in the diet.

VI. MEAT. Study of location of cuts in beef, mutton and pork; nutritive value and cost compared. Preparation of both tough and tender cuts; methods of using up left-overs.

VII. DESSERTS. Demonstration in the making of hot and cold desserts and pudding sauces. Tapioca, cornstarch, steamed puddings, and gelatine desserts.

VIII. PLANNING AND SERVING OF MEALS. Review of food composition; discussion of comparative food values and cost of different foods; balanced meals for children, adults of active and sedentary habits, aged, sick, etc.
Preparation of Meals. Review of principles underlying the cooking of proteins, carbohydrates, etc.; care of dining room furnishings, laying the table, table service, eating; duties of the host, hostess and other members of the family; duties of a waitress.

ECONOMICS.

H. A. TREXLER, (Candidate) Ph. D. Acting Professor of Economics

E. 1. CONTEMPORARY EDUCATIONAL IDEALS. Six lectures will cover the various phases and incidents of American economic development. They will deal with the incentives and motives which caused the discovery, exploration and settlement of the colonies, the social pressure at home and the alluring and fabled riches of the New World to the west. England's colonial policy, the causes of the Revolution, the struggles of the new Republic, the sweep of the pioneer over the frontiers, and the building of highway, canal and railroad will be touched upon. One lecture will deal with the financial struggles of the country, and one with the growth and operation of the slavery system.

EDUCATION.

W. W. KEMP, Ph. D. Professor of Education

E. 1. CONTEMPORARY EDUCATIONAL IDEALS. Six lectures.
(1) Education as Process of Acquisition and Learning; (2) Education as Process of Unfoldment or Development; (3) Education as Process of Training and Discipline; (4) Education as Adjustment; (5) Education as Preparation for Social Efficiency and Service; (6) The Problem of the Teacher and the School.

E. 2. THE CIVILIZATION AND EDUCATION OF THE GREEKS. Six lectures. (1) National Characteristics of the Greeks; (2) Spartan Education as a Type; (3) Athenian Education as a Type; (4) The Periclean Age; (5) Later Greek Education; (6) Greek Influence on Medieval and Modern Education.

E. 3. HYGIENE IN RELATION TO SOCIAL UPLIFT. Six lectures.
(1) Survey of the General Need for an Extended Knowledge of Hygiene; (2) Biological Basis of Heredity; (3) Modern Medicine and Hygiene; (4) Playgrounds, Amusements and Hygiene; (5) Hygiene in Relation to the State and to Education; (6) Hygiene and the Education of Adolescent Boys and Girls.
ENGLISH AND LITERATURE.

G. F. REYNOLDS, Ph. D.  Professor of English and Rhetoric

E. 1.  ART OF DRAMA. A series of lectures dealing with the drama as a form of art, pointing out some of its most interesting differences from the novel and the short story, and emphasizing the points which one should notice in listening to a play or in reading it. With each lecture there will be reading either of whole short plays or selected passages from longer ones. Persons desiring credit will be assigned the reading of further plays and the writing of a paper on some subject connected with the drama.

E. 2.  STUDIES IN EARLY DRAMA. Six lectures each accompanied by illustrative readings; (1) The Drama in the Church; (2) The Drama becomes Secular; (3) The Drama becomes Professional; (4) The Elizabethan Playhouse; (5) Early English Tragedy; (6) Early English Comedy.

E. 3.  SOME POETS OF TODAY. Five lectures each accompanied with illustrative readings; (not given for credit); (1) Alfred Noyes; (2) John Masefield; (3) Hardy’s Dynasts; (4) W. W. Gibson; (5) Other Poets of Today.

CARL HOLLIDAY, M. A.  Assistant Professor of English

E. 4.  THE GREATER AMERICAN POETS. This course, given mainly in the form of lectures, will consist of appreciations of eight or ten of the greater American poets and their works. Persons desiring credit will be expected to do considerable reading of the poetry. The lecturer will deal with the biographies and the principal works of each author, and will explain many of the details of the more famous poems.

GEORGE R. COFFMAN, Ph. D.  Assistant Professor of English

E. 5.  BRITISH POETS OF THE NINETEENTH CENTURY. An intensive study will be made of the more important British poems of the nineteenth century, such as Browning’s Saul and Tennyson’s In Memoriam.

Page’s British Poets of the Nineteenth Century will be used as the guide.

MARY STEWART, A. B.  Dean of Women and Instructor in English

E. 6.  THE EPIC. Discussions of Homer’s Iliad and Odyssey, Virgil’s Aeneid, Dante’s Inferno, Milton’s Paradise Lost. Persons desiring credit in this course will be required to read
these books carefully and to do such written work as the instructor may require.

GEOLOGY.

J. P. ROWE, Ph. D.
Professor of Geology

E. 1. Practical Mineralogy. In this course from 150 to 180 economic minerals will be studied. The aim of the course is to enable students taking it to identify in the field most of the economic minerals that they may find. Blank sheets for each mineral will be furnished and small mineral specimens, so that the students working in this course will have something tangible to determine and a few forms of minerals to assist them in identifying these same minerals when found in the field. A text book on Practical Minerology will be used.

E. 2. Geography and Geology of Montana. It is intended to take up in this course a study of the various mountains, rivers, valleys, railroads dam-sites, mining regions, agricultural regions, etc., of the state. Maps, showing the railroads and rivers will be furnished, and general outline maps of the state, so that the counties and the various rivers, mountains, etc., may be put therein, will also be furnished to each student. This course is intended to make the student familiar with the general geography of the state, the various counties and county seats, and also give an idea as to the mineral wealth of the state. Whenever possible, samples or specimens of the various minerals will be shown to the classes, and thereby students will be enabled to see first-hand many of the natural products. For persons desiring credit there will be assigned readings and map work.

HISTORY.

PAUL C. PHILLIPS, Ph. D.
Assistant Professor of History

E. 1. Six Periods of European Culture and the Ideas Which Have Dominated Them. This course pre-supposes some knowledge of the general history of Europe, and consideration is paid only to certain ideas in the history of culture which have their influence on our present-day civilization.

1. The Classic Outlook. Paganism and ancient culture; the cultural heritage of the Middle Ages; Cicero and his philosophy.

2. Medieval Ideal. Breakup of Rome, the Christian view-
point, as represented by St. Augustine and other patristic fathers.


4. Petrarch, Boccaccio and the humanistic movement. Revived interest in the classics, Greek culture in the west, character of humanism.

5. Movement of culture to the north of Europe. Erasmus, Colet, More. Character of the Protestant movement.


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**LAW.**

LESLIE J. AYER, J. D.  
Professor of Law

E.1. **EVERYDAY LAW.** Obviously the rights and liabilities of a person under the law, is a life-long study, and the protection and enforcement of the same is properly through the lawyer or attorney at law. The following lectures are not intended, and it would not be possible, to cover the subjects in more than a general way. Their main purpose is to acquaint the general public and economical men with the general principles of the law in the various subjects, which all should know in order to properly protect their rights and to avoid unintentional liabilities. Beyond this the proper counsellor either as to the law or procedure is the attorney.

1. Contracts. A general discussion of the formation of contracts, with suggestions as to their essential elements, such as mutual assent, offer and acceptance, and consideration. Also a discussion of the duties of the contracting parties, and the performance and discharge of same. Various points are observed in the making and execution of contracts, and some of the dangers with suggestions for avoiding them. This subject in general lays the foundation for the discussion of the various subjects
based in the main on contract law, such as Sales, Agency, Partnership, etc.

2. Sales, Agency and Partnership. The greater part of ordinary business and commercial transactions will be covered by these subjects, which deal with the rights and liabilities of the seller and buyer, when making present and future sales, with the rights and liabilities of principal and agent, factor and broker, contractor and independent contractor and with the exceptional liabilities of the partnership relation, which is largely a specialized form of agency. In connection with sales the subject of fraud through misrepresentation, and the buyer’s rights in such cases as well as his rights in cases where goods received are other than ordered will be discussed; also the subject of bills of lading and the rights of seller and buyer.

3. Persons and Domestic Relations. The discussion on these subjects deals with the law relating to persons other than those of ordinary capacity, such as infants, insane persons, and the contractual disability of married women at common law; with the rights of married women under the common law and modern law; and in general with the reciprocal duties of husband and wife, including the laws of separation and divorce.

4. Banks and Negotiable Instruments. This lecture deals with the functions, powers, duties and liabilities of banks, but more particularly with the laws of Bills, Notes and Checks. Various observations are made as to the use and dangers in the execution of such instruments and suggestions as to the avoidance of the assumption of liabilities not intended. The common use of negotiable instruments renders the use of them of such importance that all commercial men particularly should be thoroughly acquainted with their duties and liabilities when executing such instruments. The law generally has developed from and is largely governed by the law merchant.

5. Real Estate Contracts, Deeds, Leases and Mortgages. The characteristics of real estate necessitate a separate discussion as to its sale and transfer. The discussion will cover the rights and liabilities of vendor and vendee peculiar under such contracts as distinguished from ordinary contracts, and the proper protection of the interest or interests acquired; the importance of leases, the execution and rights and liabilities under same; the
purpose of and rights and liabilities incurred under both chattel and real mortgages.

6. Collection of Debts, including Limitation of Actions, Exemption Laws, Settlement through Composition and Bankruptcy, and the Actions of Attachment and Garnishment. A discussion in general as to the method of collecting debts, the advisability of bringing suits at law, the taking of security and the acceptance of compositions in preference to forcing a debtor through bankruptcy. A brief discussion will be given as to the advantages and disadvantages and suggestions as to the various courses of actions to be pursued, particularly in the use of the actions of Attachment and Garnishment.

Lectures on any special subject may be arranged for, provided sufficient notice is given.

ROBERT NEAL THOMPSON, B.S. Assistant Professor of Physics

E 1. A course of six lectures may be had in any of the following six subjects: Mechanics, Heat, Sound, Light, Electricity and Radiation, and Allied Phenomena. Applications should indicate which set of lectures is desired.

PSYCHOLOGY.

THADDEUS L. BOLTON, Ph. D... Professor of Psychology

E 1. How We Learn. The course will consist of three or more lectures on the processes of learning. These lectures are both popular and scientific, suitable for audiences of general culture. They attempt to present the principles of learning and to point the way toward more economical learning and teaching.

E 2. Social Psychology. This course will cover as many lectures as a club or society might wish to hear upon the psychology of society as we see it about ourselves. It is a study of people just as they are, laying bare their motives and springs to action. Any one of the lectures may be given alone.

EDUCATIONAL ADDRESSES.

In addition to the subjects listed, members of the university faculty will be glad to assist in movements of educational progress by the delivery of addresses or by visiting high schools already established and communities where schools are desired. Towns desiring such assistance should notify either the depart-
ment of university extension or the individual instructors whose assistance is desired. For such service no set fees will be charged, but towns will be expected to arrange at least for the local entertainment of the university representatives.

Many towns desire members of the university faculty to deliver commencement addresses. This service has been performed very generally in the past and will be continued. As almost every town provides some special fee for this service, it will not be included under the work of University Extension, but the department will be glad to assist towns in securing speakers for these occasions.

UNIVERSITY ASSISTANCE IN HIGH SCHOOL ACTIVITIES, ETC.

Believing that many high schools and perhaps other organizations may desire expert assistance on particular subjects more in the way of informal direction than set lectures, the University offers the following service of direction and guidance:

PLAYS.

Schools or other organizations which are about to put on a play may secure a director from the University for one, two or perhaps more visits on the following terms: The play to be given must be approved by the director. The director should be notified as early as possible before the rehearsals are to begin that his services are desired. If one visit is made, it should be at the beginning of the rehearsals. At least six weeks should be allowed for the preparation of a play intended to fill an evening. If two visits are made, the second should be shortly before the play is to be given. The University will pay the traveling expenses; the local organization will provide local entertainment and pay a fee of $10 for each visit. For this plan to be successful, it is necessary that there should be a person competent to conduct the rehearsals and carry out the suggestions of the director. The University will be glad to assist in the suggestion of plays. As only a limited number of towns can be served in this way, applications should be made early in the season. The following persons may be secured for this work: Mrs. Alice W. Macleod, Mrs. G. F. Reynolds, Professor Carl Holliday, Miss Mary Stewart and Professor G. F. Reynolds.
LIBRARY MANAGEMENT.

Schools or towns putting in new libraries or arranging old ones, may secure the assistance of Miss Gertrude Buckhous, Librarian of the University. Miss Buckhous will be able to visit a limited number of towns during the winter and will give explicit directions for the classification and arrangement of the library and advice as to its management. She will do this either in the way of a formal lecture or in private consultations with the officers interested. The University will pay the traveling expenses; the local authorities will pay a fee of $10 and the expenses of entertainment.

ATHLETICS.

Between January 1 and April 15 a limited number of high schools may secure the services of W. W. H. Mustaine, director of physical education, or Dr. A. G. Heilman, instructor in biology and coach of the University athletic teams. Either gentleman will spend a day at the school giving practical directions concerning training and concerning the proper methods in basketball and track.

The University will pay the traveling expenses; the schools will pay a fee of $10 and provide local entertainment. Schools desiring this service should make application at once. In general, visits will be made to those which make the first requests.

Dr. Heilman gives the following program for his visit at any school: In basketball he will discuss the developing of team work and training; when and how to "shoot for baskets"; the style of "shooting" and passing; and the manner in which an offensive and defensive game should be played. For track and field work he will discuss What Is Meant by Training (the general impression of training is very misleading to young athletes; this will bring in the problems of food, drink, etc.); How to Train in order to bring the body up to the most efficient condition so that when the body is called upon in the final test or event the muscles will respond perfectly and in co-ordination; Training for Special Events, with reference to the advantage of form and of starting in these special events, and to the amount of exercise and the time it should be taken, so as to avoid becoming stale or overtrained; the Final Results of Conscientious Training. This will all be accompanied by practical demonstrations.
Correspondence Study
Department
CORRESPONDENCE STUDY DEPARTMENT

1. General Information.

1. Correspondence study should appeal to the following classes of persons: (1). Teachers who are seeking promotion. (2). Persons preparing for the University who cannot find time to attend the usual preparatory school. (3). Those who want to take a regular course at the University but who desire to shorten the time of residence. (4). Those who are temporarily absent from the University. (5). Graduates of Colleges and Universities who desire to pursue some special work. (6). Any person who desires guidance in systematic work.

2. Admission and Registration.

No preliminary examination or proof of previous work is required of an applicant for Correspondence Work. A student desiring to undertake Correspondence Study should first select such course or courses as he may desire to take, and send for a registration blank. He should then fill out this blank with the information called for, and return it with the required fee to the Extension Department of the University. The University reserves the right to reject unsuitable applicants or to recommend other courses than those chosen if the data furnished on the application blank should warrant such action, but it will promptly return all fees if the applicant is rejected, or if the substitution of courses recommended is not acceptable to the student. (See Regulations below.)

3. Methods of Instruction.

Upon receipt of application blank and fee, the first lesson assignment will be sent, with directions for study and instructions for preparing and returning lesson sheets and reports. Each lesson will be returned to the student with such corrections, explanations and suggestions as the instructor may think the student needs. The lesson sent to the student will contain: (1) Full directions for study, including references to text books by chapter and page; (2) questions to test the student's method of work and his understanding of the ground covered; (3) lists of books and assignments for further reading and such other suggestions and helps as the instructor thinks the student needs. After careful preparation of the lesson sent, the student writes his answers to the question or prepares the assignment as direct-
ed and mails them to the instructor, together with any statement of difficulties which may have arisen during his study. Questions on the subject in hand are at all times encouraged and will receive the careful attention of the instructor. The student's recitation paper is corrected as promptly as possible and returned to the student. All lessons are thus carefully criticised by the instructor so that each student receives personal guidance and instruction throughout the course.

4. **Informal Courses.**

In certain advanced courses the direction of the student's work takes the form of informal correspondence between the student and the instructor. The course is usually arranged between the student and the instructor to meet the special needs of the former. The student must present evidence that he is doing useful and effective work. This evidence may consist of several themes or a thesis covering the whole work. If not otherwise specified, courses are formal.

5. **The Unit Course.**

All Correspondence Work is based upon the Unit Course, which consists of 35 assignments and is the equivalent of the work of a resident student for five hours per week for one semester or half year. A Unit Course may, however, consist of one or more subjects or courses each embracing 1-5, 2-5, or 3-5 of a full course and representing 7, 14, 21 assignments, or 1, 2, 3 semester hours of credit. It is believed that a full Unit Course or its equivalent should be completed by the average student in thirty-five weeks on a minimum of leisure for study of one hour per day, six days in the week. The student may, however, pursue his studies as rapidly as he is able.

6. **The Lesson.**

Each formal course, therefore, consists of a definite number of assignments, 7, 14, 21, 28 or 35, depending upon the number of credit hours represented by the course. An assignment represents in general about a week's work for the average student, not an evening work, as at school.

7. **Examinations.**

Examinations are optional with the student, but are required if credits or certificates of credit are sought. These examinations should be taken at the University, but may be held at
some other convenient place approved by the University.


(a). All courses offered by the Correspondence Department, whether taken for University credit or not, are on a uniform basis in reference to amount of work covered. Courses which are satisfactorily completed have, therefore, a definite value, and all students who successfully complete such courses will be given a certificate of credit for all work satisfactorily completed.

(b). Credits toward graduation will be given by the University for work done in Correspondence Courses of collegiate rank if satisfactory examinations have been passed.

(c). Credit records for all Correspondence Courses successfully completed will be kept in the office of the University and may, if the student enters the University, be applied toward entrance or graduation requirements.

(d.) The maximum credit towards a University degree which may thus be earned by Correspondence Study may not exceed one-half the unit hours required for graduation. At least one year or four summer sessions amounting to not less than 24 credit hours of work must be done in residence at the University.

Regulations.

(a). Correspondence Courses may be begun at any time during the collegiate year.

(b). For admission to the Correspondence Study Department no examination is required, but the student is required to fill out a regulation blank, giving such information as may be helpful to the instructors in adapting the work to the needs of the student.

(c). Students who undertake Correspondence Study Work for University credit must comply with all the requirements of the University and make known this intention in advance.

(d). Correspondence students are expected to complete a Unit Course within twelve months, two courses within fifteen months, and three courses within eighteen months from date of registration.

(e). No fee is refunded because of a student’s inability to finish a course for which he has registered. If an application
for instruction cannot be met by the University or is for any cause rejected by the University, the fee is returned.

(f). If a student does not report in 90 days by sending in lesson sheets or otherwise he may forfeit the right to further instruction.

(g). Credit for work done by correspondence may be used to satisfy entrance requirement to the University.

10. Expenses.

The fees for the correspondence course are payable in advance, at the rate of $3.00 per credit hour. Thus the fee for a course giving three hours credit, is $9.00, and for a course giving five hours credit the fee is $15.00. If a student registers for a total of more than five credit hours at one time, the fee for each credit hour above five is $2.00 per credit hour. In the case of preparatory subjects for which University credit is not granted the number of credit hours is given in parenthesis to indicate the amount of the fee. These amounts cover the cost of the necessary outlines, laboratory materials, etc., but do not cover the cost of the necessary text books which must be procured by the student himself. The student must enclose a stamped and self-addressed envelope with each lesson sheet returned. The fees for this work have been fixed at the lowest possible rate, as the motive is purely one of public service. In general, it is thought best to register for only one or at the most two courses at one time, and to carry these through to completion as rapidly as possible.

COURSES OF INSTRUCTION

Special Courses.

Persons who do not find in the list of courses given below just what they want, should write the Correspondence Study Department, describing in detail the work which they wish to do. Special courses to suit individual needs will be given whenever that seems justified. It is the aim of the University to help every student applying to it who is prepared and willing to do serious work.

ART.


This course will cover the growth of painting in Italy from the time of Giotto to its decadence. Two credit hours. Miss Knowles.
2. Elementary Drawing and Painting.

Instruction will be given in object drawing and shading, in sketching from nature, in the principles of perspective, and in the technique of water color painting. While this course does not purpose to teach methods, it will be found of value to the teacher who desires to become proficient.

Two credit hours; Miss Knowles.

COMMERCE AND ACCOUNTING

1. Bookkeeping.

This course involves the theory of debits and credits, posting preparation of trial balances, financial statements, closing the ledger, special books of original entry, the bank account, cash proof, commercial papers, the bill book, opening and closing of double entry books. Practical sets of transactions representing a proprietary business, and later a retail partnership are used to illustrate the principals brought out in this course. Students are required to record these transactions in blank books accompanying the text.

Two credit hours.

2. Wholesale Partnership Accounting.

A knowledge of bookkeeping is presupposed in this course. It covers the method of procedure in taking in a partner, articles of co-partnership, adjustment of interest between the partners, the dissolution of partnership, use of auxiliary ledgers, special column cashbook and journal, suspense account, and controlling accounts. The student is required to record practical transactions in a set of books and handle the business papers involved.

Two credit hours.

3. Corporation Accounting.

This course involves the study of the organization and management of corporations, special accounts and books used in corporation accounting; classification and method of issuing, transferring and cancelling stock; opening corporation books; classification and interpretation of accounts; significance of various items represented in the statement; dividends; reserve fund; depreciation and surplus; voucher system. In addition to a regular set of business transactions which the student is required to enter in blank books, reference and papers on special topics are assigned.

Two credit hours.

This course takes up that phase of accountancy concerned in the determination and recording of the actual cost of manufacturing any article or product. Emphasis is placed upon the elements and principles concerned in the cost of material; labor and factory expense; the cost formula; advantages of the cost system; distribution of indirect expenses; wage systems; cost method of manufacturing accounts; classification of accounts under cost system; manufacturing statements; forms. A set of business transactions covering the work of a manufacturing concern for a period of time is used to illustrate the principles set forth, and special problems are given to emphasize certain important elements.

Two credit hours.

5. Bank Accounting.

This course presupposes a knowledge of bookkeeping and involves a study of the organization and management of banks, emphasizing the national bank particularly. Methods of accounting, forms and books used in various departments of the national banks are carefully considered. Banking customs and various details in the routine of the banking business, bringing out the interdependence and the close relation existing between the departments, are emphasized. A set of transactions representing the actual business of a national bank, and involving the duties, forms and records of the various clerks in the organization, is entered in blanks especially prepared for the purpose. These are then properly closed and a financial statement rendered.

Two credit hours.

Elementary Shorthand.

The purpose of this course is to master the principles of Gregg shorthand. A careful study is made of consonants, vowels, and their various combinations, phrasing, wordsigns, compound words, abbreviation, prefixes and affixes, and the development of vocabulary with special emphasis placed upon accuracy and legibility. Sufficient work in dictation and writing exercise is given to put into practice all principles involved in the course.

Three credit hours.

ECONOMICS AND SOCIOLOGY.


A study of the economic process of producing and distribu-
ing wealth; interest, rent, wages, with a view to the application of these principles to the study of current economic questions. Ely’s Outlines of Economics will be required as a textbook. Other books will be read on specified subjects. Professor Underwood.

Three credit hours.

2. Business Organization.

A study of financial institutions, e. g., trust companies, building associations, insurance companies; the organization and problems of the corporations, as capitalization, bonding reserves, monopoly; stock exchanges, brokerage; investments. Professor Underwood.

Two credit hours.


A study of the economic and social forces underlying the explorations and settlements of America, the development of the Colonies and their trades, industry and agriculture. The economic and financial struggles of the new Republic—its expansion to south and west, the coming of canal and railway, the slavery system, and more recent economic and industrial advancement will be employed.

Two credit hours.

4. Sociology.

A course in the theory of sociology and some of our social problems. In connection with the above a study of the local social formation and activities will be developed.

Three credit hours.

EDUCATION.

History of Education.

This course provides for a general survey of the evolution of educational ideals and school systems from savagery to the present time. The presentation of the subject shows the relation of the theory and practice of education to the contemporary industrial and social conditions, traces the chief stages in the origin and development of theory and practice, and forms the basis for evaluating present-day problems in education. Professor Kemp.

Two or four credit hours.

Principles of Education.

The biological, sociological and psychological background of education. The possibilities of organizing the course of study in
such a way that it shall be based on the above background rather than on mere tradition. Professor Kemp.

Two credit hours.

School Supervision.

A study of practical problems in elementary and secondary education, the organization and management of schools, courses of study, electives, correlation of studies, promotions, discipline, teachers' meetings, etc. Professor Kemp.

Two credit hours.

ENGLISH AND LITERATURE

Any person desiring correspondence work in English should indicate, as definitely as possible, in his letter of application, just how much work he has done, both in literature and in theme writing. It will also make it easier to arrange the course if the student can give some information as to the books at his disposal. On the basis of this letter, the student will be advised as to the course for which he seems best prepared.

Course A.—Preparatory English Composition.

A simple introduction to English composition, intended mainly for:

1. Those who have had no formal training in the subject.
2. Foreigners with no knowledge of grammar, but with some experience in writing the language.
3. Any persons who are not properly prepared for a more advanced course.

The work consists in the writing of simple themes, based mainly on the student's own experience and observation, the preparing of exercises illustrating the simpler rhetorical principles, and the reading of a few assigned books, which are to be used as the basis for themes.

Course B. Preparatory English Composition.

A continuation of Course A. The two courses are approximately equivalent to the work required in composition for entrance to the University.

*Credit hours.

Preparatory English Literature.

The works in English and American literature required for admission to college will be studied. The aim, however, is to make the courses valuable not only to students preparing for col-
lege, but also to persons who wish to take up, either for the first time or by way of review, the more simple and concrete phases of the study of literature.

(a.) This course will cover approximately the work in literature of the first two years of the high school, with study of the simpler masterpieces among those listed "for reading" in the list of college entrance requirements.

One entrance credit. (Six credit hours.)

(b.) In this course, the masterpieces listed "for study" will be emphasized, with attention also to some of the more difficult books among those listed "for reading." The work is approximately that of the last two years of high school.

One entrance credit. (Six credit hours.)

11. Freshman English.

A study mainly of exposition, with frequent themes and assigned reading.

Three credit hours.

12. Freshman English.

A continuation of Course 11. Study of exposition continued, and of simple narration and letter writing.

Three credit hours.


This course covers in some detail English Literature from the fifth to the nineteenth century. Not only the lives and works of the better known authors will be studied, but also a number of the minor writers, the social conditions of each period, the growth of various literary movements, and the influence of one period upon another. The work is equivalent to the survey course given in the sophomore year of many colleges and presents a course equal to that of two semesters.

Six credit hours.


A course planned as the one above and equivalent to sophomore work of two semesters upon the same subject as presented in a standard college.

Four credit hours.

FRENCH

1. Elementary French.

This course is designed to acquaint the student with French
grammar, to enable him to translate simple English prose into idiomatic French.

Three credit hours.

2. Elementary French.

This course includes a systematic review of irregular verbs. Special attention is given to the acquisition of vocabulary and to the ability to translate and read easy French prose. Prerequisite: Course 1.

Three credit hours.


Composition and reading. Prerequisite: Courses 1 and 2.

Three credit hours.

4. Advanced French.

Composition and reading. Prerequisite: Courses 1, 2 and 3.

Three credit hours.

GERMAN

1. German.

Composition, conversation and some of the following readings: Wilhelm Tell, Karl Heinrich, Das Abenteuer einer Neujahrsnacht, Maria Stuart, Minna von Barnhelm, Herman und Dorothea, Wallenstein. Prerequisites: Knowledge of German Grammar.

Three credit hours.

2. Reading and Composition.

Such works as Wallenstein, Deutche Liebe, Ekkehart, Composition.

Three credit hours.

Work will be planned for each individual.

GREEK

1. White’s First Greek Book; 5 credit hours.
2. Xenophon: Anabasis, Book 1; 5 credit hours.
3. Xenophon: Anabasis, Books 2-4; 5 credit hours.
4. Homer: Iliad, Books 1-3; 3 credit hours.
5. Plato: Apology and Crito; 3 credit hours.

HISTORY


Historical development; organization, form and practical working of the national government of the United States. Atten-
tion is given to the development of political parties, their methods and present day political questions.

Two credit hours.

2. State and Local Government.

Powers, obligations and limitations of state in the Federal Union; formation and admission of states; evolution of state constitutions, organizations of state and local government; political methods. Especial attention will be given the government of Montana.

Two credit hours.

3. United States History, 1600-1914.

Especial attention will be given to social and economic factors in American history, to westward expansion, and the development of the West.

Three credit hours.

4. Problems in Montana History and Government.

Open only to those who have training to do advanced work and who can furnish evidence of facilities with which to undertake research in some special topics of Montana history. (Informal).

HOME ECONOMICS

1. Foods.

A study of nutrients; their occurrence in foods, the principles involved in their preparation, their cost from various sources. Formulating menus, preparing and serving meals. Practical work in the kitchen will be required as well as reference reading.


b. Study of proteins. Reference reading and practical work in the preparation of milk, egg and cheese dishes.

c. A continuation of study of proteins illustrated by the cooking of meals with special reference to the effect of different temperatures. Making of soups. Gelatin, its source and uses.
d. Carbohydrates and Fats. Classification and general study of carbohydrates.

e. Sugar.

f. Starch; food value and cooking of cereals. Flour. Doughs and batters and a study of the various leavening agents; chemistry of baking powders; yeast and breadmaking.

g. Vegetables and green vegetables. The making of salads.

h. Fats—their food value and use in cooking.

i. The cost, planning, preparation and serving of meals.

Reference readings will be taken largely from Norton's Food and Dietetics, obtainable from the American School of Home Economics, Chicago, $1.50, and from Government Bulletins.

Four credit hours.

2. Household Management.

This course is planned to study the underlying principles and give training in the processes involved in housekeeping. The organization of the household, the division of the income and keeping of accounts, the buying and storing of supplies and equipment, the household processes, and care of the household.

Text: Terrill Household Management, American School of Home Economics, Chicago. $1.50.

Three credit hours.

LATIN.

1. Cicero: De Senectute and De Amicitia; 3 credit hours.
2. Livy: Book 22; 3 credit hours.
3. Tacitus: Agricola and Germania; 3 credit hours.
4. Prose Composition; 3 credit hours.
5. Horace: Odes, selected; 3 credit hours.
6. Horace: Satires and Epistles; 3 credit hours.

LIBRARY SCIENCE

Reference Work.

1. A course to help the general reader to make the best use of the resources of any library in investigating any subject and to collect material for the preparation of papers, etc. Only the fundamental principles of reference will be considered. Open to anyone who has access to a library.

One credit hour.
2. A course in practical reference work that will enable a library attendant to give efficient assistance to readers in their use of the resources of a library. This will cover all the standard general reference books and many on special subjects. Open to graduates of high schools.
Four credit hours.

MATHEMATICS

Professor N. J. Lennes, Assistant Professor E. F. A. Carey.

Academic Courses.

1. Elementary Algebra.
   This course begins with the fundamentals of the subject and continues through quadratic equations. One entrance unit.
   (Six credit hours).

2. Elementary Algebra.
   A continuation of Course 1, with a repetition of some of the topics therein contained treated more exhaustively. One-half entrance unit.
   (Three credit hours).

   The fundamental propositions of plane geometry are demonstrated with the aim of placing the student in possession of methods of attacking "original exercises." One entrance unit.
   (Six credit hours).

   The minimum number of propositions with application to mensuration. One-half entrance unit.
   (Three credit hours).

5. Trigonometry.
   Definitions of the trigonometric functions; their properties and solution of triangles. One-half entrance unit.
   (Three credit hours).

Collegiate Courses.

1. College Algebra.
   This course aims to give a clearer insight in the academic mathematics as well as to lay the foundation for more advanced mathematics.
   Three credit hours.
2. **Analytic Geometry**

A treatment of the important properties of the several conics, including a discussion of a few of the more interesting higher plane curves.

Three credit hours.

3. **Differential Calculus.**

Three credit hours.

4. **Integral Calculus.**

Three credit hours.

The ground covered in courses 3 and 4 is the equivalent of that included in a standard text.

5. **Mechanics.**

Composition and resolution of forces; the principles of equilibrium; application of the principles of states to simple machines; brief discussion of graphical statics with applications to structures.

Four credit hours.

6. **Teaching of Mathematics.**

A critical review of secondary mathematics, including a discussion of current developments in methods of teaching.

Two credit hours.

7. **Protective Geometry.**

An introductory course. Prerequisite: Differential and Integral Calculus.

Three credit hours.

8. **Functions of a Real Variable.**

An introductory course. Prerequisite: Calculus and Differential Equations.

Three credit hours.

7. **Shop Mathematics.**

This course aims to meet the needs of those engaged in Mechanical Engineering trades.

One credit hour.

8. **Mathematics for Foresters.**

This course deals with such subjects and problems as are of practical use to the forester.

One credit hour.
7. **Constructive Geometry.**

This course is given primarily for forest rangers and mechanics who have not had a course in geometry. It consists in part of drawing to scale a large number of geometrical figures by means of which theorems are deduced. These theorems are then applied to practical problems.

One credit hour.

**PHYSICS**

1. **Elementary Physics.**

   In this course we are trying to meet the needs of three classes of persons: those actively engaged in teaching the subject; those making preparation for first grade or professional certificates, and those looking forward to entrance to the University.

   The work of this course will consist of the study of some suitable text-book, the solution of assigned problems and exercises. Should the candidate desire credit for this subject toward entrance to the University, a note-book containing the results of about fifty assigned laboratory problems must be submitted in addition to an examination on the text-book used. The laboratory work may be carried along with the text-book study if the candidate has access to a high school laboratory or may be taken later at the University Summer School.

   One entrance unit; (six credit hours); Professor Thompson.

**PSYCHOLOGY**

**General Psychology.**

This course treats of the general principles of mental activity. The work will be presented by outlined readings and experiments of simple character that students can perform upon themselves or others of their acquaintance. It will offer lists of questions to be answered by observations upon children, animals and adult persons. Students are expected to purchase several books for reading purposes.

Three credit hours.

**Psychology of Thinking.**

This course will aim to direct the reading and observations of the student to the end that he may come to a fuller understanding of the reasoning processes and to make clearer and more exact use of them.

Four credit hours.
Psychology of Religion.

This course will cover a discussion of the origin and functions of religion among primitive peoples and aim to show the psychological character of religion among cultured peoples in Europe and America. The standpoint is that of sympathy and appreciation rather than of criticism. The place of religion in the individual life will find treatment.

Social Psychology.

This will include a study of the forces that are operative in society and show the organization of peoples into nations. The student will be led to observe people in their activities towards one another and so to discover the general principles of social living. The student will be expected to purchase some books and others will be supplied. He will be given questions to answer by observing his fellows about him. In this way the student should come to a better understanding of himself and the people with whom he lives.

Two credit hours.

ZOOLOGY.


The study will include examination of specimens representative of the various invertebrate types. The lessons will cover anatomy and morphology, physiology, ecology and distribution of species. To clearly present the idea of organic evolution and to develop methods of working and thinking will be the ends sought.

Four credit hours; Professor M. J. Elrod.


Following the same general plan as for invertebrates. Material included will be the lowest vertebrates, the fish, frog, bird, rabbit or squirrel, etc., not merely from an anatomical standpoint, but from a broad view as given above. Material from the University will be furnished at cost.

Four credit hours; Professor M. J. Elrod.

3. Photography.

A study of the camera, the dark room, plates, lenses, ray filters, papers, development and reducers, followed by work in making lantern slides, copying, enlarging, making transparencies, and the like. A camera and dark room will be necessary. Working material will be furnished at cost.

Two credit hours; Professor Elrod.
Bureau of Public Information

The Bureau of Public Information was established in October, 1913, for the purpose of furnishing information to all classes of citizens of Montana on all classes of subjects. Such information is furnished absolutely free except that each letter of inquiry must be accompanied with a stamp in order to pay return postage. During the short time in which the Bureau has been in existence hundreds of questions have been answered—questions from teachers, farmers, miners, and numerous other kinds of workers. The information furnished has been of wide variety—from the correction of defects in a pump to the translation of an Armenian letter written in the Gregorian script. Thus far no letter of inquiry has been left unanswered. It is believed that this new effort on the part of the University to aid citizens of the State has proved its value, and every person seeking information of any character whatever is therefore urged to take advantage of this offer of help.
DEGREES CONFERRED, JUNE, 1913.

Allison, Herman Thomas..................B. A. (Mathematics)
Cameron, Carl Ernest......................B. A.
Dobson, Cecil Frank.......................B. S. in Engineering
Freeze, Gladys Julia......................B. A. (History)
Garlington, Mabel Alma....................B. A. (History)
Heyward, Gladys Loie......................B. A. (Literature)
Hoblitt, Alvin Bailey.....................LL. B.
Huffman, Gladys Marguerite..............B. A. (Modern Languages)
Hutchinson, Anne Elizabeth..............B. S. (Physics)
Ingalls, Mildred Franklin...............B. A. (Modern Languages)
Kramer, Cecil Inice......................B. A. (Modern Languages)
Leopold, Rose................................B. A. (Modern Languages)
Lewis, Gladine............................B. A. (English)
McFarlane, Gertrude Cornelia............B. A. (Modern Languages)
Mathews, Florence May...................B. A. (Literature)
Mathewson, Alice Seabury.................B. S. (Mathematics)
Metcalf, Helen Frances...................B. A. (History)
Oneal, Mrs. Glen..........................B. A.
Shull, Mary Patience.....................B. S. (Botany)
Silloway, Perley M.........................M. S.
Sloan, Royal Daniel......................B. S. in Engineering
Smith, Louise Elizabeth................B. A. (Modern Languages)
Stabern, Suzanne.........................B. A. (Mathematics)
Thompson, Oscar James....................LL. B.
Wells, Roscoe Ward.......................B. A. (Economics)
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**SHORT FORESTRY STUDENTS, 1914**

- DeLano, Thomas Paine
  - Residence: Trout Creek
- Fletcher, J. Henry
  - Residence: Birmy
- Heatler, Orie E.
  - Residence: Trout Creek
- Jefferson, Lorenzo Freedom
  - Residence: Choteau
- Kramer, Oscar John
  - Residence: Miles City
- Luma, William John
  - Residence: Elliston
- Miller, Victor Ernest
  - Residence: Lo Lo
- Saint, James Carl
  - Residence: Noxon
- Stanley, Arthur Ulysses
  - Residence: Miles City

**SUMMER SCHOOL STUDENTS, 1913**

- Abbott, George H.
  - Residence: Carbon
- Adams, Marie P.
  - Residence: Missoula
- Allen, Pattie
  - Residence: Yellowstone
- Allison, Herman T.
  - Residence: Missoula
- Anderson, Louise F.
  - Residence: Missoula
- Anderson, Virginia P.
  - Residence: Meagher
- Auby, Charlotte L.
  - Residence: (South Dakota)
- Auby, Emma J.
  - Residence: (South Dakota)
- Baird, Dora H.
  - Residence: Missoula
- Bannerman, Ida M.
  - Residence: Yellowstone
- Bates, Frank B.
  - Residence: Missoula
- Beckwith, Lawton B.
  - Residence: Missoula
- Bellesfield, Cynthia
  - Residence: (Iowa)
- Bennett, Cordelia
  - Residence: Missoula
Bennett, Minerv A M. ........................................ Madison
Berry, Agnes D. ................................................. Missoula
Blyth, May E. ...................................................... Cascade
Bonner, Marguerite M. ......................................... Missoula
Bray, Archie W. L .............................................. Sheffield, Eng.
Bray, Cora E. ..................................................... Yellowstone
Sister Bridget ..................................................... Missoula
Bryant, Carrie M. ................................................ Meagher
Bruner, T. A. ...................................................... Beaverhead
Bruner, Mrs. T. A. .............................................. Beaverhead
Bullard, Nell C. ................................................... Missoula
Byrnes, Frank L. ................................................ Flathead
Carroll, Cecile M. ............................................... Missoula
Carter, Mrs. E. M. ............................................... Missoula
Cassidy, Francis J. .............................................. Broadwater
Chesnutt, Rowena ................................................ Missoula
Cowan, Virginia A. ............................................. Valley
Crossman, Ida .................................................... Silver Bow
Culmer, Orpha A. ................................................ Missoula
Davidson, Mary C. ............................................. Missoula
Dermers, Clementine V. ....................................... Missoula
Dennis, Eunice .................................................... Missoula
Dwyer, Cecile ..................................................... Missoula
Eaton, Jennie C. .................................................. Flathead
Eberhard, Nina .................................................... Valley
Elliot, John L. ..................................................... Valley
Farmer, Mrs. E. E. ............................................... Missoula
Farnsworth, Ethel R. .......................................... Missoula
Ferguson, Fannie C. .......................................... Missoula
Forbes, Edna M. ................................................ Missoula
Forbes, Lucius ................................................... Missoula
Fowler, Lottie V. ................................................ Missoula
Goff, Clifford C. .............................................. Yellowstone
Graham, Ethel A. ................................................ Missoula
Gregory, Mrs. C. M. ........................................... (Idaho)
Grundy, Perman B. ............................................. Missoula
Gustafson, Esther L. .......................................... Deer Lodge
Gross, G. A. ...................................................... Missoula
Hagen, Anna L. ................................................ Cascade
Hancock, Jesse H. ............................................. Beaverhead
Hanson, Emily J. ................................................ Teton
Hansen, Peter ..................................................... Missoula
Hart, Letitia C. ................................................... Missoula
Hazelton, Cecilia M. .......................................... Broadwater
Hazelton, Mary H. ............................................. Broadwater
Henry, Minnie .................................................... Missoula
Herman, Hazel F. .............................................. Missoula
Hill, Mrs. D. S. ................................................... (Louisiana)
Hord, Harriet ..................................................... Missoula
Huff, Mrs. Bessie ............................................... Sheridan
Hunter, Mrs. Lydia ................................................................. Gallatin
Jackson, Clifton S. ............................................................. Missoula
Jeffers, Altha M. ................................................................. Madison
Johnson, C. P. ..................................................................... Yellowstone
Johnson, Elizabeth V. ......................................................... Ravalli
Johnson, Sarah M. ............................................................. Missoula
Keelan, Mary R. ................................................................. Butte
Kelley, Lillian D. ................................................................. Broadwater
Kelley, Mrs. Joanna C. ......................................................... Sheridan
Kelly, Simon C. ................................................................. Missoula
Kennedy, Cora B. ............................................................... (New Brunswick)
Kitts, Mary C. ....................................................................... Fergus
Klebe, Elizabeth M. ............................................................ Missoula
Kramer, Cecil L. ................................................................. Missoula
Kreis, Bessie M. ................................................................. Sanders
Lamb, John H. ..................................................................... Yellowstone
Lear, Lillian G. ................................................................. Ravalli
Lebkicher, Florence ............................................................ Missoula
Leslie, Fred J. ....................................................................... Chouteau
Lewis, Pearl E. ................................................................. (New York)
Lewis, Gladine ..................................................................... Rosebud
Linn, Anna ........................................................................... Missoula
Lindfors, Verena ................................................................. Missoula
Logan, S. Rae ...................................................................... Ravalli
Sister Leonella ..................................................................... Missoula
Sister Lucia ......................................................................... Missoula
Lundgren, Ruth .................................................................... Missoula
Lyman, Henrietta ............................................................... (Illinois)
McCay, Louise S. ............................................................... Gallatin
McCoy, Annie L. ................................................................. Missoula
McLeod, Mary L. .................................................................. Sheridan
McMartin, Alice I. .............................................................. (North Dakota)
McMartin, Dora E. .............................................................. (North Dakota)
Sister Margeret .................................................................... (Washington)
Sister Martha of Bethany ..................................................... Missoula
Sister Mary Evelyn ............................................................. (Idaho)
Sister Mary Mildred ............................................................ (Washington)
Merry, Katherine ................................................................ Missoula
Miller, Patricia L. ................................................................ Carbon
Miller, Maxine ..................................................................... Missoula
Morgan, Dora L. ................................................................. Yellowstone
Morrison, Estelle K. ............................................................. Carbon
Mowbray, Lulu M. ............................................................... Missoula
Murray, Irene T. ................................................................... Missoula
Nelson, Clara E. ................................................................... Yellowstone
Nicholson, Gladys ................................................................ Sweet Grass
Nutterville, Catherine .......................................................... Silver Bow
Olsen, Alfred J., Jr. ............................................................. Flathead
Osborn, Ruth E. ................................................................... Hill
Piepho, Mrs. E. C. ................................................................. Carbon
Poindexter, Jessie C. .......................................................... Yellowstone
Porter, Ellen ...........................................(Nebraska)
Power, Lillian T. ...........................................Sheridan
Putnam, Herbert J. ...........................................Dawson
Putney, Emma M. ...........................................Missoula
Rafferty, Mary R. ...........................................Missoula
Railsback, Jessie A. .......................................Yellowstone
Rawll, Ruby E. ...............................................(Illinois)
Reynolds, Mrs. G. F. .......................................Missoula
Roberts, Anne Gladys .......................................Missoula
Ronan, Margaret T. .........................................Missoula
Rutherford, William E. .....................................(North Dakota)
Sauer, Grace Y. ...............................................Silver Bow
Savage, Azelle A. ...........................................Missoula
Shull, Florence ...............................................Missoula
Sims, Amy A. ...................................................Valley
Slocum, Mettie V. ...........................................Missoula
Sparrow, Elma ..............................................Deer Lodge
Stahl, Lena ....................................................Flathead
Stanton, Sadie M. ...........................................(North Dakota)
St. Germain, Loretta A. .....................................Missoula
Stillman, Madge J. ..........................................Flathead
Stone, Bess V. ..................................................Silver Bow
Stonehouse, Estelle ..........................................Teton
Taylor, Louise ................................................Missoula
Taylor, Nicholas .............................................Missoula
Thompson, Howard E. ......................................Jefferson
Vance, Margeret C. ..........................................Ravalli
Waddell, Olive ...............................................Ravalli
Wallace, Enid ................................................Missoula
Waitman, Myrtle ..........................................Valley
Wardle, Inez V. ...............................................Missoula
Watkins, Gordon ..........................................Missoula
Webb, Golda M. ............................................Broadwater
Willard, Mamie A. ...........................................Missoula
Williams, J. U. ...............................................Missoula
Williamson, C. C. ..........................................Ravalli
Wilson, Bleth ...............................................Hill
Wilson, Effie ................................................Madison
Wyatt, William R. ..........................................Beaverhead

Special Students in Physical Education .........................10

BIOLOGICAL STATION, 1913.

Adam, Mrs. C. C. ...........................................(Illinois)
Allen, Edward ...............................................Missoula
Conway, Walter .............................................Missoula
Dice, Lee R. ..................................................(Washington)
Elrod, Mrs. M. J. ...........................................Missoula
Elrod, Mary ....................................................Missoula
Guinotte, Mrs. .............................................(Minnesota)
Guinotte, Marie ..............................................(Minnesota)
Letts, Martha ..................................................(Missouri)
McManis, Sarah ..............................................Silver Bow
Newell, Anna G. ..............................................(Massachusetts)
Rubinow, Mrs. Sidney G. .................................Flathead
Rubinow, Sidney G. .........................................Flathead
Sawyer, Mary L. ..............................................(Illinois)
Watson, Lavinia A. ...........................................Rosebud
Wells, Caroline M. ..........................................Missoula

STUDENTS ENROLLED IN CORRESPONDENCE-STUDY
DEPARTMENT

Abbott, George H. ............................................Rosebud
Bowman, Leroy J. .............................................Sanders
Boyman, Mary M. .............................................Rosebud
Bruner, T. A. ....................................................Beaverhead
Cochran, Daisy ..............................................Blaine
Clothier, Francis A. .........................................Meagher
DeKary, Charles A. ..........................................Blaine
Donery, Joseph A. ...........................................(Minnesota)
Drake, Alice A. ................................................Ravalli
Gish, Aaron K. ................................................(Alberta, Can.)
Gish, Walter ...................................................(Alberta, Can.)
Gorman, Charles .............................................Hill
Helterbran, Marietta .......................................Sweet Grass
Hughes, Elizabeth .........................................(South Dakota)
Hynes, Louise .................................................Granite
Jackson, Clifton .............................................Ravalli
Kingsley, R. M. ...............................................(Idaho)
Kramer, O. J. ..................................................Custer
Kurtz, Millard ................................................(Washington)
Reed, Minnie A. .............................................Broadwater
Schanck, Donna M. .........................................Lincoln
Stanley, Arthur U. ..........................................Custer
Stewart, Glenna .............................................Broadwater
Thomas, Russell B. .........................................Lincoln
Thompson, Agnes S. .......................................Teton
Wenger, Edward A. .........................................Deer Lodge
Young, Lois L. .................................................Yellowstone
### SUMMARY OF REGISTRATION

For the Academic Year 1913-14

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*Counted twice............................ 22*

*Total ..................................... 541*
REGISTER OF ALUMNI.

1898
Mrs. Helen Robb Glenny, B. A. .................................................................1013 Lake St., Minneapolis, Minn.
Eloise Knowles, B. Ph. (Ph. M., University of Chicago) ..................Missoula

1899
Zoe Bellew (Mrs. Sidney M. Ward), B. A. (M. A. 1902) ..........Hamilton
Earl Douglas (B. S., Iowa State College), M. S. ........................................Carnegie Institute, Pittsburgh, Pa.
Anna Louise Hatheway (Mrs. W. D. Harkins), B. S. .................Chicago
George Hempstead Kennett, B. S. (M. D., Rush Medical College).........Kellogg, Idaho
Helen McCracken, B. A. (M. A., University of Chicago) ..........Hamilton
Charles Pixley, B. A. (M. D., Rush Medical College) ..............Missoula

1900
Charles Earl Avery, B. Ph. .................................................................Missoula
Mary Gertrude Buckhous, B. S. ..........................................................Missoula
Caroline Harrington Cronkrite (Mrs. C. T. DeWitt Grubbs), B. S. ....Missoula
Lu Knowles, (Mrs. R. J. Maxey), B. S. ......................Camp Josman, Iloilo, P. I.
Eben Hugh Murray, B. A. ...........................................................(Address unknown)
Percy Shelley Rennick, B. Ph., (M. D., Kentucky Medical College) ........Helmville
Sidney Elery Walker, B. S., (LL. B., University of Michigan) ..........National City, New Mexico

1901
Estelle Bovee, B. Ph. .................................................................Glendive
Hugh Alexander Graham, B. S. ................................................15 California St., San Francisco, Cal.
Sue Lewis (Mrs. W. A. Thompson), B. A. .........................................................1802 College Ave., East St. Louis, Ill.
Mary Lewis (Mrs. W. B. Simpson), B. A. ......................Leavenworth, Wash.
Lydia Jimmie Mills (Mrs. C. H. Rittenour), B. S. ..................Plains
Bertha Simpson, B. Ph. .................................................................Missoula
Sidney Mire Ward, B. Ph. .................................................................Hamilton
Kathryne Clara Wilson, B. Ph. ..................................................East Aurora, N. Y.

1902
John Frederick Anderson, B. S. (in M. E.) ..................(Deceased Oct. 3, 1910)
Harold Blake, B. S. (in M. E.) ..................................................Anaconda
William O. Craig, B. S. .................................................................Helena
Helene Kennett (Mrs. Geo. Wilcox) B. A. (Literary) .................Missoula
Helen La Caff (Mrs. Roy Jackson) B. A. (Classical) .................(Deceased Jan., 1910)
Agnes McDonald, B. A. (Classical) .................................................Anaconda
Homer McDonald, B. S. .................................................................Great Falls
Helen McPhail, B. A. (Classical) ..................................................Mace, Idaho
Fanny Maley, B. A. (Literary) ..........................................................Missoula
Jeanette Pickering Rankin, B. S.................................................................Missoula
Katherine Ronan (Mrs. E. C. Trask), B. A. (Classical)................................
.............................................................................................................1124 E. Fifth St. S., Salt Lake City, Utah
Margaret Ronan, B. A. (Classical).........................................................Missoula
Pearl Scott (Mrs. Fritz Kroger), B. A. (Classical)..................................Philipsburg
Guy Emerson Sheridan, B. S.................................................................659 ½ W. Granite St., Butte
Benjamin Stewart, B. S...........................................................................Juneau, Alaska
Edith Watson (Mrs. C. H. Keel), B. A. (Classical)..................................Red Lodge

1903

Myrtle Weber Avery (Mrs. Charles E. Avery), B. S., (Classical)...Missoula
Miriam Hatheway, B. A. (Classical).........................................................Missoula
Mabel Emily Jones, B. A., (Literary).......................................................Missoula
Martin Jones, B. S................................................................................Cabanagan, Nueva, Luzon, P. I.
Lillian F. Jordan (Mrs. I. L. Bendon), B. A. (Literary).........................Glendive
Lucy Likes, B. A. (Literary).....................................................................Missoula
Rella Likes, B. A. (Literary).....................................................................Missoula
Claude Otto Marcyes, B. A. (Literary)...................................................Forsyth
Welling Duncan Rankin, B. S..................................................................Helena
Ida Rigby, B. A. (Literary)......................................................................(Deceased Feb. 19, 1904)
Eloise Rigby, B. S..................................................................................Carlton
Harriet Laura Rankin (Mrs. Oscar Sedman), B. A. (Classical)...........Polson
Leslie Mitchell Sheridan, B. S. (in M. E.)..............................................Anaconda

1904

Page Bunker, B. A. (Classical).................................................................Kalispell
Moncure Cockrell, B. A. (Classical).........................................................Deer Lodge
Walter Hammer, B. A. (Literary).............................................................Foster
Alice Herr, B. A. (Literary).....................................................................112 Rutgers, St. Belleville, N. J.
Roxane Howell (Mrs. J. A. Derge), B. A. (Classical).........................Salt Lake City
Georgia Evelyn Polleys (Mrs. D. T. Mason), B. A. (Literary)..............Missoula

1905

Jessie May Bishop (Mrs. E. P. Giboney), B. A. (Literary)...............Great Falls
Anna F. Carter, B. S................................................................................Missoula
William Oran Dickinson, B. S................................................................Missoula
Alice Gertrude Glancy, B. A. (Literary)................................................Portland, Ore.
Herbert H. Hughes, B. S. (Ph. G., Chicago School of Pharmacy) (M. D., Rush Medical College).......................................Portland, Ore
John Ray Haywood, B. S. (in Engineering)...........................................Great Falls
Avery Faulkner May (Mrs. W. O. Dickinson), B. A. (Classical)...Missoula
Charles Edward Schoonover, B. A. (Classical).................................(Deceased, March 21, 1909)
Frances Sibley, B. A. (Literary)..............................................................Sewanee, Tenn.
Charles Edward Simons, B. A. (Classical)..........................................Missoula
Blanche May Simpson (Mrs. Frank Borg), B. A. (Literary)..............Missoula
Ray Epperson Walters, B. A. (Classical)..............................................Larson, Idaho
Edward Williams, B. A. (Classical)....................................................Hotel Lenox, Portland, Ore.

1906

Fred Elliot Buck, B. S. (in M. E.)..............................................................Missoula
Joseph Buckhous, B. S. (in M. E.)..........................................................St. Ignatius
Maud Burns, B. A. ................................................................. Missoula
Edwin Reed Corbin, B. S. (in M. E.) ...................................... Los Angeles, Cal.
Mary P. Evans, B. A. (Classical). ........................................ Livingston
Grace Serena Flynn, B. A. (Classical) .................................... Missoula
Thomas Leo Greenough, B. S. (in M. E.) ............................ Larson, Idaho
Delbert I. Grush, B. S. (in M. E.) ........................................ Anacoda
Floyd Hardenburgh, B. S. .................................................. Missoula
Florence Matilda Johnson (Mrs. J. J. Moore), B. S. ............ 2225 W. Polk St., Chicago, Ill.
Maud Esther Johnson, B. A. ................................................ Missoula
John Davis Jones, B. A. ....................................................... Missoula
Roy Daniel McPhail, B. A. .................................................. Drummond
Fay Abernathy Murray (Mrs. James Gilly), B. A. ............ 701 W. Galena St., Butte
Alma Lottie Myers (Mrs. John D. Jones), B. A. ....................... Missoula
Josie May Robb, B. A. ......................................................... Stevensville
Ona Mansfield Sloane, B. A. ................................................ Missoula
Thomas Claude Spaulding, B. S. (M. S. F., University of Michigan) ................................................................. Missoula
Margaret Summers, B. A. (Literary) ......................................... Missoula
Ruth Ward (Mrs. D. I. Grush), B. A. ..................................... Anaconda
Debora Wagy, B. A. (Mrs. J. Lee Sedgwick) .................. Fort Benton

1907

Cora Averill (Mrs. N. S. Poole), B. A. (Classical) .................. Townsend
James Henry Bonner, B. S. (in Engineering) ........................ Missoula
Charles Patrick Cotter, B. A. (Literary) ............................... Missoula
Charles Scovill Dimmick, B. S. (in Engineering) ............... Missoula
Frederick Eugene Dion, B. S. (in Engineering) .................... Glendive
Stella Louise Duncan, B. A. (Classical) ............................... Missoula
Florence Editha Ervey (Mrs. Gilbert J. Heyfron), B. A. (Classical) ......................................................... Missoula
Thomas Joseph Farrell, Jr., B. A. (Literary) ......................... Missoula
Linda Ellen Featherman, B. A. (Literary) (Mrs. J. E. Meyers) Drummond
Mary Monica Fergus, B. A. (Literary) ................................. 625 S. Washington St., Butte
Susie Garlington (Mrs. E. A. Cole), B. A. (Classical) .......... Charlotte, N. C.
Rufus King Garlington, B. S. .............................................. Missoula
Ralph Edward Gilham, B. S. ................................................ Townsend
Lawrence Edward Goodbourne, B. A. (Classical) ................ Roseburg, Ore.
Laura May Hamilton (Mrs. R. L. Harmon), B. A. (Literary) .... Walla Walla, Wash.
Ralph L. Harmon, B. A. (Literary) ...................................... Walla Walla, Wash.
Anna Jo Hutter, B. A. (Literary) ........................................ Elma, Wash.
Daisy Kellogg (Mrs. Lynn Ambrose), B. A. (Literary) .......... Missoula
Jennie Andrews McGregor, B. A. (Classical) ....................... Bonner
James Hamilton Mills, B. S. (in Engineering) ....................... Butte
Josiah John Moore, B. S. .................................................. 2225 W. Polk St., Chicago, Ill.
Frances Nuckolls (Mrs. E. P. Kelley), B. A. (Literary) ....... 975 Copper St., Butte
William Hovey Polleys, B. S. (in Engineering) ................. (Deceased, Aug. 2, 1910)
Joseph William Streit, B. S. .............................................. Missoula
Montgomery De Smith, B. S. (in Engineering) ....................... Augusta
Lillian Warren, B. A. (Classical).............................(Deceased, Feb. 22, 1908)
Alice Brown Welch, B. A. (Literary)....................54 Scott St., Chicago, Ill.

1908

Ethel Olive Ambrose (Mrs. H. L. Hitchcock), B. A. (Literary)...........Los Angeles, Cal.
Agnes Dorothea Berry, B. A. (Literary)................................Missoula
Oral Jay Berry, B. S......................................................Drummond
Charles Amos Buck, B. S. (Engineering)...........................Stevensville
Nell Cavette Bullard, B. A. (Literary)..............................Plains
Vincent Stuart Craig, B. S. (Engineering)............................Terminal, Cal.
Arthur George Davidson, B. S. (Engineering).........................Anaconda
Margery Winnifred Feighner, B. A. (Literary).........................Missoula
Phoebe Aditha Finley, B. A. (Literary)................................Forsyth
Helen Goddard, B. A. (Classical).....................................Billings
Carrie Hardenburgh (Mrs. R. L. Gilham), B. A. (Literary)...........Townsend
Fanny Hatheway (Mrs. John Lucy), B. A. (Classical)................Missoula
Frances Margaret Jones, B. A. (Literary).............................Anaconda
Minta Lee McCall (Mrs. J. H. Bonner), B. A. (Classical).............Missoula
Herman Cole McGregor, B. S. (Engineering)...........................1116 Boston Bldg., Salt Lake, Utah
May Elizabeth Murphy, B. A. (Literary)..................................608 Twenty-Second St., San Diego, Cal.
Ruth Lenore Smith (Mrs. T. S. Houston), B. A. (Classical)...........2716 North Eighth St., Tacoma, Wash.
Helen Antoinette Smeal, B. S. (Mrs. O. M. Harris).....................Missoula
James Beryl Speer, B. A. (Literary)..........................Stanford University, Cal.
Clarissa Elinor Spencer, B. A..............................................Wash.
Roy Newton Whitesitt, B. A. (Literary)............................Stevensville
Edward Angus Wenger, B. S. (Engineering)...........................Anaconda

1909

Almeda Andrews (Mrs. C. F. Farmer), B. A. (Classical)..............Missoula
George Edward Beavers, B. S.............................................Billings
Bess Margaret Bradford (Mrs. Charles Popkins), B. A. (Literary)......Sapulpa, Okla.
Dero Montana Buswell, B. A. (Literary) (Mrs. W. V. Rowland)........Victoria, B. C.
Ida May Cunningham, B. A. (Literary)..................................Colville, Wash.
Cecile Katherine Dwyer, B. A. (Literary).................................Missoula
Charles Frederick Farmer, B. S. (Engineering).......................Missoula
Marie Sophie Freeser, B. S..............................................Two Dot
Frederick Greenwood, B. A. (Literary).................................Spokane, Wash.
Berney Fred Kitt, B. S. (Engineering)....................................Missoula
Jennie Marguerite Lyon, (Mrs. Berney F. Kitt), B. A. (Literary)......Hamilton
Neena Crete Pratt, B. A. (Literary)......................................Lincoln, Neb.
Mary Frances Rankin, B. A. (Classical)...............................Colville, Wash.
Florence Ethela Thieme (Mrs. Ray Hamilton), B. A. (Classical).......Missoula
Alice Anne Wright, B. A. (Literary).....................................Missoula
William Montgomery Van Eman, B. S. (Engineering)..................Augusta
1910

Mary Elizabeth Burke, B. A. (Latin) ........................................ Livingston
Anna Hazel Butzerin (Mrs. C. A. Bisbee), B. A. (Latin) .............. Missoula
May Opal Cronk, B. A. (Latin) ................................................ Townsend
Homer Roswell Deuel, B. S. (Engineering) ................................ 917 Shattuck Ave., Berkeley, Cal.
Frances Folsom Foster (Mrs. Frank Bonner), B. A. (Literature). Missoula
Edna Fox, B. A. (Modern Languages) ....................................... Twin Bridges
Mary Dorothy Graham, B. A. (Latin) ....................................... Pony
Josephine Mary Henderson, B. A. (Literature) ............................ Hall
Renee Jane Henderson (Mrs. M. R. Henderson), B. A. (Literature)  Missoula
Edna Frances Hollensteiner, B. A. (Latin) .................................. Lolo
Laura Seawright Johnson, B. A. (History and Economics) (Mrs. Chas. McVey) ................................................................. Cambridge, Mass.
Lizzie Beulah Leaf, B. A. (Latin) .............................................. Townsend
Arbie Eugene Leech, B. A. (Economics) ...................................... Dupuyer
Olive Helen Lovett, B. A. (Latin) .............................................. Ismay
David Lamar Maclay, B. A. (Mathematics) .................................. Lolo
Marjorie Estelle Mason, B. A. (Modern Languages) .................... Plains
Daisy Margery Penman, (Mrs. John Logan), B. A. (Latin) ............ Columbus
Martha Edith Rolfe, B. A. (Modern Languages) ........................ Missoula
Robert Satterthwaite, B. A. (Literature) .................................. Falls City, Wash.
Frederick Thayer Stoddard, B. S. (Geology) .............................. Missoula
William James Tait, B. S. (Engineering) .................................... Anaconda
Helen Margaret Whitaker (Mrs. Charles Donnally), B. A. (Modern Languages) .............................................................. Washington, D. C.

1911

Florence Hale Averill, B. A. (Literature) ................................... Townsend
William Andrew Bennett, B. A. (Economics) .............................. Belgrade
Arthur Fowler Bishop, B. S. (Forestry) ..................................... Helena
Conrad Henry Bowman, B. A. (History and Economics) ............. Corvallis
Florence E. Catlin, B. A. (Literature) ....................................... Sylvan, Washington
Eva M. Coffee, B. S. (Biology) .................................................. Missoula
Oliver Raymond Dinsmore, B. S. (Engineering) ........................ Missoula
Isma Caroline Eldell (Mrs. H. H. Slaughter), B. A. (Literature) .... Missoula
Mary Elrod, B. S. (Biology) ....................................................... West Point, N. Y.
Hugh Temple Forbis, B. S. (Geology) ........................................ Missoula
Frank Elliott Gleason, B. S. (Engineering) ................................ Schenectady, N. Y.
Jessie Hanon, (Mrs. Emil Saxl) B. A. (Latin and Greek) .......... Lewistown
Mary Hansen, B. S. (Biology) .................................................... Y. W. C. A., Great Falls
Charles Henry Hoffman, B. S. (Engineering) ............................ Great Falls

Ethel Grace Hughes, B. A. (Modern Languages) ........................ Missoula
Abbie Catherine Lucy, B. A. (Modern Languages) ...................... Missoula
Charles Stuart McCowan, B. A. (Economics and History) .......... Great Falls
Massey Sanderson McCullough, B. S. (Geology)..........................Missoula
Mildred Alene McGregor, B. A. (Literature)..........................Hinsdale
Gladys Ann McLean, B. A. (History and Economics).............Anaconda
Harry David Maclay, B. S. (Engineering)...............................Missoula
Mary Lucile Marshall, B. A. (Modern Languages).................Madison, Wis.
Stephen James Reardon, B. S. (Engineering).........................Wilkinsburg, Pa.
Lucia Ione Rolfe, B. A. (Latin and Greek).............................Ronan
Marjorie Ross, B. A. (Modern Languages)..............................Missoula
Ralph Wallace Smith, B. S. (Engineering)............................St. Ignatius
Harvey George Spencer, B. S. (Chemistry)...........................Missoula
Mary Edith Steele, (Mrs. D. B. McGregor), B. A. (Biology)....Frenchtown
Lillian Williams (Mrs. Chas. Kelley), B. A. (Literature)......Deer Lodge

1912
Leo Walter Baker, B. S. (Engineering).................................Great Falls
Daniel Marion Conner, B. S. (Engineering)...........................Missoula
Florence DeRyke, B. A. (Literature)                         Kokomo, Indiana
Clarence Jenks Forbis, B. S. (Biology).........................Minneapolis, Minn.
Ernest W. Fredell, B. S. (Engineering).................................Anaconda
Nina Pearl Gough, B. A. (Modern Languages)......................Potomac
Ernest E. Hubert, B. S. (Forestry)......................................Missoula
Birdie Florence Hunter, B. A. (Mathematics)......................Columbus
Bessie Irwin, B. S. (Botany)..............................................Lolo
Sarah Maude Johnson, B. A. (History and Economics).........St. Ignatius
Florence Leech, B. A. (Modern Languages).........................Valier
Holmes Maclay, B. S. (Geology)............................................Missoula
Maud Brooks McCullough, B. A. (Modern Languages).............Missoula
Milton Mason, B. S. (Engineering).........................................Missoula
Arthur William O'Rourke, B. S. (Economics)......................Helena
Grace Evelyn Rankin, B. A. (Mrs. Tom. Kinney), (History and Economics) Thompson Falls
David Dudley Richards, B. S. (Geology)...............................Missoula
Annabelle Robertson, B. A. (Latin and Greek)....................Hamilton
William Emmett Ryan, B. S. (Geology)...............................Valier
Azelia Agnes Savage, B. A. (Modern Languages)..................Ronan
Shirley Belle Shunk, B. A. (History and Economics)............Missoula
Florence Sleeman, B. A. (History and Economics).................Stevensville
Fred E. Thieme, B. S. (Engineering).....................................Missoula
Beulah Van Engelen (Mrs. Douglas P. Lucas), B. A. (Literature) Chicago, Ill.
DeWitt Cregier Warren, B. A. (History and Economics)........Missoula
Helen Wear, B. A. (Latin and Greek).................................Missoula
Carolina Pack Wharton, B. S. (Biology)..............................Butte
Gertrude A. Whipple, B. A. (Modern Languages)..................Townsend
Edward Alexander Winstanley, B. S. (Geology)....................Los Angeles, Cal.
Herman Thomas Allison, B. A., (Mathematics)..............................Laurel
Carl Ernest Cameron, B. A., ............................................................................Missoula
Cecil Frank Dobson, B. S., (in Engineering).............................................Schenectady, N. Y.
Gladys Julia Freeze, B. A., (History).............................................................DeBorgia
Mabel Alma Garlington, B. A., (Modern Languages)................................Missoula
Gladys Lole Heyward, B. A., (Literature)......................................................Hamilton
Gladys Marguerite Huffman, B. A., (Modern Languages).........Butte
Alvin Bailey Hoblit, LL.B...........................................................................Missoula
Anne Elizabeth Hutchinson (Mrs. A. R. Sanders), B. S. (Physics)..............Red Lodge
Mildred Franklyn Ingalls, B. A., (Modern Languages)..............................Cyr
Cecil Inice Kramer, B. A., (Mathematics).....................................................Valier
Rose Leopold, B. A., (Modern Languages)....................................................Hysham
Gladine Lewis, B. A., (English)..................................................................Dixon
Gertrude Cornelia McFarlane, B. A., (Modern Languages)......................Winifred, Alberta, Canada
Florence May Mathews (Mrs. O. E. Hanssen), B. A., (Literature).............Missoula
Alice Seabury Mathewson, B. A., (Mathematics).......................................Anaconda
Helen Frances Metcalf, B. A., (History).......................................................Stevensville
Mrs. Glen Oneal, B. A...............................................................................Wisdom
Mary Patience Shull, B. S., (Botany)..............................................................Dixon
P. M. Silloway, M. S.....................................................................................Lincoln, Ill.
Royal Daniel Sloan, B. S., (in Engineering).................................................Schenectady, N. Y.
Louise Elizabeth Smith, B. A., (Modern Languages).................................Willmette, Ill.
Suzanne Stabern, B. A., (Mathematics).........................................................Helena
Oscar James Thompson, LL.B.................................................................Fairmont, N. D.
Roscoe Ward Wells, B. A., (Economics).......................................................Missoula

PHARMACY ALUMNI

Allen, Edgar Warren, '10, Red Lodge Drug Co., Proprietor............................
Burfiend, Henry C., '12, Proprietor City Drug Store.....................................Dillon
Conrad, Blanche, '10, Gallatin Drug Co........................................................Bozeman
Converse, Earl W, '13, Fuller Drug Co.......................................................Anaconda
Cox, Harvey H., '10, Gallatin Drug Co........................................................Bozeman
Crosby, Spencer J., G. W. Sparrow Pharmacy.............................................Anaconda
Drinville, James, '10, Igel Drug Co..............................................................Coffee Creek
Mitchell, Paul L, '09 Foster Drug Co..............................................................Miles City
McCarthy, Ray, '11 (Mrs. E. H. Williams) Williams Pharmacy,.................Radersburg
Morris, Abbie F., '11.................................................................................Virginia City
Solberg, Harold, '13 Nelson Drug Co............................................................Wilsal
Stieb, Clyde W., '13, A. C. Roecher Pharmacy...........................................Bozeman
Young, Earl, '10, Igel Drug Co..................................................................Stanford
HONORARY DEGREES CONFERRED

1901
Thomas H. Carter, LL.D. ... ... (Deceased, Sept. 17, 1911)
United States Senator.

1902
Joseph K. Toole, LL.D. ... ... ... Helena
Ex-Governor of Montana.

1904
Hiram Knowles, LL.D. ... ... ... (Deceased, April 7, 1911)
United States Judge.

1909
Howard Taylor Ricketts, LL.D. ... ... (Deceased, May 3, 1910)
Professor, University of Chicago.
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RESEARCH BULLETINS.

NOTE—The University of Montana Publications are offered in exchange for the publications of learned societies and institutions, libraries and universities.

All matter sent in exchange and all orders, or requests for information concerning the Bulletins should be addressed to The Library, University of Montana, Missoula, Montana, U. S. A.

The following scientific publications have been issued:

PSYCHOLOGY.—Studies in Psychology.


BIOLOGY.—Morton J. Elrod, editor.

No. 1. The Summer Birds of Flathead Lake, by P. M. Silloway. Pages 83, plates 16, 1901.
No. 3. A Biological Reconnaissance in the Vicinity of Flathead Lake, by M. J. Elrod. Pages 182, plates 26, 1902.
No. 5. Lectures at Flathead Lake. Pages 97, plates 6, 1903.
No. 6. Additional Notes to Summer Birds of Flathead Lake with Special Reference to Swan Lake, by P. M. Silloway. Pages 19, plates 7, 1903.
No. 7. Lichens and Mosses of Montana, by Wilson P. Harris and Caroline W. Harris. Pages 22, plates 7, 1904.
No. 11. A List of the Fishes of Montana with Notes on the Game Fish, by James A. Henshall. Pages 12, plates 1, 1906.
No. 15. Montana Botany Notes by Marcus E. Jones. Pages 75, plates 6, 1910.

N. B.—Numbers 2, 4, 8, 9, 12, 13, of Biological Bulletins were brief annual announcements of the Biological Station.

GEOLOGY.—Jesse Perry Rowe, editor.

The Neocene Lake-Beds of Western Montana, and Descriptions of some New Vertebrates from the Loup Fork, by Earl Douglass. Pages 27, plates 4, 1900.