1-1-1911

1911-1912 Course Catalog

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REGISTER, 1911-12

Entered August 24, 1901, at Missoula, Montana, as second class matter, under act of Congress, July 16, 1894.
The publications of the University are issued in a general series of Bulletins, which include the register, reports of the president, monographs of scientific and literary character by the different departments of the University, and miscellaneous circulars on special courses, summer school sessions, biological station work, interscholastic meet, high school debating league, and other announcements of a general character.

Registers, reports and circulars are sent gratuitously to anyone wishing them. Address requests to the President's Office, University of Montana, Missoula, Montana.

For information regarding scientific and literary bulletins, see the inner page of the back cover of this Register.
THE SEVENTEENTH REGISTER

OF THE

University of Montana

MISSOULA, MONTANA

1911-12

With Certain Announcements for

1912-13
UNIVERSITY CALENDAR
1912-13

FIRST SEMESTER

Registration day, Tuesday, September 10.
Instruction begins, 8:30 a. m., Wednesday, September 11.
Columbus day, a holiday, Saturday, October 12.
Thanksgiving recess, 12:30 p. m., Wednesday, November 27, to 8:30 a. m., Monday, December 2.
Christmas holidays, 4:00 p. m., Friday, December 20, to 8:30 a. m., Monday, January 6.
First semester ends, 4:00 p. m., Friday, January 31.

SECOND SEMESTER

Entrance examinations, Monday, February 3.
Registration day, Tuesday, February 4.
Instruction begins, 8:30 a. m., Wednesday, February 5.
Buckley oratorical contest, Wednesday, February 5.
Lincoln's birthday, a holiday, Wednesday, February 12.
Charter day, Monday, February 17.
Washington's birthday, a holiday, Saturday, February 22.
Easter recess, 4:00 p. m., Thursday, March 20, to 8:30 a. m., Tuesday, March 25.
Final debate, High School League, 8:00 p. m., Tuesday, May 6.
Interscholastic meet, Wednesday, Thursday, Friday, May 7, 8, 9.
Arbor day, a holiday, Tuesday, May 13.
Instruction ends, 4:00 p. m., Thursday, May 29.
Memorial day, a holiday, Friday, May 30.
Baccalaureate day, Sunday, June 1.
Annual music recital, 8:30 p. m., Monday, June 2.
Annual address before literary societies, 8:00 p. m., Tuesday, June 3.
Class day exercises, 10:30 a. m., Wednesday, June 4.
Alumni annual dinner, 7:00 p. m., Wednesday, June 4.
Commencement exercises, 10:30 a. m., Thursday, June 5.
University luncheon, 1:00 p. m., Thursday, June 5.
President's reception, 8:30 p. m., Thursday, June 5.
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MONTANA STATE BOARD OF EDUCATION

EX-OFFICIO

GOVERNOR EDWIN L. NORRIS, President.
ALBERT J. GALEN, Attorney General.
W. E. HARMON, Supt. Pub. Instruction, Secretary.

APPOINTED

S. D. LARGENT ............................................ Term Expires February 8, 1912
W. S. HARTMAN ............................................ " " " 12, 1912
H. G. PICKETT ............................................ " " " 10, 1913
G. T. PAUL ............................................. " " " 10, 1913
N. R. LEONARD ........................................... " " " 1, 1914
C. H. HALL ............................................. " " " 7, 1914
O. W. McCONNELL ..................................... " " " 1, 1915
W. H. NYE ................................................ " " " 1, 1915

G. A. KETCHAM ............................................ Clerk of the Board

EXECUTIVE BOARD OF THE UNIVERSITY

C. A. DUNIWAY ........................................... Chairman (ex-officio)
J. H. T. RYMAN, Treasurer ................................ Term Expires April 19, 1913
A. L. DUNCAN ........................................... " " " 19, 1915
J. B. SPEER ............................................. Secretary
THE FACULTY

CYLDE AUGUSTUS DUNIWAY, Ph. D. . . Maurice Avenue

President.

A. B., Cornell University, 1892; A. M., Harvard University, 1894; Ph. D., Harvard University, 1897; Instructor in History, Harvard University and Radcliffe College, 1896-97; Assistant Professor of History, Leland Stanford, Jr., University, 1897-99; Associate Professor of History, Stanford University, 1899-1908; Associate Professor of History, University of California, Summer School, 1900; Student in Leipzig, Berlin, and Paris, 1901-02; Professor of History, Stanford University, 1908; President, University of Montana, since September 1, 1908.

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

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. . 309 South Fifth St. West

Professor of Modern Languages.

Attended Public Schools, Barcelona, Spain; Graduate, Gymnasium, Frankfurt on the Main, Germany; M. E., Purdue University, 1893; A. C., same, 1894; Secretary of the Faculty, University of Montana, 1895-1909; Professor of Modern Languages, 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, 1888; Ph. D., Illinois Wesleyan University, 1905; 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.

FRANCES CORBIN, B. L. . . . 110 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, 1883-1900; Professor of Literature, University of Montana, since 1900.
WILLIAM D. HARKINS, Ph. D. ..................................................'521 E. Pine St.

Professor of Chemistry.

A. B., Stanford University, 1900; Ph. D., 1907; Graduate Student, University of Chicago, 1901 and 1904; Graduate Student, Stanford University, 1905-06; Assistant in Chemistry, Stanford University, 1893-1900; Instructor in Analytical Chemistry, Stanford University, 1900; Instructor in Chemistry and Physics, University of Montana, 1900-01; Institut fur Physikalische Chemie u. Elektrochemie, Karlsruhe, i. B., 1909; Research Associate, Research Laboratory of Physical Chemistry, Massachusetts Institute of Technology, 1910; Expert Chemist, U. S. Department of Justice, 1910-11; Professor of Chemistry, University of Montana, since 1901.

JESSE PERRY ROWE, Ph. D. .................................................319 University Avenue

Professor of Geology.

B. S., University of Nebraska, 1897; M. A., 1903; Ph. D., 1906; Student, University of Oregon, 1893; 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.

WILLIAM FREDERICK BOOK, Ph. D. ........................................402 Eddy St.

Professor of Psychology and Education.

A. B., Indiana University, 1900; Ph. D., Clark University, 1906; Graduate Student, Chicago University, 1901; Fellow in Psychology, Clark University, 1903-06; Principal, High School, Princeton, Indiana, 1900-03; Lecturer in Psychology, Summer Quarter, Indiana University, 1907; Special Lecturer, Educational Psychology, Indiana University, Summer Quarter, 1910; Lecturer in Psychology, Columbia University Summer School, 1911 and 1912; Professor of Psychology and Education, University of Montana, since 1906.

JOSEPH HARDING UNDERWOOD, Ph. D., LL.D. ..........................516 Woodford St.

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.
LOUIS CLARK PLANT, M. S. 404 Eddy St.

Professor of Mathematics.

Ph. B., University of Michigan, 1897; Graduate Student, University of Chicago, 1897-98, and Summers, 1899, 1900, 1902, 1905, 1906, 1907, 1911; M. S., University of Chicago, 1904; Assistant in Mathematics, Bradley Polytechnic Institute, 1898-1900; Associate, ibid., 1900-04; Instructor, ibid., 1904-07; Associate Professor of Mathematics, University of Montana, 1907-08, and Professor of Mathematics, since 1908.

ARTHUR WILLIAM RICHTER, M. M. E. 305 University Avenue

Professor of Engineering, in charge of School of Engineering.

B. M. E., University of Wisconsin, 1889; M. E., University of Wisconsin, 1891; M. M. E., Cornell University, 1899; Instructor in Engineering, 1892-93; Assistant Professor of Steam Engineering, 1893-96; Assistant Professor of Experimental Engineering, 1896-1902, Professor of Experimental Engineering, University of Wisconsin, 1902-09; Consulting practice, also Consulting Engineer, Wisconsin State Board of Control, 1908-09; Professor of Engineering, University of Montana, since September 1, 1909.

JOSEPH EDWARD KIRKWOOD, Ph. D. 520 Ford St.

Professor of Botany and Forestry.

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, since September 1, 1909.

GEORGE FULLMER REYNOLDS, Ph. D., 539 University Avenue

Professor of English and Rhetoric.

Ph. B., Lawrence University, 1898; Ph. D., University of Chicago, 1905; Teacher of English, Weyauwega, Wis., High School 1898-99; Teacher of English, Chicago Manual Training School, 1900-01; Fellow in English, University of Chicago, 1901-02; Head of English Department, Shattuck School, Faribault, Minn., 1902-09; Assistant Professor of English and Rhetoric, University of Montana, 1909-10; Professor of English and Rhetoric, since September 1, 1910.
GUSTAV L. FISCHER  . . . . 503 S. Fourth St. West

Professor of Music.

Musical Student in Hamburg, Weimar, Buckeburg, and Frankfurt; Member of Theodore Thomas Orchestra, St. Louis Choral Symphony Society and World's Fair Symphony Orchestra; Professor of Music, University of Montana, since September 1, 1910.

JOHN BERTRAND CLAYBERG, LL.B.  . . . . . Helena

Honorary Dean of Law School, Professor of Mining and Irrigation Law and Montana Code Practice.

LL.B., University of Michigan, 1875; Attorney General of Montana, 1889; 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, since September 1, 1911.

HENRY WINTHROP BALLANTINE, A. B., LL.B.  404 Connell Avenue

Professor of Law, Acting Dean of the Law School.

A. B., Harvard College, 1900; LL.B., Harvard Law School, 1904; Lecturer in Law, University of California, 1905-09; Assistant Professor of Law, Hastings College of the Law, 1905-09; Practicing Attorney in San Francisco, 1904-11; Professor of Law, and Acting Dean of Law School, University of Montana, since September 1, 1911.

ROBERT NEAL THOMPSON, B. S.  . . 17 Rozale Apartments

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, 1909; Instructor in Physics, University of Montana, 1909-10; Assistant Professor of Physics, since September 1, 1910.

WILLIAM R. PLEW, M. S. . . . . . 809 Hilda Avenue

Assistant Professor of Engineering.

B. S., Rose Polytechnic Institute, 1907; M. S., 1910; Instructor in Civil Engineering, Rose Polytechnic, 1907-10; Assistant to City Engineer, City of Terre Haute, Ind., 1907-09; Engineer Paris Bridge Co., Paris, Ill., 1909; Instructor in Civil Engineering, University of Montana, 1910-11; Assistant Professor of Engineering, since September 1, 1911.
A. N. WHITLOCK, A. M., LL.B. .............................. 539 University Avenue

Assistant Professor of Law.

A. B., University of Kentucky, 1906; A. M., ibid., 1908; Principal Caldwell High School, Richmond, Ky., 1906; Assistant Professor in English and Assistant in Academy, University of Kentucky, 1906-08; LL.B., Harvard Law School, 1911; Member of Kentucky Bar since 1909; Assistant Professor of Law, University of Montana, since September 1, 1911.

PHILIP S. BIEGLER, B. S., E. E. ....................................... 930 Poplar St.

Assistant Professor of Engineering.

B. S. E. E., University of Wisconsin, 1905; with Chicago Edison Company, 1899-1906; Instructor in Electrical Engineering, University of Iowa, 1906-08; Assistant Professor, 1908-09; Assistant to Electrical Engineer, Washington Water Power Company, 1909-10; Assistant Professor Electrical Engineering, Purdue University, 1910-11; Assistant Professor of Engineering, University of Montana, since September 1, 1911.

ELOISE KNOWLES, Ph. M. ........................................ South Second St. West

Instructor in 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, 1898-1910; Instructor in Fine Arts, since September 1, 1910.

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.
JAMES BERYL SPEER, B. A. . . . 539 University Avenue
Registrar and President's Secretary.
B. A., University of Montana, 1908; President's Secretary, 1908-09; Acting Registrar and President's Secretary, 1909-10; Secretary of the Faculty, since September 1, 1909; Registrar and President's Secretary, since September 1, 1910.

EUGENE F. A. CAREY, B. S. . . . . 522 Rollins St.
Instructor in Mathematics.
B. S., University of California, 1905; Graduate Student, University of California, 1905-09; Assistant in Physics, 1905-07; Instructor in Matriculation Physics, Summer Session, 1907, and Assistant in Mathematics, 1907-09; Instructor in Mathematics, University of Montana, since September 1, 1909.

MABEL ROCKWELL SMITH, M. A. . . 300 University Avenue
Instructor in Public Speaking and Physical Culture.
B. A., Western College, 1901, and M. A., 1907; Student, Columbia School of Oratory, 1901-02 and Northwestern University, 1902-03, 1907-08; Instructor in Public Speaking and Literature, Campbell College, Kansas, 1903-05; Teacher of Public Speaking and Literature, High School, Toledo, Iowa, 1905-07; Instructor in Elocution and Physical Culture, Dakota Wesleyan University, 1908-09; Instructor in Public Speaking and Physical Culture, University of Montana, since September 1, 1909.

ROBERT H. CARY, Ph. B. . . . . 317 University Avenue
Physical Director.
Student, University of Montana, 1904-06; Ph. B., Yale, 1909; Physical Director, University of Montana, since September 1, 1910.

JOHN HOWARD STOUTEMYER, Ph. D. . . . . 310 S. Fifth St. East
Instructor in Education.
A. B., Kalamazoo College, 1905; A. B., University of Chicago, 1906; Ph. D., Clark University, 1910; Graduate Student, University of Chicago, 1905-07; Fellow in Psychology, Clark University, 1908-10; Instructor in History and Education, University of Montana, 1910-11; Instructor in Education, since September 1, 1911.

JOHN WARREN HILL, M. A. . . . . 620 Woodford St.
Instructor in Chemistry.
B. A., University of New Brunswick, 1905; M. A., Yale, 1909; Graduate Student, University of New Brunswick, 1906-07; Graduate Student, Yale, 1908-10; Demonstrator in Chemistry, University of New Brunswick, 1904-05; Principal McAdam Superior School, 1905-06; Principal Gibson School, 1906-08; In-
Instructor in Chemistry, Rutherford Institute, New Haven, 1908-09; Assistant in Chemistry, Yale University, 1909-10; Instructor in Chemistry, University of Montana, since September 1, 1910.

PAUL CHRISLER PHILLIPS, Ph. D. . . . 523 S. Second St. West

Instructor in History.

A. B., Indiana University, 1906; A. M., 1909, Ph. D., University of Illinois, 1911; Assistant in History, Indiana University, 1907-08; Fellow in History, University of Illinois, and student in government archives, Washington, London, and Paris, 1908-10; Assistant in American History, University of Illinois, 1910-11; Instructor in History, University of Montana, since September 1, 1911.

GEORGE MERIT PALMER, A. M. . . . 523 Woodford St.
Instructor in English.

Graduate Illinois State Normal University, 1899; A. B., University of Illinois, 1907; A. M., University of Illinois, 1908; Graduate work, University of Illinois in History, English and Education, 1908-11; Superintendent of Schools, Averyville, Illinois, 1897-98, 1899-1901; Teacher of English, Philippine Islands, 1901-04; Superintendent of Schools, Milaca, Minnesota, 1904-07; Instructor in English, Academy, University of Illinois, 1907-09; Instructor in English in Academy and Supervisor of Practice Teaching in English in School of Education, University of Illinois, 1909-11; Instructor in English, University of Montana, since September 1, 1911.

GEORGE H. CUNNINGHAM, B. S., M. E. . . . 410 Eddy St.

Instructor in Mechanical Engineering.

B. S., Virginia Polytechnic Institute, 1906; M. E., Cornell University, 1908; Instructor in Graphics, Virginia Polytechnic Institute, 1906-07; Engineering Department of Tennessee Coal, Iron and Railroad Co., 1908-09; Engineering Department Virginia Bridge and Iron Co., 1909-10; Assistant Superintendent Power and Mechanical Department Consolidation Coal Co., 1911; Instructor in Mechanical Engineering, University of Montana, since September 1, 1911.

GUSTAve ADOLPH GROSS . . . . 512 S. Sixth St. West

Instructor in Engineering Shops.

Lake Mills (Wis.) High School, 1900; Assistant Foreman, Fargo Creamery Supply Co., 1904-08; Mechanician, College of Engineering, University of Wisconsin, 1908-11; Instructor in Engineering Shops, University of Montana, since September 1, 1911.

MARGERY WINNIFRED FEIGHNER, B. A. . . . 315 East Front St.

Cataloguer in the Library.

B. A., University of Montana, 1908; Student, Library School, Simmons College, 1908-09; Assistant in the Library, University of Montana, since September 1, 1909.
INSTRUCTORS IN OBSERVATION AND PRACTICE TEACHING.

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<td>NELLE BOWMAN, A. B. (Park College)</td>
<td>History</td>
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<tr>
<td>JOSEPH DICKINSON, B. S. (Nebraska)</td>
<td>Physics</td>
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<tr>
<td>MARGARET JAMES, A. B. (Beloit)</td>
<td>Latin</td>
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<tr>
<td>ELVA JAMESON, B. S. (Beloit)</td>
<td>Botany</td>
</tr>
<tr>
<td>ABBIE WOODIN, A. B., A. M., (Kansas)</td>
<td>English</td>
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SPECIAL LECTURERS IN FORESTRY.

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<tr>
<td>C. H. ADAMS, E. M.</td>
<td>Assistant District Forester in Charge of Grazing, District No. 1.</td>
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<td>F. E. BONNER</td>
<td>Draftsman, District No. 1</td>
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<tr>
<td>J. T. JARDINE</td>
<td>Inspector of Grazing, United States Department of Agriculture.</td>
</tr>
<tr>
<td>JOHN D. JONES</td>
<td>Forest Examiner</td>
</tr>
<tr>
<td>CHARLES W. JUNGBERG</td>
<td>State Forester of Montana</td>
</tr>
<tr>
<td>D. T. MASON, M. F., M. S.</td>
<td>Supervisor Deer Lodge National Forest</td>
</tr>
<tr>
<td>J. F. PRESTON</td>
<td>Assistant District Forester</td>
</tr>
<tr>
<td>R. H. RUTLEDGE</td>
<td>Assistant District Forester</td>
</tr>
<tr>
<td>DORR SKELLS</td>
<td>Supervisor Kootenai National Forest</td>
</tr>
</tbody>
</table>

STUDENT ASSISTANTS.

<table>
<thead>
<tr>
<th>Name</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>BURTON RALPH COLE, A. B.</td>
<td>Assistant in German</td>
</tr>
<tr>
<td>MARY HANSEN, B. S.</td>
<td>Assistant in Psychology and Education</td>
</tr>
<tr>
<td>BIRDIE FLORENCE HUNTER</td>
<td>Assistant in Mathematics</td>
</tr>
<tr>
<td>DAVID DUDLEY RICHARDS</td>
<td>Assistant in Geology Laboratory</td>
</tr>
<tr>
<td>OWEN DUGUID SPEER</td>
<td>Assistant in Physics Laboratory</td>
</tr>
<tr>
<td>JAMES CLAYTON HAINES</td>
<td>Assistant in Physical Culture</td>
</tr>
<tr>
<td>R. JUSTIN MILLER, A. B.</td>
<td>Assistant in Law Library</td>
</tr>
<tr>
<td>MADGE ELIDE BEATTY, BESSIE IRWIN</td>
<td>Assistants in Library</td>
</tr>
<tr>
<td>D. BARRINGTON CONRAD, ORIN D. CUNNINGHAM</td>
<td>Storekeepers in Chemistry Laboratory</td>
</tr>
<tr>
<td>FLORENE DE' RYKE</td>
<td>Assistant in English</td>
</tr>
<tr>
<td>ERNEST EVERETT HUBERT</td>
<td>Assistant in Biology and Botany Laboratories</td>
</tr>
<tr>
<td>GLADYS MARGUERITE HUFFMAN, EDITH LUCILE MERRIFIELD</td>
<td>Assistants in Gymnasium</td>
</tr>
</tbody>
</table>
SHIRLIE BELLE SHUNK ........................................ Assistant in Fine Arts
ANNA DAVIS, MARY HANSEN, LARUE SMITH, BRUCE M.
THOMSON .................................................. Assistants in Office

EMPLOYES

RICHARD KESSLER ........................................ Engineer
THEODOR KESSLER ........................................ Assistant Engineer
MAX KRAMICH .............................................. Watchman

LUCILE BREWER ........................................ Matron of Woman's Hall
ERMA DAVIS ................................................ Stenographer and Bookkeeper

STANDING COMMITTEES OF THE FACULTY, 1911-1912

The President is ex-officio a member of all committees.

Admission and Registration:
ABER, Book, Corbin, Rowe, Richter, Speer.

Athletics:
CARY, Harkins, Plew, Rowe, Whitlock.

Attendance:
PLANT, Stewart, Speer.

Employment for Students:
PLANT, Cary, Elrod, Knowles, Scheuch.

Extension Lectures and Correspondence:

Graduate Work:
HARKIN, Book, Elrod, Reynolds, Underwood.

Interscholastic Meet:

Lecture Course:
ELROD, Buckhous, Rowe, Smith, Thompson.

Public Accountancy:
UNDERWOOD, Ballantine, Speer.

Public Exercises:
REYNOLDS, Aber, Corbin, Fischer, Smith, Underwood.

Recommendations:
BOOK, Corbin, Harkins, Richter, Speer.

Schedule and Examinations:
Scheuch, Aber, Biegler, Carey, Palmer.

Scholarship:
PLANT, Ballantine, Richter, Reynolds, Stewart, Speer.

State Fair Exhibit:
ABER, Elrod, Kirkwood, Knowles, Richter.

Student Affairs:
ROWE, Cunningham, Harkins, Reynolds, Stewart.
GENERAL INFORMATION

HISTORICAL SKETCH

The University of Montana had its origin in a grant of seventy-two sections of land made by the federal government to the state of Montana for University purposes. It was provided that the land should be used to form an endowment that could never be diminished, and the income from which would form a fund to be applied to the maintenance of the University.

The legislative act providing for the organization of the University bears date of February 17, 1893. In accordance with the provisions of the state constitution this act placed the University under the control of the State Board of Education. The act also gave general directions concerning the organization of the different departments of the University, the courses of instruction, duties of the president, fees, etc.

At the December meeting, 1894, the University Committee of the State Board of Education reported in favor of opening the University in September, 1895. In order to facilitate the opening of the University the citizens of Missoula donated the use of their South Side public school building to the state until permanent buildings could be constructed. About $3,500, raised by special tax, was spent in improving this building and in putting it in proper order for the use of the state.

A local executive committee was appointed to assist the board in their work. This committee, consisting of J. H. T. Ryman, Judge Hiram Knowles and Col. T. C. Marshall, all of Missoula, served without any change in its membership until April 19, 1909, when the newly created Executive Board began its functions.

The University was formally opened with appropriate ceremonies on Wednesday, September 11, 1895.

Arbor Day, 1896, is a memorable day in the history of the University, for on this day the grounds, donated to the state by Mr. E. L. Bonner and Mr. F. G. Higgins, and fenced by the Missoula Board of Trade, were dedicated to University purposes.

The Legislative Assembly of 1897 gave the University authority to issue bonds to the amount of $100,000, bearing not more than 6 per cent interest, due in thirty years and payable in twenty. These bonds, secured by the income from the University lands, were sold at a premium, a building commission was appointed, and the work of providing buildings was undertaken.
Two buildings were then constructed, one known as University Hall, containing the library, museum, assembly room, class rooms, and president’s office; the other, known as Science Hall, containing the necessary rooms for science and work in engineering as well as the steam plant for heating the buildings and furnishing power for the engineering laboratory. These buildings were completed and formally presented to the State Board of Education, February 18, 1899.

The Legislative Assembly of 1901 authorized the issuing of $70,000 additional in 5 per cent bonds, due in thirty years and payable in twenty. It was also provided that $40,000 of these bonds should be issued at once and the remainder at the discretion of the State Board of Education. With the proceeds of this bond issue a Woman’s Hall (now named Craig Hall in honor of the late President O. J. Craig) and a Gymnasium were erected and equipped.

Before the remaining $30,000 were sold the Attorney General of Montana gave an opinion, which was sustained later by the Supreme Court of Montana and also by the Supreme Court of the United States, that the income from the lands could not be applied to payment of interest and principal of building bonds, but must be devoted to the maintenance of the University. In accordance with this decision the General Assembly of 1907 passed an act looking to the assumption of this bonded debt by the state, and for the purpose of placing intact the permanent endowment funds of educational institutions. By favorable action of the voters at the general election in 1908, the legislative act was ratified, with the result that the endowment of the University is to be preserved unimpaired.

The General Assembly of 1909 provided for the creation of separate “Interest and Income Funds,” of each of the State’s educational institutions, to be derived from the interest on permanent funds and the leasing of lands. The law directs that these funds are to be used in the payment of claims for the maintenance of the several institutions.

The General Assembly of 1907 granted to the University an appropriation of $50,000 for a Library building and $10,000 for enlargement of heating plant and other improvements. These appropriations were expended under the direction of John M. Evans, J. H. T. Ryman and Dr. O. J. Craig, Building Commissioners, and the building was formally presented to the State Board of Education on February 19, 1909.

A special appropriation of $7,500, made by the General Assembly of 1909, for the purpose, provided for the furnishing of the Library building.
The Twelfth Legislative Assembly appropriated $50,000 for the construction of an Engineering Building; $40,000 for the purchase of additional campus grounds; $5,000 for a building for the Biological Station on Flathead Lake. These sums were to be available during the biennium ending February 28, 1913. The appropriations for the Engineering Building and for additional land have been suspended by the State Board of Examiners. The Biological Station is to be constructed during the summer of 1912.

LEGISLATIVE ENACTMENTS

The most significant portions of the laws of Montana in force with respect to the University are as follows:

"666. (1540.) University of Montana Established.—The University of Montana is established and located at Missoula, and has for its object, instruction and education in all the departments of science, literature, art, industrial and professional pursuits." (Revised Codes, 1907).

"Section 1. The state board of education, as now created by law, shall have power and it shall be its duty:

1. To have the general control and supervision of the University of Montana.

11. To have, when not otherwise provided by law, control of all books, records, buildings, grounds and other property of the institutions and colleges named in this section.

12. To choose and appoint a president and faculty for each of the various state institutions named herein, and to fix their compensation;

13. To confer upon the executive board of each of said institutions such authority relative to the immediate control and management, other than financial, and the selection of the faculty, teachers and employees as may be deemed expedient, and may confer upon the president and faculty such authority relative to the immediate control and management, other than financial, and the selection of teachers and employees as may by said board be deemed for the best interests of said institution.

"Section 2. There shall be an executive board, consisting of three members, for each of said institutions, two of whom shall be appointed by the governor, by and with the advice and consent of the state board of education, and the president of such institution shall be ex-officio a member of said board and shall be chairman thereof. At least two of said members shall reside in the county where such institution is located. Said executive board shall have such immediate direction and control, other than financial, of the affairs of such institution as may be conferred upon such board by the state board of education, subject, always, to the supervision and control of said state board.

"Said executive boards shall also have and exercise power and authority in contracting current expenses and in auditing, paying and reporting bills for salaries, or other expenses incurred in connection with such institution, provided, the Board of Examiners may not limit the power of the Executive Board in making expenditures or contracts which in no single instances or for any single purpose does not exceed
Two Hundred and Fifty Dollars. All vacancies occurring in the membership of any of said executive boards shall be filled by appointment by the governor, which appointments shall be referred to the state board of education at its first meeting thereafter for confirmation.

"Section X. The ex-officio member of each of said executive boards shall hold his office during his continuance as president of such institution, and the two members appointed by the governor shall hold office for the term of four years from and after the third Monday in April, 1909, unless sooner removed by the governor or by the state board of education; provided, that of the members of the executive board first appointed under the provisions of this act, one shall be appointed for the term of two years and one for the term of four years. Such members shall qualify by taking and filing their oath of office with the state board of education.

"Section XIII. The state board of examiners of the state of Montana shall have supervision and control of all expenditures of all moneys appropriated or received for the use of said colleges from any and all sources, and said state board of examiners shall let all contracts, approve all bonds for any and all buildings or improvements, and shall audit all claims, but said state board of examiners shall have authority to confer upon the executive boards of such institutions such power and authority in contracting current expenses and in auditing, paying and reporting bills for salaries or other expenses incurred in connection with said institution as may be deemed by said state board of examiners to be to the best interests of said institutions." [Session Laws, 1909, Ch. 73.]

"671. . . . . . No sectarian or partisan test shall ever be allowed or exercised in the appointment of professors, instructors, officers or employees of the University, or in the admission of students thereto, or for any purpose whatever. No instruction, either sectarian or religious or partisan in politics, shall ever be allowed in any department in the university.

"676. . . . . . The university shall be open to students of both sexes, under such regulations and restrictions as the state board of education may deem proper.

"677. . . . . . Tuition shall ever be free to all students who shall have been residents of the state for one year next preceding their admission, except in the law and medical departments, and for extra studies. The state board of education may prescribe rates for tuition for any student in the law or medical departments, or who shall not have been a resident aforesaid, and for teaching such studies.

"679. . . . . . For the support and endowment of the university there is annually and perpetually appropriated:

1. The university fund income and all other sums of money appropriated by law to the university fund income.

2. All tuition and matriculation fees.

3. All such contributions as may be derived from public or private bounty." [Revised Codes, 1907.]

**POWERS OF THE EXECUTIVE BOARD**

The following regulations, passed by the State Board of Education on June 8, 1909, define the functions and powers of the Executive Board:
"The Executive Board of all State Educational Institutions shall have immediate direction and control of the affairs of such institutions, subject only to the general supervision and control of the State Board of Education, and, as to financial matters, of the State Board of Examiners.

"It is authorized to choose and appoint professors, teachers, instructors, assistants and other employees, for such institutions, who shall serve as such for such time, and receive such compensation as the said Executive Board may prescribe, subject to the approval of the State Board of Education.

"It shall keep such books or cause the same to be kept by its Secretary and Treasurer, or other officer which it shall prescribe, as may be necessary to keep full, true and complete accounts of the moneys received and expended by it in the management of said institution, and shall make the reports prescribed by Chapter 73, Laws of 1909, and shall furnish the estimates to the State Board of Education and the State Board of Examiners provided by Chapter 120, Laws of 1909."

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 to 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 one hundred and twelve 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 Department of Engineering. Eight 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. On each floor are closets and bathrooms. 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 by 58 feet in its ground dimensions, the main floor being 114 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, is a commodious grandstand and extensive bleachers.

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

An Infirmary Cottage specially 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 Puget Sound 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-years’ 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 old 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 or 4 units of Mathematics; 2 units of History; 2 units of Science.

Students planning to enter the Department of Engineering should include Physics and four years of Mathematics in their preparation.

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. Similar blanks 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 1912-13 these days are September 9 and February 3.

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; relation between roots of an equation and the coefficients; binomial theorem; complex numbers; 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 years' 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. Myers or West or equivalent.

The second unit should embrace the history of mediaeval and modern Europe. Myers or West or equivalent.

Third unit may be in English history. Andrews or equivalent.

The fourth should embrace American history, Channing or equivalent; and civil government. Fiske or equivalent.
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. Composition exercises should be given throughout the work.

GERMAN.—Grammar, Joyne's-Meissner, Whitney's or their equivalents. 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 equivalents. 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 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 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 years' 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 may be admitted without the usual entrance units as special students, not candidates for degrees, 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 in 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."

By subsequent action the president of the University was appointed Inspector of High Schools, and the State Superintendent of Public Instruction was designated as Associate Inspector. In June, 1910, the president of the University was 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.

Also, the committee recommended to the Board that "the work of the eight grades, when arranged, shall be the standard for entrance to the high schools." This recommendation, which was adopted by the Board, became of effect in 1899, when the State Common School Course of Study was published and placed in the hands of school boards, teachers and superintendents.

In June, 1899, the State Board of Education instructed the Diploma Committee to revise the course of study for accredited high schools. At the December meeting the committee asked for further time, which was granted. At the regular meeting of the Board in June, 1900, the Diploma Committee reported a three years' course of study, 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 years' course of study. The recommendation was adopted and a committee was appointed to prepare a four years' 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 years' 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 years' 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
(1911-1912)

<table>
<thead>
<tr>
<th>City</th>
<th>Principal</th>
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<td>Anaconda</td>
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<td>W. H. McCall</td>
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<td>Spencer D. Kelley</td>
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<td>Beaverhead—Dillon</td>
<td>L. R. Foote</td>
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<td>Broadwater—Townsend</td>
<td>John M. Kay</td>
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<td>Carbon—Red Lodge</td>
<td>A. C. Carlson</td>
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<td>Custer—Miles City</td>
<td>J. A. Burger</td>
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<td>Dawson—Glendive</td>
<td>Ralph L. Hunt</td>
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<td>Fergus—Lewistown</td>
<td>H. L. Sackett</td>
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<td>Flathead—Kalispell</td>
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<td>Gallatin—Bozeman</td>
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<td>Granite—Philipsburg</td>
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<td>Jefferson—Boulder</td>
<td>H. E. Harry</td>
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<td>Missoula—Missoula</td>
<td>F. A. Stejer</td>
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<td>Park—Livingston</td>
<td>Lewis Terwilliger</td>
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<td>Powell—Deer Lodge</td>
<td>A. M. Clark</td>
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<td>Sweet Grass—Big Timber</td>
<td>C. V. Brown</td>
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<td>Teton—Choteau</td>
<td>B. E. Toan</td>
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Private Schools

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<tr>
<th>School</th>
<th>Principal</th>
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<tr>
<td>Central High School—Butte</td>
<td>Rev. M. McCormack</td>
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<tr>
<td>Sacred Heart Academy—Missoula</td>
<td>Sister M. Vincent</td>
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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" systems 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 for 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 classroom.

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

Students in the professional schools must complete the work required in those schools, but calculated upon a basis of not less than a total of 122 credit hours.

**REQUIRED AND ELECTIVE WORK**

*Required of all:*
- 2 Courses in English Composition ....................... 4 to 6 hours
- 4 Courses in Physical Culture (2 exercises per week for 2 years) 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

*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 students' 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.

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 161/2 but not more than 181/2 hours credit in the succeeding semester.

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 151/2 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 161/2 credit hours and who are failing during a semester to do at least passing work in any course shall have their registration reduced to 161/2 credit hours or less.

5. The enforcement of these regulations and the consideration of petitions shall be left to the Committee on Admission and Registration.

The Faculty also adopted, on January 19, 1912, the following regulations concerning attendance upon classes:

1. Absences shall be reported daily to the Committee on Attendance and records kept.

2. Each instructor shall determine whether or not work can be made up. Such work not made up shall count as zero.

3. (a) A student who has been absent from any course may appear before the Committee on Attendance and explain his absence. (b) Unexplained absences from any course amounting to the recitation hours of the course per week shall cause the student to be summoned before the Committee; unexcused absences to this amount in any course shall debar the student from the class until reinstated by the Committee with the consent of the instructor; unexcused and excused absences amounting to three times the recitation hours per
week shall fail the student in any course, except that in exceptional cases this clause may be waived if such action is approved by the instructor, the Committee on Scholarship, and the Committee on Admission and Registration. (c) Unexcused absences from any required course to the number of the recitation hours per week, shall exclude a student from all his work in the University until reinstated by the Committee. (d) A leave of absence shall not cause the student to appear before the Committee, but it does not relieve the student from the necessity of properly satisfying the requirements of the instructor nor from the operation of the last clause of section (b) above.

BACCALAUREATE DEGREES

Upon the successful completion of undergraduate courses the University confers degrees of Bachelor of Arts, or Bachelor of Science, or Bachelor of Science in Engineering.

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.

DEGREE OF BACHELOR OF SCIENCE IN ENGINEERING

The requirements for the degree of B. S. in Engineering include at least one hundred and twenty credits, in addition to those prescribed in Physical Culture. The three courses of study for Civil Engineering, Mechanical Engineering, and Electrical Engineering, respectively, are given in full under the School of Engineering, pages 88-90.

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:
1. The candidate for either of these degrees must be a graduate of the University of Montana or of some other university or college approved by the committee on graduate work.

2. At least one year of work in residence will be required. By special permission, however, a limited amount of the work may be done in absentia. If any student during his candidacy for a master's degree should engage in teaching or in other remunerative employment he may be required to devote to his work more than the normal time.

3. The candidate may pursue one major and two minors, one major and one minor, or may devote the entire time to the major. At least one-half of the candidate's work should be in the major study.

4. The head of the department in which the major study is selected shall be the adviser of the candidate; and shall assist the candidate in the selection of the minor studies. All courses of study must be approved by the committee.

5. The candidate within two weeks after registration will be required to fill out a blank form, provided for the purpose, stating the course of study to be taken. The topic for the thesis must be reported to the president's office, not later than eight weeks after the date of registration.

6. The thesis written by the candidate must show marked attainment in some branch of learning; and must be submitted, not later than May 1, to a special examining committee appointed by the president, consisting of three members; the head of the department in which the major work is done, and two other members of the faculty. The candidate must pass an examination, either written or oral, or both, conducted by the same special examining committee.

7. The candidate, before receiving the degree, must give evidence of having a reading knowledge of some modern language besides English, preferably German or French.

**ADVANCED ENGINEERING DEGREES**

For those wishing to devote more time to preparation for professional work graduate courses may be given by the School of Engineering leading to the degrees of Mechanical, or Electrical, or Civil Engineer.

**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 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 Certificate of Qualification to Teach, as a legal license to teach in high schools.

Students wishing to receive the Certificate of Qualification to Teach should note the following regulations, passed by the faculty and approved by the State Board of Education:

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. **General Professional Knowledge.**—He must have taken not less than fifteen hours in education distributed among the following subjects:
   - A. History of General and Secondary Education.
   - B. Principles of Education, including the study of educational aims, values and processes, and principles of general method.
   - C. Educational Psychology, with special emphasis on adolescence.
   - D. School Hygiene.
   - E. The High School, its evolution, organization, management and problems.

4. **Special Professional Knowledge:**
   - A. The candidate must have made a detailed and special study of the subject or subjects which he expects to teach, and have done at least 20 semester hours work in the special subjects in which he is commissioned to teach.
   - B. Have taken a course in Special Methods in the secondary school subjects which he expects to teach (one or two hours.)
   - C. Have completed five semester hours in observation and practice teaching under the direction of the head of the Department of Education and guidance of a critic teacher of the subjects to be taught.

All general questions relating to each student's professional work will be 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.

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

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 high 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 (September 10, 1912, and February 4, 1913), a special Registration fee of $2.00 is required. This special fee is increased to $4.00 when registration is delayed more than one week after the official registration days.

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, as far as possible, to live in Craig Hall. This building is well furnished, lighted, and heated, for its special purpose, and will comfortably house
about sixty students. The University itself has the entire manage-
ment of the Hall, making a combined charge of $25.00 per
month for room and board. An extra charge of $2.00 per month
must be paid by a single occupant of a room. 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 pri-
ivate families. By combining in club houses, either as frater-
nities 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 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 be-
ginning.

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,
janitors, gardeners, and in other capacities. Others find em-
ployment 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 dur-
ing 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 par-
ticular offers unusual opportunities for those who are studying
that subject. Engineering students are in demand for survey-
ing, etc., with railroad and construction companies.
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. Regular students are expected to complete a minimum of eight hours credit in a given semester in order to register in a succeeding semester.

The Faculty voted upon April 19, 1911, that hereafter to be eligible to participate in any intercollegiate contests a student must be satisfactorily carrying work equivalent to twelve credit hours, and must have passed (in the case of those previously enrolled in the University, or other collegiate institution) at the end of the last semester he attended in at least twelve credits.

It was also voted at the same time that students who are not doing satisfactory work will not be permitted to engage in student activities other than intercollegiate.

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.

SCHOLARSHIPS AND PRIZES

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 years' 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 Mr. Arthur W. O'Rourke, of Helena, Montana. It will be awarded again in 1912.
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.

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 1912 by Miss Florence De Ryke, 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 1912 it was won by Mr. Nat Little of Missoula.

BENNETT PRIZE ESSAY

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 1911-12 is "The Experience of Cities under the Commission Form of Government."
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 it is to be awarded to the best student in elementary Chemistry.

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.

PRESIDENT'S SCHOLARSHIP BOOKS

A fund established by 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 1911 these books were given as follows: Biology, Miss Gertrude Crane; Botany and Forestry, Mr. E. E. Hubert; Chemistry, Mr. Lansing Wells; Engineering, Mr. Charles Hoffman; English and Rhetoric, Miss Dorothy Bird; Fine Arts, Miss Dorothy J. Polleys; Geology, Mr. E. A. Winstanley; History and Economics, Miss Helene Boldt; Latin and Greek, Miss Constance Darrow; Literature, Miss Florence De Ryke; Mathematics, Miss Birdie Hunter; Modern Languages, Miss Gertrude Whipple; Philosophy and Education, Mr. Millard S. Bullerdick; Physics, Mr. R. D. Sloan.

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. More
detailed statements will be found upon the inner cover pages of this Register.

UNIVERSITY ASSEMBLY

Faculty and students of the University meet in regular Assemblies on the first and third Wednesdays of each month at 11:30 A. M. Attendance is required of all. Addresses, music, the consideration of matters of general interest, make up the program.

SOCIETIES

The whole body of students and the Faculty are 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.

Fraternities are represented by chapters of Sigma Nu, Sigma Chi, Kappa Kappa Gamma, Kappa Alpha Theta, Delta Gamma, and Iota Nu.

A Dramatic Club, a Science Association, a Chemical Club, and an Engineers' Club, perform functions indicated by their titles.

THE STATE ORATORICAL ASSOCIATION

This association was organized in 1900. The institutions represented are the Montana Wesleyan University, the Montana College of Agriculture and the Mechanical Arts, the Montana Normal College, College of Montana, and the University of Mon-
tana. The purpose of the association is to promote interest in oratory. Eleven annual contests have been held.

INTER-STATE ORATORICAL ASSOCIATION

The University is a member of the Inter-State Oratorical Association, composed of the Universities of Oregon, Washington and Montana. This year’s contest is held in Missoula.

DEBATING CONTESTS

By joint agreement with the State College of Washington debates between representative teams of two men each from each institution are held annually.

In 1912 the University of Montana was represented by Mr. R. J. Miller and Mr. H. F. Sewell.

PUBLICATIONS BY STUDENTS

A University Press Club with a joint stock membership 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. In 1912-13 the Kaimin passes into control of the A. S. U. M.

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 Physical Director 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 under track, within which are located the baseball diamond and the football field. To the south are the tennis courts.

The Faculty has established the following important regulations:

GENERAL CONTROL.—A Faculty Committee on Athletics with the Physical Director as Chairman, has general oversight and control of athletic sports. The management is in the control of the A. S. U. M.

ATHLETICS AND SCHOLARSHIP.—To be eligible to participate in intercollegiate contests, a student must be satisfactorily carrying work equivalent to twelve credit hours, and must have passed (in the case of those previously enrolled in the University or other collegiate institution) at the end of the last semester he attended in at least twelve credits.

AMATEUR COACHING.—The employment of professional coaches for all University teams is prohibited.
GENERAL REGULATIONS.—First—For all games scheduled with institutions in the membership of the Montana Intercollegiate Athletic Association the rules and by-laws of the association must be observed.

Second—Games with institutions not in the Montana Intercollegiate Athletic Association may be scheduled if the institutions concerned enforce rules substantially the same as those of the association.

Third—The University will not countenance athletic games of any sort on Sunday, nor games to be played on Memorial Day.

Fourth—No contracts relating to athletics and other events under the jurisdiction of the A. S. U. M. will be considered binding unless written by or countersigned by the Chairman of the respective committees of the A. S. U. M.

Fifth—The football season must close on or before Thanksgiving Day of each year.

Sixth—No engagement shall be made requiring more than three days consecutive absence, not counting holidays.

In administration of the rule concerning scholarship the Faculty Committee on Athletics has adopted the following rule:

The Committee shall include in the lists to be sent to other institutions two weeks before each game, the names of such men as are shown by the reports of instructors at the time to be carrying at least twelve hours with a reasonable prospect of maintaining a satisfactory standing. Evidence of satisfactorily carrying twelve hours of work is to be furnished by supplementary reports a week before the departure of the team for outside games, or a week before games on home grounds. After the supplementary reports are submitted and four days before the departure of teams, or before games on home grounds, the Committee shall strike from the list of eligible players those who are not at the time satisfactorily carrying twelve hours of work.

The following rules of eligibility of the Montana Intercollegiate Athletic Association are in force:

Sec. 1. No student shall participate in any collegiate contest unless he is a bona fide student satisfactorily carrying work equivalent to twelve credits in a regular or special course, as defined in the curriculum of his college. A credit is to be considered as one recitation hour or laboratory period of not less than two hours per week for the semester.

Sec. 2. No student who has been in attendance in Montana or elsewhere any part of a preceding semester shall be allowed to participate in any collegiate athletic contest unless he shall have passed at the end of the last semester he attended in at least twelve credits of work. Provided, this does not apply to students who are forced to leave school before the end of any semester through sickness, death in family, or other legitimate reasons, said reasons to be certified by the parent or guardian of such students and by the president of the college; and provided, also, such students have passed in required credits the semester preceding, and are up in their twelve credits at the time of leaving, the president to certify as to the student’s standing at the time of leaving.

Sec. 3. No student shall be eligible to represent any institution of this association in any form of athletics who has represented any institution or institutions of collegiate rank for an aggregate of four years unless one of these years he shall have been registered in the preparatory department, in which case he may participate five years.
Sec. 4. No student registering after the 15th of October shall be eligible to play in any intercollegiate contest before February 1st, of that collegiate year.

Sec. 5. No student registering later than fifteen days after the opening of the second semester shall take part in any inter-collegiate athletic contest held during the remainder of that college year.

Sec. 1. No person shall be allowed to compete in any athletic contest of this association who is not an amateur.

Sec. 2. An amateur is a person who has never competed for money or under a false name or has knowingly entered any competition participated in by any professional, or professionals, or has knowingly competed with any professional, or professionals, for any prize or token, or has at any time taught, pursued or assisted at athletic exercises for money or for any valuable consideration.

ANNUAL INTERSCHOLASTIC MEET

For nine 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.

The University pays railroad fares of five representatives from each school, and furnishes entertainment and medals for the contestants.

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 1912 is held May 8, 9, 10, and that for 1913 will be held in the corresponding week.

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 Inter-scholastic Meet. In 1912 it is held on May 7th. The several series of contests have been held for six years, beginning in 1907.

THE LIBRARY

The General Library, consisting of about 19,000 volumes and 8,000 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 laboratory and class room work being deposited in several departments.

The Library receives over 200 periodicals, the current numbers of which are available in the reading room, as are newspapers and college exchanges. Through the courtesy of the editors a large number of the daily 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 State 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

The Museum is located in the large and well-lighted basement of the Library building. Cases made of native woods display the collections to advantage.

A room in the basement of University Hall is used for the storing of collections not on display. Geological and biological material almost completely fills the available shelving. These valuable collections have been partly catalogued, and the larger space now available in the new quarters for the Museum will make possible more extensive exhibits.

The Museum material not stored in the room set apart for the collections is housed in the different departments. Indeed, much of it is indispensable to department work, and as a result much of the Museum is scattered.

Considering the time during which material has been gathered and the amount expended, the collections have made remarkable growth. The intention is to make the Museum a depository of material representing the natural, mineral and scientific wealth of the state.

COLLECTIONS

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 thousand duplicates, received largely through donations, by collecting and from the exhibit at Omaha; a collection of insects, partly through purchase, but largely by collecting; 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 MUSEUM**

There is being built up in connection with the Department of Education in University Hall, an Educational Museum, 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 educational 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.

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 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 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 at the beginning of each semester. These schedules are necessary in the arrangement of the student's program.

LATIN AND GREEK

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 to Latin, the rest of the required hours may be given to Latin or Greek.

Candidates for the Teacher's Certificate must have completed courses IA, IB, IIA, IIB, III, IV, and IX in Latin.

COURSES IN LATIN

Note.—Courses IA, IB, IIA and IIB 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.

IA. CICERO.—De Amicitia and De Senectute of Cicero.
First semester; 3 credit hours; M..W. F., 9:30.
IB. PROSE COMPOSITION.—
First semester; 2 credit hours; T. Th., 9:30.

IIA. LIVY.—Books XXI and XXII.
Second semester; 3 credit hours; M. W. F., 9:30.

IIB. PROSE COMPOSITION.—
Second semester; 2 credit hours; T. Th., 9:30.

III. CATULLUS, HORACE.—Selected Poems of Catullus and
Odes and Epodes of Horace.
First semester; 3 credit hours; M. W. F., 8:30.

IV. TACITUS.—The Agricola and Germania.
Second semester; 3 credit hours; M. W. F., 8:30.

V. HORACE, JUVENAL.—Selected Epistles of Horace and Satires
of Horace and Juvenal.
First semester; 3 credit hours; M. W. F., 10:30.

VI. PLAUTUS, TERENCE.—Selected Comedies of Plautus and
Terence.
Second semester; 3 credit hours; M. W. F., 10:30.

VII. LUCRETIUS.—Selections from De Natura Rerum.
First semester; 3 credit hours; M. W. F., 11:30.

VIII. PLINY, CICERO.—Selected Letters of Pliny and Cicero.
Second semester; 3 credit hours; M. W. F., 11:30.

IX. ROMAN LIFE.—A view of Roman life such as is presented
in “Life of the Greeks and Romans” by Guhl and Kohner, and John-
ston’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; 3 credit hours; M. W. F., 1:30.

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.

I. BEGINNING GREEK.—White’s First Greek Book.
First semester; 5 credit hours; M. T. W. Th. F., 10:30.

II. BEGINNING GREEK.—Completion of First Greek Book and
beginning Xenophon’s Anabasis.
Second semester; 5 credit hours; M. T. W. Th. F., 10:30.

III. XENOPHON, PROSE COMPOSITION.—Four books of Ana-
basis completed, with composition based on the text read.
First semester; 5 credit hours; time to be arranged.

IV. HOMER.—Selections from the Iliad and Odyssey.
Second semester; 5 credit hours; time to be arranged.

V. HERODOTUS, THUCYDIDES.—Selections from Herodotus and
Thucydides.
First semester; 3 credit hours; time to be arranged.
VI. PLATO.—Apology and Crito of Plato.
Second semester; 3 credit hours; time to be arranged.

VII. DRAMA.—A play each of Aeschylus and of Sophocles, and selections from Euripides and Aristophanes.
First semester; 3 credit hours; time to be arranged.

VIII. PINDAR, DEMOSTHENES.—Selected Odes of Pindar, Demosthenes on the Crown.
Second semester; 3 credit hours; time to be arranged.

IX. GREEK LIFE.—A course like that in Roman life described above, with Blumner's "Home Life of the Ancient Greeks," and Guhl and Kohner's "Life of the Greeks and Romans," as the principal work of reference.
First semester; 3 credit hours; M. W. F., 1:30.

ENGLISH AND RHETORIC

MAJOR REQUIREMENTS

Students who make this their major department are required to take courses I-IV and IX-XII. They should also elect at least two courses in French, four courses in German, and as many general courses in history, literature and science as possible. No student will be allowed to specialize in composition who does not show special ability in writing.

Candidates for the Teacher's Certificate in English should choose English and Literature as their major, and should take the following courses: In Literature at least twenty hours—including courses II, V, VI, VIII, X, XI, XII, XIII; in English at least twenty hours—including courses I, II, III, IV, IX, X, XI, XII; in Education fifteen hours. For their restricted electives they should take Public Speaking, at least two hours; French, ten hours; German, twenty hours; History (English), six hours; Science, eight hours. Special readings will be assigned during the Senior year in methods of teaching English.

COURSES OF INSTRUCTION

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 I and English A; those who pass the examination satisfactorily will be required to take only English I and II. 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 who fail to pass the preliminary examination in English or whose work in English I shows the necessity of this course.
First semester; no college credit; T. Th., 10:30.
B. CORRECT ENGLISH.—English A continued for those students whose work shows its necessity.
Second semester; no college credit; T. Th., 10:30.

I. and II. FRESHMAN ENGLISH.—Oral and written themes; outside readings; quotations. Required of all Freshmen. No credit for only English I, the course being continuous.
Both semesters; 2 credit hours; three recitations; three sections, with combined meeting of all sections, W., 11:30, and frequent individual conferences.

III and IV. ADVANCED COMPOSITION.—Advised for all students desiring more practice in writing than that afforded by English I and II. Special attention will be given in the first semester to the essay; in the second to the short story. Short themes daily; long themes every two or three weeks.
Both semesters; 2 credit hours; M. W. F., 8:30.

IVa. SHORT STORIES.—Typical short stories with a study of their technic.
Second semester; 2 credit hours; M. W., 8:30.

V. SHORT STORY WRITING.—Prerequisite, English IV., and the permission of the instructor.
First semester; 2 credit hours; time to be arranged.

VI. TRANSLATION.—Translations from foreign languages with special attention to the English version; lectures on the art of translation. Open only to advanced students in French, German or Latin.
Second semester; 2 credit hours; time to be arranged.

VII. DEBATE.—A study of the principles of debating with regular practice in the outlining and briefing of arguments, and in the actual work of team debating. Some experience in debating is required for admission.
First semester; 2 credit hours; T., 7:15 p. m.

VIII. DEBATE.—A course in practical debating, including the developing of briefs and set debates on political and governmental questions. Prerequisite: English VII or its equivalent.
Second semester; 2 credit hours; T., 7:15 p. m.

IX. CHAUCER.—Selections from the Canterbury Tales studied as an introduction to Middle English. This course alternates with course XI.
First semester; 3 credit hours; M. W. F., 9:30. Omitted in 1912-13.

X. ENGLISH VERSE.—Its principles, forms and technic, with frequent exercises in verse writing. This course alternates with course XII.
Second semester; 2 credit hours; T. Th., 11:30. Omitted in 1912-13.

XI. ENGLISH LANGUAGE.—History and grammatical problems, with papers on problems of present interest. This course alternates with course IX.
First semester; 3 credit hours; M. W. F., 9:30.

XII. ENGLISH PROSE.—A careful study of the vocabulary, style and structure of a few typical masterpieces. This course alternates with course X.
Second semester; 2 credit hours; T. Th., 11:30.
XIV.—TYPES OF DRAMA.—Typical dramas from Sophocles to Ibsen, studied as illustrative of the principles and development of the dramatic art.

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

XVI. THE BIBLE AS LITERATURE.
Second semester; 2 credit hours; T. Th., 11:30. Omitted in 1912-13.

XVIII. ENGLISH.—THE ROMANTIC MOVEMENT. A lecture and reading course. The origin of Romanticism, with a study of the works of the early Romanticists, such as the Wartons, Young, Walpole, Thomson, Blake, Chatterton, Beckford, MacPherson, McCleod, etc., and a special study of certain types of the Romanticists, such as Newman in philosophy, Rousseau in politics and government, etc. A study of Burke as a type of the true Classicist as opposed to Rousseau, and a brief glance at the rise of Romanticism in Germany and France, with work upon such representatives as Madame de Stael and the Schlegels.

Second semester; 2 credit hours; M. F., 11:30.

LITERATURE

MAJOR REQUIREMENTS

Students whose major is Literature are required to take thirty hours, and are permitted to take forty hours in the department. They are also expected to take four courses in French or German, two courses in History, and one course in English.

Candidates for the Teacher’s Certificate in Literature should choose English and Literature as their major, and should take the following courses: In Literature at least twenty hours, including courses II, V, VI, VIII, X, XI, XII, XIII; in English at least twenty hours, including courses I, II, III, IV, IX, X, XI, XII; in Education, fifteen hours. In their restricted electives they should take Public Speaking, at least two hours; French, ten hours; German, twenty hours; History (English), six hours; Science, eight hours. Special readings will be assigned during the Senior year in methods of teaching Literature.

COURSES OF INSTRUCTION

Note.—Freshmen may take courses I and XIV. Course VI must be preceded by course V. Courses VI, X, XI and XII are for advanced students. Two courses in English, other than English I and II, may be accepted as literature.

I. INTRODUCTORY COURSE.—Elementary work in the essay, poetry, drama and fiction. Open to all students.
First semester; 2 credit hours; T. Th., 1:30.

II. HISTORICAL OUTLINE.—History and development of English Literature in outline. Open to all students.
Second semester; 2 credit hours; M. W., 9:30.
III. THE ELIZABETHAN PERIOD.—Spencer, Marlowe and Bacon. Open to all students who have had English I and II. First semester; 2 credit hours; M. F., 11:30.

IV. LYRIC POETRY.—Lyric Poetry from the time of Wyatt and Surrey to that of Tennyson. Open to third and fourth-year students. Second semester; 2 credit hours; T. Th., 9:30.

V. SHAKESPEARE.—Introductory course, all of Shakespeare's plays being read. Open to second, third and fourth-year students. First semester; 3 credit hours; M. W. F., 10:30.

VI. SHAKESPEARE, ADVANCED.—A careful and detailed study of five of Shakespeare's plays; for 1912-13, "Antony and Cleopatra," "Hamlet," "The Tempest," "King Lear," "As You Like It." Open to students who have completed course V. Second semester; 3 credit hours; M., hours to be arranged.

VII. THE EIGHTEENTH CENTURY.—Lectures and written reports. Special attention is given to Pope, Goldsmith, Gray, and Addison. Open to second, third and fourth-year students. First semester; 2 credit hours; T. F., 11:30.

VIII. NINETEENTH CENTURY PROSE.—Carlyle, Ruskin, Eliot. Open to second, third and fourth-year students. Second semester; 3 credit hours; M. F., 11:30.

IX. THE NOVEL.—First semester; 3 credit hours; time to be arranged.

X. VICTORIAN POETS.—Wordsworth, Coleridge, Byron, Shelley and Keats are studied in representative selections. Open to advanced students. Second semester; 2 credit hours; T. Th., 8:30.

XI. VICTORIAN POETS.—Course X continued. First semester; 3 credit hours; M. W. F., 8:30.

XII. TENNYSON AND BROWNING.—The critical study of selections from Tennyson and Browning. Open to advanced students. Second semester; 3 credit hours; M. W. F., 8:30.

XIII. AMERICAN PROSE.—A survey of American literary history, and the discussion of notable works in prose. Open to students who have finished freshman English. First semester; 3 credit hours; M. W. F., 9:30.

XIV. AMERICAN POETRY.—Selections from the verse of American poets. Open to all students. Second semester; 2 credit hours; T. Th., 1:30.

XV. GRADUATE COURSE.—Selected topic for intensive study. First semester; credit and time to be arranged.

XVI. GRADUATE COURSE.—Selected topic for intensive study. Second semester; credit and time to be arranged.
PUBLIC SPEAKING

This department combines the study of the best literature with the art of interpretation and expression. It aims to give the student control of his own powers and to give him easy, natural and effective delivery. Through his work in vocal interpretation it is hoped that literature will become to him more real and beautiful.

I. ELEMENTS OF PRACTICAL ELOCUTION.—Voice building; enunciation; pronunciation; analysis and interpretation; reading of narrative and didactic styles.
   First semester; 2 credit hours; T. Th., 8:30.

II. ELEMENTS OF PRACTICAL ELOCUTION.—A continuation of course I. Analysis and interpretation of imaginative literature.
   Second semester; 2 credit hours; T. Th., 8:30.

III. ORATORY.—History of American Oratory; orations read and delivered; extemporaneous speaking.
   First semester; 2 credit hours; T. Th., 9:30.

IV. ORATORY.—A continuation of course III.
   Second semester; 2 credit hours; T. Th., 9:30.

V. ADVANCED INTERPRETATION.—Readings from standard plays; presentation of scenes from plays; expressive reading; recitals.
   First semester; 2 credit hours; T. Th., 10:30. Omitted in 1912-13.

VI. ADVANCED INTERPRETATION.—Expressive reading from Shakespeare, Browning, Tennyson, Longfellow, Aldrich, Kipling and others; presentation of scenes from plays; elements of criticism; recitals.

MODERN LANGUAGES

MAJOR REQUIREMENTS

A student electing Modern Languages as a major will be required to take two years at least of one modern language beyond the first year course; two years at least of one other modern language; one year of History, preferably the history of Europe; one course in history of German or French Literature.

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

COURSES IN GERMAN

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

I and II. ELEMENTARY.—Joyner-Messner’s or 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 Erzählungen, Der Zerbrochene Krug, Immensee.

Both semesters; 5 credit hours; M. T. W. Th. F., 8:30.

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

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

V and VI. ADVANCED.—Composition, conversation, sight reading; Max Mueller, Deutsche Liebe, Scheffel, Ekkhart, Goethe, Faust, etc. Students electing Chemistry, Geology or some other science as their major work will do outside reading upon articles which bear upon their special work.

Both semesters; 3 credit hours; M. W. F., 1:30.

COURSES IN FRENCH

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

I and II. ELEMENTARY.—Devoted to the study of Chardenal, Frazier and Squair, Aldrich and Foster's Grammar, or their equivalents. Readers: Trois Contes Modernes, Rollin's Reader, La Tulipe Noire, L'Abbe Constant in, etc.

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

III and IV. INTERMEDIATE.—Readers: Trois Mousquetaires, Quatre-vingt Treize, Pecher d'Islande, etc. Conversation and composition.

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

V and VI ADVANCED.—Duval's Histoire de la Literature Française, Les Miserables, Notre Dame de Paris, etc. Conversation and composition.

Both semesters; 3 credit hours; M. W. F., 2:30.

VII and VIII. SPECIAL.—Sight reading and conversation with outside reading.

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

IX and X. HISTORY OF FRENCH LITERATURE.—An advanced course. Prerequisite, three years of French.

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

COURSES IN SPANISH


Both semesters; 3 credit hours; M. W. F., 3:30. Omitted in 1912-13.

III and IV. INTERMEDIATE.—Dona Perfecta, Ford's Spanish Composition, Don Quixote, conversation.

Both semesters; 3 credit hours; time to be arranged. Omitted in 1912-18.
PHILOSOPHY AND EDUCATION

MAJOR REQUIREMENTS

For students who take their major work in Philosophy the required work consists of courses I and II, XIII (or XVII), XIV, III and IV, V and VI (or XV and XVI, or VII and VIII), and IX (or X). Students who desire to give their chief attention to Philosophy should elect courses XV and XVI and substitute courses in Philosophy for courses IX and X.

Students preparing for the profession of teaching or desiring to secure the University certificate of qualification to teach must take the course in Elementary Psychology in their second year.

COURSES IN PSYCHOLOGY

I and II. ELEMENTARY PSYCHOLOGY.—A general course, serving as an introduction to all special courses in Psychology and as a foundation course for work in Philosophy and Education. Lectures, experimental demonstrations and readings from standard text-books. Continuous course throughout the year. Prerequisite: One year of University work.

Both semesters; 3 credit hours; M. W. F., 9:30.

III and IV. LABORATORY COURSE IN EXPERIMENTAL PSYCHOLOGY.—Typical experiments in sensation, perception, attention, association, memory, movement, affective expression, imagery, fatigue, etc., selected and arranged to familiarize students with the methods, apparatus, and results of typical experiments. Continuous course throughout the year. Prerequisite: May be taken with or in sequence to courses I and II.

Both semesters; 2 credit hours; T. Th., 10:30—12:30.

V and VI. SYSTEMATIC PSYCHOLOGY.—A comparative study of two or more standard treatises and of current psychological literature. Prerequisite: Six hours of Psychology. Alternates with courses VII, VIII and IX, X.

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

VII and VIII. GENETIC PSYCHOLOGY.—A study of the origin and development of consciousness. In the first semester the development of intelligence in the animal series will be traced. In the second semester the course of mental development in the child from birth to adolescence will be taken up. Prerequisite: Psychology I and II.

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

IX. ABNORMAL PSYCHOLOGY.—A study of suggestion, hypnotism, duplex personality and the pathology of mind. Text-book, collateral reading and lectures, with clinics. Prerequisite: Six hours of Psychology.

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

X. SOCIAL AND APPLIED PSYCHOLOGY.—An introductory study of the psychic factors and forces behind material and social
progress. The application of Psychology to business, medicine and law. Selected readings from Baldwin, Tard and Ross. Lectures and reports. Prerequisite: Six hours of Psychology.

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

XI and XII. PSYCHOLOGICAL SEMINARY.—Study and discussion of a subject selected for study at the beginning of each semester. In 1910-11 the Psychology of Learning was taken up. Prerequisite: Philosophy I and II. Open to those whose major subject is Philosophy or Education.

Both semesters; 1 or 2 credit hours; F., 4:00.

COURSES IN PHILOSOPHY

XIII. LOGIC.—Recitations, lectures and exercises in logical analysis. Forms and expressions of arguments; the detection of fallacies; some discussion of scientific method. Text, Creighton’s “Introductory Logic.” Prerequisite: One year of university work.

First semester; 2 credit hours; T. Th., 8:30. Alternates with course XVIII.

XIV. ETHICS.—Lectures and assigned readings. Prerequisite: One year of university work.

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

XV and XVI. HISTORY OF PHILOSOPHY.—A rapid survey of the development of thought from the time of the earliest Greek philosophers to the present time. Rogers, “Student History of Philosophy,” serves as a general guide to the course. Prerequisite: Whenever possible, preceded by courses I and II, and XIII (or XIV or XVII.)

Both semesters; 3 credit hours; M. W. F., 8:30.

XVII. INTRODUCTION TO PHILOSOPHY.—An outline survey of the field of philosophy with a study of fundamental problems and tendencies. Texts, Hibben’s “Problems of Philosophy” and Paulsen’s “Introduction.” Prerequisite: One year of university work.

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

XVIII. THOUGHT MOVEMENTS OF THE NINETEENTH CENTURY.—A non-technical course taking up the origin and development of the literary and popular thought movements of the century. Intended for students of history and literature as much as for special students of philosophy. Prerequisite: One year of university work.

Second semester; 2 credit hours; T. Th., 8:30. Omitted 1912-13.

COURSES IN EDUCATION

The purpose of the courses in Education is three-fold: (1) to offer an opportunity for the study of education as a social force in the development of civilization, and to provide an opportunity for the study of such facts of school organization and administration as would enable the layman to intelligently discharge a citizen’s duty in matters pertaining to public education; (2) to provide adequate professional preparation for those
students desiring to prepare themselves for teaching; (3) to provide an opportunity for a scientific study of educational problems.

The courses outlined are intended primarily for junior, senior and graduate students, but may be elected by special students sufficiently mature and qualified to pursue the work with profit.

A University Certificate of Qualification to Teach, authorizing the holder to teach in the high schools of the state without examination, will be issued to those who meet the special academic and pedagogic requirements. (See statement of requirements (page 31) and suggestive schedule on page 57.) The general and special professional requirements for this certificate may be met by taking courses I, II, III, V, VI and VII in Education. Courses I, II and III should be taken in the junior year, V, VI and VII in the senior year.

Note.—The courses in Elementary Psychology or their equivalents are a necessary prerequisite to all work in education.

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

First semester; 3 credit hours; M. W. F., 8:30.

II. HISTORY OF EDUCATION.—This course gives a general survey of the evolution of educational ideals and the development of school systems in their relation to the history of civilization from the period of the earliest cultural nations to the present time, including the history of education in America.

Second semester; 5 credit hours; M. T. W. T. F., 8:30.

III. EDUCATIONAL PSYCHOLOGY.—The psychological facts and laws underlying learning and development will be considered. Special attention will be given to the psychology of adolescence and child development.

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

IV. HISTORY AND SCIENCE OF METHOD.—The work of this course will include (1) a historical survey of the arts of teaching and study; (2) a consideration of present day methods and principles of teaching. Chief attention will be given to the psychology of learning, instead of teaching the various school subjects.

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

V. 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; M. W. F., time to be arranged.

VI. OBSERVATION AND PRACTICE TEACHING.—Lectures on the organization and administration of the High School. Systematic observation of class-room 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 co-operation with the Missoula County High School. Prerequisite, 15 hours in Education.

Second semester; 5 credit hours; time to be arranged.

VII. SCHOOL HYGIENE.—The hygienic aspects of school architecture and equipment and the more important aspects of mental hygiene and the 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; time to be arranged.

VIII. 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; time to be arranged.

IX. NORMAL COURSE IN PLAY FOR TEACHERS AND PARENTS.—A course of lectures and assigned readings dealing with the following topics: The meaning and function of play, its educational value and significance for development and learning, etc. Modern theories of play, child nature and play, school and home games. The playground and the recreation movement, the organization and administration of public playgrounds, the place of organized play and games in the schools with special reference to the place of play in the German school curriculum.

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

Note.—A course will also be provided for those preparing to be professional directors of playgrounds, if there be a demand for such a course.

XIX and XX. PEDAGOGICAL SEMINAR.—Designed for special 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.

Both semesters; 1 or 2 credit hours; M., 4:00.
## Suggestive Schedule of Courses for Prospective Teachers

### First Year's Work

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<tr>
<th>First Semester, 15½ Hours</th>
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<td>Principles of Education</td>
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<td>Educational Psychology</td>
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<td>School Hygiene</td>
<td>Observation Work</td>
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HISTORY AND ECONOMICS

MAJOR REQUIREMENTS

Thirty hours of courses may be offered as a major. These hours may be offered in either History or Economics. Major work in one subject must be accompanied by minor work in the other. Students who make History or Economics a major should study Modern Languages. Students of Economics and Sociology are recommended to study Mathematics, Biology and Psychology.

Candidates for the Teacher’s Certificate in History are required to complete courses I-VI and VII-VIII or IX-X in History.

COURSES IN HISTORY

I. MEDIUMEVAL EUROPEAN HISTORY.—The history of continental Europe in the Middle Ages to the Thirty Years’ War. Special attention is given to the influence of Roman civilization, the Christian church, and the German people in the development of modern Europe, and to the Renaissance and Reformation as a period of transition.
  First semester; 3 credit hours; M. W. F., 1:30.

II. MODERN EUROPEAN HISTORY.—A study of the modern European state system. The ascendency of France, the rise of Prussia, the revolutionary and Napoleonic eras, the unification of Germany and Italy, and the progress of democracy and social reform in the nineteenth century.
  Second semester; 3 credit hours; M. W. F., 1:30.

III. HISTORY OF ENGLAND.—A course in the constitutional, political and institutional history of England to the close of the Tudor period. Feudalism, manor and gild, development of law, origin and growth of parliament; intellectual and social history; causes and results of the reformation movement.
  First semester; 3 credit hours; T. Th. S., 8:30.

IV. HISTORY OF MODERN ENGLAND.—Struggle of king and parliament in seventeenth century; constitutional, political, and religious questions of modern England; expansion of England; commercial and industrial development; democratic and social movements of nineteenth century.
  Second semester; 3 credit hours; T. Th. S., 8:30.

V. AMERICAN HISTORY.—The colonies and Revolution. Beginnings of American nation; European influence; development of American institutions; provincial America; French and English rivalry; colonial government; causes of Revolution; independence, the Confederation and Constitution.
  First semester; 3 credit hours; M. W. F., 8:30.

VI. AMERICAN HISTORY.—Organization of the government; rise of nationality; territorial expansion; growth of democracy; the slavery controversy; Civil War and Reconstruction; recent development.
  Second semester; 3 credit hours; M. W. F., 8:30.
VII. 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 or 3 credit hours; T. Th., 11:30.

VIII. 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 Reformation.
Second semester; 2 or 3 credit hours; T. Th., 11:30.

IX. REVOLUTIONARY 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; 2 or 3 credit hours; T. Th., 10:30.

X. 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; 2 or 3 credit hours; T. Th., 10:30.

COURSES IN ECONOMICS

I and II. 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 semesters; 3 credit hours; M. W. F., 8:30.

III. 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., 8:30.

IV. PUBLIC FINANCE.—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., 8:30.

V. 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.

VI. 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. Th., 9:30.
VII and VIII. 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.

IX and X. SOCIAL AND ECONOMIC PROBLEMS.—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 philanthropy. Prerequisite: one year in history and economics.

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

XI-XII. SEMINAR.—Studies in selected topics, and the discussion of student researches.

Both semesters; 2 credit hours; T. Th., 11:30.

LIBRARY SCIENCE

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.

COURSES OF INSTRUCTION

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 book sellers 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.

FINE ARTS

MAJOR REQUIREMENTS

For major work in this department students may take from thirty to thirty-four hours. Ten additional hours selected from the departments of Literature, History, Languages, Philosophy and Sociology are advised.

Candidates for the Teacher's Certificate must have completed acceptably courses I, III, IV, V, VI, XIII, XIV, XV, XVI and XVII.

COURSES IN HISTORY AND APPRECIATION

I. HISTORY OF ANCIENT ART.—This course gives a general survey of the architecture, sculpture and painting of the ancient world.
   First semester; 3 credit hours. Omitted in 1912-13.

II. HISTORY OF GREEK SCULPTURE.—A study of the development of Greek sculpture, the major consideration being the work of the fifth and fourth centuries.
   Second semester; 3 credit hours; time to be arranged.

III and IIIa. HISTORY OF RENAISSANCE PAINTING AND SCULPTURE.—A study and comparison of the Florentine, Venetian, Flemish and Dutch schools of painting.
   First and second semesters; 2 credit hours; time to be arranged.

IV. ARCHITECTURAL STYLES.—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.
   First semester; 3 credit hours; time to be arranged.

V. 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, observa-
tion, and practical application. This course will consist of two lectures and one laboratory period a week.
First semester; 3 credit hours; omitted in 1912-13.

VI. HISTORY OF MODERN PAINTING.—A consideration of the classic, romantic, realistic and idealistic tendencies of the art of painting in the present age. This includes a study of American painting.
Second semester; 3 credit hours. Omitted in 1912-13.

VII. EGYPTIAN ART.—A study of all forms of Egyptian art, based on the most recent discoveries.
First semester; 3 credit hours. Omitted in 1912-13.

VIII. GREEK VASE PAINTING.—A course in black figured and red figured pottery.
Second semester; 3 credit hours. Omitted in 1912-13.

IX. HISTORY OF FLORENTINE PAINTING.—An intensive study of the Florentine school with the view of developing critical and appreciative powers of observation.
First semester; 3 credit hours. Omitted in 1912-13.

X. HISTORY OF MEDIAEVAL, RENAISSANCE AND MODERN SCULPTURE.—A study of the development of the art of sculpture since ancient times, with special consideration of American sculpture.
Second semester; 3 credit hours. Omitted in 1912-13.

XI. HISTORY OF VENETIAN PAINTING.—A course similar to course IX.
First semester; 3 credit hours. Omitted in 1912-13.

XII. HISTORY OF DUTCH AND FLEMISH PAINTING.—A course similar to course IX.
Second semester; 3 credit hours. Omitted in 1912-13.

XIII. HOME DECORATION.—An introductory course in home decoration, in which aesthetic principles are applied to the construction and embellishment of the home. This course will consist of two lectures and one laboratory period a week.
First semester; 3 credit hours; time to be arranged.

COURSES IN DRAWING, PAINTING AND DESIGN

XIII. ELEMENTARY DRAWING AND PAINTING.—A course in free-hand drawing and painting intended for engineers and teachers.
First semester; 2 credit hours; time to be arranged.

XIV. TECHNICAL TRAINING IN REPRESENTATION.—Practical work in black and white and color.
Second semester; 2 credit hours; time to be arranged.

XV. PRACTICE IN DESIGN.—The essential principles of design. This course is desirable in connection with course XIX.
First semester; 2 credit hours; time to be arranged.

XVI. APPLIED DESIGN.—Applications in metal and leather.
Second semester; 2 credit hours; time to be arranged.

XVII. 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.
Prerequisites: Courses XIII, XIV, XV and XVI.
First semester; 2 credit hours; time to be arranged.
The Department of Music offers instruction in instrumental and vocal music.

Piano courses include major and minor scales in octaves, thirds, sixths, legato and staccato. Daily exercises by Clemence Schultz; etudes by Loeshorn, Heller, Bertini, Czerny Op. 299 and the Art of Finger Dexterity, Cramer Etudes (Buelow Ed.), Clementi, Gradus ad Parnassum, Moscheles Etudes, Mozart and Beethoven Sonatas and different classic and modern compositions.

Violin courses include Violin schools by Ries, Parts I and II; Sevcik, Op. 6 (Parts I-VII); Etudes by Gruenwald (50 Etudes); Kayser (Parts I, II, III); Mazas, (Parts I and II); Kreutzer, Fiorillo and Rode, Etudes; Sevcik, Op. 2, 3, 7, 8, 9; different classic and modern solos.

Chamber music recitals and concerts are given by the department at various times during the year. The students’ orchestra furnishes music for various college functions.

By resolution of the Faculty a total of eight credits toward graduation may be allowed for Music.

The University Orchestra, Glee Club and Sextette offer opportunities for careful instrumental and vocal training, and pupils sufficiently advanced in this department may join the Philharmonic Society. This Society, under the direction of Professor Fischer, gives concerts during the year in Assembly Hall.

**Fees.**

- Piano, one lesson a week . . . $20 per semester
- Violin, one lesson a week . . . $20 per semester

**PHYSICAL CULTURE**

The Department of Physical Culture has charge of all athletics of the University and directs the courses 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 stu-
dent is required to spend two hours a week during the semester to receive this credit. Gymnasium classes are given in the morning at hours most convenient to students. When men are engaged in competitive sports they may be excused from the gymnasium classes by applying to the Physical Director.

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

COURSES FOR MEN

I and II. 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; M. T. W. Th., 9:30 a. m.; M. T. Th. F., 11:30 a. m.

III and IV. Advanced work on the apparatus, club swinging, etc.
Both semesters; ½ credit hour; M. T. W. Th., 9:30; M. T. Th. F., 11:30.

COURSES FOR WOMEN

V and VI. 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; ½ credit hour; two sections, M. W., 1:30 and 2:30.

VII and VIII. 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; ½ credit hour; T. Th., 1:30.

MATHEMATICS

MAJOR REQUIREMENTS

The requirements for a major in Mathematics are thirty-six semester hours, as a minimum, selected as follows: Courses I to VI, inclusive, course XII and ten semester hours from the remaining courses. Choice of restrictive electives should include one year of Physics, two years of German and one year of French.

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

COURSES OF INSTRUCTION

Note.—Course Ib and courses II, III and IV present a continuous development of the subject matter which is generally given in distinct courses under the various names of algebra, analytic geometry, differential and integral calculus. The traditional division of mathematics
into distinct subjects is disregarded and the principles of each subject are introduced as needed and the subjects developed together.

A. SOLID GEOMETRY.—This course is offered to accommodate students entering without solid geometry, and who need mathematics for their work in the sciences or technical departments.
First semester; 2 credit hours; T. Th., 10:30.

I a. MATHEMATICS (Trigonometry.)—The work in Trigonometry covers 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; theory and use of logarithms; areas and solutions of right and oblique triangles.
First semester; 2 credit hours; T. Th.; section I, 8:30; section II, 9:30; also second semester, T. Th., 10:30.

I b. MATHEMATICS (Algebra, Elements of Analytic Geometry and Calculus.)—An elementary treatment of methods of elimination, including the principal theorems of determinants; graphical representation of functions with applications to statistical and scientific data; algebraic polynomials, including the geometry of the straight line and some of the more important theorems of the theory of equations; differentials of the polynomial in one variable, including problems on tangents, normals, maxima and minima and points of inflection.
First semester; 3 credit hours; M. W. F., section I, 8:30; section II, 9:30.

II a. ELEMENTARY ANALYSIS.—A brief course in the elements of analytic geometry and calculus. This course is designed for students desiring some training in mathematics, but not wishing to major in the subject. Prerequisite: Trigonometry.
Second semester; 3 credit hours; M. W. F., 10:30.

II b. MATHEMATICS (Plane Analytic Geometry, Elements of Calculus.)—This course is a continuation of course I. It covers the following subjects: Graphs of algebraic functions involving surds of fractions; the derivation of the equations of curves defined by geometric properties; intersection of curves; differentiation of algebraic functions with applications to geometrical and physical problems; change of co-ordinate axes; the analytic geometry of curves of the second degree; graphs and derivations of elementary transcendental functions with applications; polar co-ordinates; and curvature.
Second semester; 5 credit hours; M. T. W. Th. F.; section I, 8:30; section II, 9:30.

III. MATHEMATICS (Integral Calculus.)—This course covers the following subjects: Elementary formula of integration; definite integrals; integration a process of summation; Taylor's and Maclaurin's series; applications to areas and lengths of plane curves, volumes of solids; integration of simple differential equations.
First semester; 5 credit hours; M. T. W. Th. F., 10:30.

IV. MATHEMATICS (Solid Analytic Geometry, Calculus, Differential Equations.)—This course is a continuation of course III. It covers the following subjects: Elements of solid analytic geometry, partial differentiation, multiple integration, infinite series, indeterminate forms, and differential equations.
Second semester; 3 credit hours; M. W. F., 10:30.
V. ANALYTIC MECHANICS.—Rectilinear motion of a particle; curvilinear motion; motion of a rigid body; translation of a rigid body; work and energy; impulse and momentum. Prerequisite: Course III, and course I in Physics.
First semester; 3 credit hours; T. Th. S., 8:30.

VI. ANALYTIC MECHANICS.—Equivalence of force systems; center of gravity and centroids; attraction and stress; general principles of equilibrium.
Second semester; 3 credit hours; T. Th. S., 10:30.

VII. DIFFERENTIAL EQUATIONS.—Differential equations of the first order; linear differential equations; special forms of partial differential equations; and application to problems in geometry, mechanics and physics.
First semester; 3 credit hours; M. W. F., 10:30. Omitted in 1912-13.

VIII. SPHERICAL TRIGONOMETRY.—The development of the formulas of spherical trigonometry, the solution of spherical triangles, problems in spherical mensuration.
Second semester; 2 credit hours; time to be arranged.

IX. SOLID ANALYTIC GEOMETRY AND DETERMINANTS.—After developing the theory of determinants, use of the same is made in simplifying results in the solid analytic geometry. Prerequisite: Course III.
First semester; 3 credit hours; time to be arranged.

X. THEORY OF NUMBERS.—An introductory course covering the elementary properties of numbers, linear congruences, quadratic residues, and quadratic forms.
Second semester; 2 credit hours; T. Th., 10:30.

XI. THEORY OF EQUATIONS.—A continuation of the theory of equations given in courses I and II, including symmetric functions of roots, properties of derived functions, methods of elimination and transformation. Prerequisite: Course II.
First semester; 2 credit hours; T. Th., 10:30. Omitted in 1912-13.

XII. TEACHERS' COURSE.—A critical review of secondary Mathematics; discussion of current developments in methods of teaching and subject matter taught; comparative study of leading textbooks; correlation of mathematics with allied subjects; laboratory mathematics. Prerequisite: Course IV.
Second semester; 2 credit hours; T. Th., 2:30.

XIII. DESCRIPTIVE ASTRONOMY.—An introductory course, dealing with the fundamental facts, and principal theories of subject.
First semester; 3 credit hours; M. W. F., 1:30.

XIV. ASTRONOMY.—A short course for engineers. Determination of latitude, azimuth, and time with emphasis laid on those methods which the engineer will be able to use with the surveyor's transit.
Second semester; 2 credit hours; T. Th. 1:30.

XV. METHOD OF LEAST SQUARES AND THE PRECISION OF MEASUREMENTS.—A discussion of the nature and methods of elimination of errors, adjustment of observations, and empirical equations. Designed for students in engineering and physics. Prerequisite: Course III.
First semester; 2 credit hours. Omitted in 1912-13.
XVI. ADVANCED INTEGRAL CALCULUS.—Including definite integrals, elliptic integrals, introduction to Fourier's Series with application to geometry, mechanics and physics. Prerequisite: Course IV. Second semester; 3 credit hours; M. W. F., 10:30.

XVII. MODERN ANALYTIC GEOMETRY.—Trilinear co-ordinates, duality, harmonic and anharmonic properties, projective properties, theory of correspondence, etc. Prerequisite: Course III. First semester; 3 credit hours; M. W. F., 9:30.

XVIII. THEORY OF FUNCTIONS OF A COMPLEX VARIABLE.—An introductory course. Geometrical representation of complex quantities, conformal representation, etc. The methods of Cauchy and Riemann are followed. Second semester; 3 credit hours; M. W. F., 9:30.

XIX. SEMINAR.—Course XIX is open to those who have completed courses Ia, Ib, III, IV. Both semesters; credit and time to be arranged.

GRADUATE COURSES

Opportunity will be given graduate students in Mathematics and Engineering and others who are prepared for the work to select from the following courses: Fourier’s Series and Spherical Harmonics, Vector Analysis, Theory of Potential, Advanced Course in Functions of a Complex Variable, Elliptic Function, Differential Geometry.

BIOLOGY

MAJOR REQUIREMENTS

Those doing major work in Biology will be required to complete one year of Chemistry and two years of Modern Languages. The Biological subjects will include courses sufficient to make a total of at least thirty hours. Seniors in Biology will be required to attend a Seminar, credit for which to the amount of four hours will be given.

Candidates for the Teacher’s Certificate in this department must have completed acceptably courses I, II, III, IV.

COURSES OF INSTRUCTION

I. GENERAL BIOLOGY.—An introduction to the study of living things, illustrated by a few of the lower types of plants and invertebrate animals, and dealing with the fundamental laws governing living organisms. Open to all students. First semester; 4 credit hours; Lect., T. Th., 10:30; Lab., two afternoons, M. W., or T. Th.

II. GENERAL BIOLOGY.—Continuation of the preceding course, but dealing with the vertebrates. Open to all students. Second semester; 4 credit hours; Lect., T. Th., 10:30; Lab., two afternoons, M. W., or T. Th.
III. ANIMAL ECOLOGY.—This course deals with the distribution of animals, their adaptability and relationship to their surroundings, the effects of climate and soil upon animal life, centers of dispersal, and kindred topics. Prerequisite: Biology I and II.

First semester; 4 credit hours; Lect. and Rec., T. Th., 8:30; Lab., time to be arranged.

IV. PROTOZOOLOGY.—A study of the life history of Protozoans and their relation to diseases. May be taken with or without laboratory work. Prerequisite: Biology I and II.

Second semester; 2 or 4 credit hours; Lect. and Rec., T. Th., 8:30; Lab., time to be arranged.

V. BACTERIOLOGY.—A general course, dealing with the general phases of the subject, such as culture media, sterilization, methods of staining and mounting, beneficial and pathogenic bacteria. Lectures and recitation, with laboratory. Prerequisite: Familiarity with the microscope, and general chemistry.

First semester; 5 credit hours; Lect., T. Th., 9:30; Lab., time to be arranged.

VI. THE HUMAN BODY.—Advanced study for mature students, following the work as outlined in Martin's Human Body. Recitations, with or without laboratory.

Second semester; 3 to 5 credit hours; M. T. F., 11:30; Lab., time to be arranged.

VII. 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; Rec., M. F., 8:30; Lab., time to be arranged.

VIII. ENTOMOLOGY.—A continuation of course VII. 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 VII.

Second semester; 3 to 5 credit hours; Rec., M. F., 9:30; Lab., time to be arranged.

IX. PHOTOGRAPHY.—A study of lenses, cameras, paper, developers, 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 requisites for admission. No attempt is made at portraiture. The subject must be chosen for the year.

First semester; 2 credit hours; Lect., F., 8:30; Lab., F., 1:30.

X. PHOTOGRAPHY.—Continuation of IX, which is a prerequisite. Laboratory work with class demonstrations or lectures. Each student works alone at hours to be arranged.

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

XI. HISTOLOGY AND MICROSCOPICAL TECHNIQUE.—Practical work in the study of tissues, both animal and vegetable, together with practice in hardening, cutting, staining and mounting sections,
uses of stains and reagents, and general practice in various kinds of microscopical preparations. Laboratory work, with occasional lectures. First semester; 2 or 3 credit hours; time to be arranged.

XII. EMBRYOLOGY.—Lectures, library and laboratory, with special reference to the chick in the laboratory, working out the various stages of development. The work will involve the preparation of sections for the microscope, drawings, etc.
Second semester; 4 credit hours; time to be arranged.

XIII. ADVANCED BIOLOGY.—Under this heading additional study will be given to those students prepared for it.
First semester; 1 to 5 credit hours; time to be arranged.

XIV. ADVANCED BIOLOGY.—Continuation of XIII.
Second semester; 1 to 5 credit hours; time to be arranged.

XV. TEACHING BIOLOGY.—For students expecting to teach biology in any of its branches. The course will treat of lectures and recitations, the laboratory, the text-book, reference books, selection of apparatus.
First semester; 2 credit hours; time to be arranged.

XV and XVI. SEMINAR.—Studies in selected topics and the discussion of individual researches.
Both semesters; 2 credit hours; 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 work satisfactorily completed during the summer.

BOTANY AND FORESTRY

MAJOR REQUIREMENTS

Students doing their major work in Botany will be required to take Botany I to VI, inclusive, and Seminar work to the amount of four hours during the senior year. Also two years of German and French, and one year of Zoology.

Candidates for the Teacher’s Certificate in this department must have completed acceptably courses I, II, III, IV.

Students doing their major work in Forestry are referred to the schedule of courses elsewhere suggested for four years’ work. The courses required are Botany I, II and IV, Forestry III, IV, V and VI and Seminar; also, German I and II and Zoology I and II or III and IV.

COURSES IN BOTANY

I. GENERAL 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 II the continuous work of a year.

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

II. GENERAL BOTANY.—The second course takes up the seed plants from the same points of view as in course I. Typical members of various families and genera are studied, outlining the classification of the principal groups. Some time will be given to the subject of plant physiology. Field trips will constitute a part of the work.

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

III. 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 I and II, or Biology I and II, or equivalent.

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

IV. PLANT PHYSIOLOGY.—Lectures and laboratory work on the relations of plants to soil, air, light and other factors; the structures of plants as related to functions; their composition and nutrition; the origin and composition of food materials; growth, reproduction and breeding are subjects of discussion and experiment. Prerequisites: Botany I and II, or Biology I and II.

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

V. 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 I and II, or equivalent.

Both semesters; credit and time to be arranged.

VI. SYSTEMATIC BOTANY.—Critical studies of more or less restricted groups. This may include work upon the lower orders of plant life. Prerequisite: Botany V.

Both semesters; credit and time to be arranged.

VII. BOTANICAL SEMINAR.—Reviews of recent literature designed to give an outlook upon the field of botanical science and forestry.

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

VIII. BOTANICAL SEMINAR.—A continuation of course VII. 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 VII and VIII are open only to seniors, but are required of all students doing major work in the department.

IX. EVOLUTION.—Lectures, reading and discussions on the subject from the standpoint of plant life; the historical development of evolutionary conceptions; consideration of recent experimental work and its relation to plant breeding and horticulture.

First semester; 1 or 2 credit hours; time to be arranged.
X. 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 and time to be arranged.

COURSES IN FORESTRY

I. ECONOMICS OF FORESTRY.—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. Open without prerequisite.

First semester; 1 credit hour; time to be arranged.

II. FOREST PRODUCTS.—Lectures on the methods of utilizing forests in the production of commodities other than lumber, viz.: naval stores, tanning extract, paper, shingles, cooperage stock, fiber, gums, etc. Attention will also be given to the economic importance of the various products.

Second semester; 1 credit hour; time to be arranged.

III. DENDROLOGY.—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. Special attention is given to western species.

First semester; 4 credit hours; M. W., 10:30; Lab., T. Th., 1:30.

IV. SILVICULTURE.—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. Nursery work, planting and field work form a large part of the course.

Second semester; 4 credit hours; M. W., 10:30; Lab., T. Th., 1:30.

V. 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; 2 credit hours; time to be arranged.

VI. 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; 2 credit hours; time to be arranged.
COURSES RECOMMENDED FOR AN UNDERGRADUATE FORESTRY COURSE

The University now provides courses affording opportunity to students looking forward to Forestry as a profession. The special opportunities for the study of Forestry at the State University consist not only in the courses offered, but also in its location with reference to the operations of the United States Forest Service. The headquarters of District Number 1 are in the City of Missoula. Several of the National Forests are within easy reach of the University. Thus the practical operations of the Service are available for study the year round, and the valuable assistance of its expert officers has been freely given in lectures and other ways of practical value to the student of Forestry. The nature of the adjacent country also affords excellent opportunities for practical work, and many students find employment in timber surveys during the months of the summer vacation.

A thorough preparation for the profession of Forestry requires a liberal education in language, economics, mathematics and engineering, as well as in the sciences of geology, physics, chemistry, zoology and botany. The courses of study as at present outlined are designed to prepare students in the fundamental subjects of Forestry. One year of graduate work will be necessary for those desiring to become professional foresters. It is the aim of the University to provide such courses of instruction as will enable students to meet the requirements for advanced standing in professional schools of Forestry.

The University is also looking to the establishment of a course in Lumbering and Forest Management for training men to organize and conduct large operations in logging and milling and at the same time to give efficient management to extensive tracts of forest land. This requires technical training in silviculture, forest management, and in engineering. Students intending to specialize in lumbering should early consult the head of the department for direction in the planning of the course of study.

The following schedule of courses is recommended for an undergraduate course, subject to changes meeting individual needs or arising from conflicts of hours:
FIRST YEAR

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<tr>
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THIRD YEAR

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FOURTH YEAR

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<td>Forest Pathology VIII</td>
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SHORT COURSE IN FORESTRY

CHARACTER OF THE SHORT COURSE

In co-operation with the officials of the Forest Service, the University of Montana provides a short course in Forestry which is open to men in the Service, and to others who may wish to apply. This course covers about eleven weeks, beginning about the 1st of January and closing late in March. Part of the instruction is given by members of the University Faculty, and part 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 Short Course is open to all men nineteen years of age and upwards, who give evidence of their ability to carry on their studies successfully. 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 course deposit of $5.00 is required, to cover incidental expenses, but whatever is left, after satisfying these charges, will be refunded. A nominal matriculation fee of $2.00 is also required.

**STAFF OF INSTRUCTION IN THE SHORT FORESTRY COURSE 1912.**

*Note.—The instruction by Forest Service officials is given in connection with their regular duties in the Service.*

J. E. KIRKWOOD . . . Professor of Botany and Forestry
Dendrology and Silviculture.

L. C. PLANT . . . . . . Professor of Mathematics
Mathematics of Forestry

E. F. A. CAREY . . . . . Instructor in Mathematics
Trigonometry

ROBERT N. THOMPSON . . . Assistant Professor of Physics
Physics

J. W. HILL . . . . . . Instructor in Chemistry
Chemistry

J. P. ROWE . . . . . Professor of Geology
Geology and Mineralogy

W. R. PLEW . . . . . Assistant Professor of Engineering
Surveying

DORR SKEEELS . . . . Supervisor Kootenai National Forest
Lumbering.

D. T. MASON . . . . Supervisor Deer Lodge National Forest
Mensuration, Timber Sales, Planting.
SHORT COURSES OF INSTRUCTION

The short courses of instruction, as outlined below, are designed to occupy a student's time fully during two winter sessions. The student beginning the course is advised to elect the first year's schedule, as it stands, unless he has already acquired sufficient training in some or all of its subjects, in which case he may elect from the second year course, or from the list of electives, to the extent of twenty hours.

**First Year**

**DENDROLOGY.**—This course deals with the classification of trees, their habitat and geographical distribution. Study of the structural features of the parts upon which classification is based. Lantern slides and other material are used for illustration. The work involves the use of the manual, and practice in the identification of plants, the study of wood sections, etc. Text, Sargent's Manual of the Trees of North America.

**SILVICULTURE.**—The work in silviculture considers the relation of forests to factors of soil and climate, the influence of water, light, temperature, etc., on the growth, form and distribution of trees; migrations and reforestation; life histories; the application of the theoretical considerations in matters of forest management. Text, Graves' Principles of Handling Woodlands.

**SURVEYING, MAPPING AND DRAFTING. I.**—This course covers the theory and practice of compass and chain surveying, including practice in platting maps from data taken in the field, together with necessary computations for calculating areas, etc.

**MATHEMATICS. I.**—This course deals with such subjects and problems as are of practical use to the forester. While elementary in character and independent of previous training, the course aims to instruct in the mathematical operations of simple surveying.

**GEOLOGY AND MINERALOGY.**—The subjects of rocks and minerals are presented in lectures and laboratory work. They are studied with special reference to occurrence, identification and relations to forest problems.

**DESCRIPTION LUMBERING.**—This course deals with the methods of logging and milling adapted to forest conditions in the Northwest. Methods and cost of logging and milling in different sections of the United States are also taken up.

**MEASUREMENTS.**—This course provides instruction in the general methods of measuring logs, fuel, lumber, standing trees and bodies of timber, with field practice.
TIMBER SALES.—The course includes complete instructions on the methods used by the Forest Service in the management and selling of National Forest timber.

GRAZING.—This course covers the different methods used throughout the United States in handling large areas of range land, the grazing policy and regulations of the Service.

ENGINEERING PROBLEMS.—A number of lectures will be given on the engineering work most frequently required in the administration of forest lands, such as the construction of roads, trails, bridges, telephone lines, etc.

Second Year

FOREST PATHOLOGY.—A discussion of the diseases of living trees, their recognition and treatment. Consideration also of organisms effecting the destruction of manufactured lumber, structural timbers, etc., methods of preservation of woods.

BOTANY.—Lectures and laboratory work on the grasses and forage plants, and on the poisonous plants of the stock ranges; consideration of shrubs and other forest plants. This course is designed to prepare for work in grazing reconnaissance and to give general instruction on the botany of the lesser plants of the forest. Practice in the use of the analytical keys and manuals.

SURVEYING, MAPPING AND DRAFTING. II.—A continuation of the first course, dealing with more difficult problems.

MATHEMATICS. II.—Trigonometry in relation to surveying, and other engineering requirements of a forester's work.

WOOD STRUCTURE AND FOREST PRODUCTS.—Properties of the principal woods. Discussion of the methods and cost of utilizing forests in the production of commodities other than lumber.

LUMBERING ENGINEERING.—The construction of logging roads, skidways, chutes, splash dams; the principles and uses of logging machinery; problems of operation under given conditions.

FOREST MANAGEMENT.—Forestry from a business standpoint. The use of field tables and the methods of compilation of forest data; the problem of taxes, interest, etc., in the valuation of timber.

PLANTING.—The methods of artificial forestation used by the Service, nursery work, sowing tree seeds, planting, etc., are studied.

PUBLIC LAND LAWS.—Lectures on the laws governing public lands, forests and other matters pertaining to the work of the Forest Service.

PHYSICS.—The course will consist of lectures and demonstrations of the more elementary principles of physics related to the subject of forestry. There will be discussed such subjects as pulleys and levers, moments of force, resultant of forces, slopes and effective component of forces, friction, jack screws, work and energy, capillary phenomena, osmotic pressure, kinetic theory of gases, evaporation, humidity, diffusion of gases and vapors, absorption, convection current and winds, optical phenomena of atmosphere, lenses and field glasses, static electricity, lightning and thunder, clearing atmosphere, etc. This course is intended for those foresters who have not had high school physics, or its equivalent.
Besides the required subjects, a number of supplementary elective courses are offered for the accommodation of those whose training in these subjects has been inadequate, and for any others who are interested. These courses will be especially helpful and are recommended for careful consideration. They include the subjects of Chemistry, Botany, Zoology, Geology, Physics, Mathematics and English.

GEOLOGY

MAJOR REQUIREMENTS IN GEOLOGY

Students desiring to specialize in Geology must take Chemistry I and II, Zoology III and IV; General and Systematic Botany one year, Physics I and II, and should have at least two years of work in German and one year in French.

COURSES IN GEOLOGY

I. 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 and 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 cultural course, and is open to all students. Text, Chamberlin and Salisbury's College Geology.

First semester; 2 credit hours; Lect., M. W., 9:30.

II. ENGINEERING GEOLOGY.—A course arranged primarily for students in the Engineering School; and devoted to the study of dynamic and structural geology, together with laboratory work on rocks, minerals and soils. Text, Scott's Introduction to Geology.

First semester; 2 credit hours; Lect., T. Th., 9.30; Lab., M., 1:30.

III. GENERAL GEOLOGY.—A continuation of course I. The study of historical geology by means of lectures, laboratory and field work. Text, Chamberlin and Salisbury's College Geology.

Second semester; 2 credit hours; Lect., M. W., 9:30.

IV. GEOLOGIC PROCESSES.—Lectures, laboratory work and collateral readings on the action of wind, water, vulcanism, catastrophe, 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. I.

First semester; 2 credit hours; Lect., M. W., 10:30; Lab., M., 1:30.

IV. HISTORICAL GEOLOGY.—Lectures and laboratory work. Intended to follow course III, but may be taken independently 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. II and III.

Second semester; 3 credit hours; Lect., M. W., 10:30; Lab., M., 1:30.
V. 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, Sallisbury's Physiography for Advanced Students. 
First semester; 2 credit hours; time to be arranged.

VI. 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 Palaeontology, Vol. I.
Second semester; 4 credit hours; time to be arranged.

VII. 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.

VIII. ADVANCED GEOLOGY.—A continuance of course VII.
Second semester; 2 to 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 Ia and II, and Chemistry I and II, III or IV, V or VI, XXXIV, XXXV, XXXVIII, together with two years of German and one year of French.

COURSES IN MINERALOGY AND ECONOMIC GEOLOGY

IX. 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.
First semester; 3 credit hours; Lect., T. Th.; Lab., T. Th., 1:30.

X. PHYSICAL MINERALOGY.—A repetition of course IX.
Second semester; 3 credit hours; Lect., T. Th.; Lab., T. Th., 1:30.

XI. ADVANCED MINERALOGY.—The determination and study of minerals as to their origin, locality, uses, etc. 
Credit and time to be arranged.

XII. BLOW-PIPE ANALYSIS.—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 IX.
Second semester; 2 or 4 credit hours; Lab., T. Th. S., 1:30.

XIII. ORE MINERALS.—A careful study of the metallic minerals used as ores; primarily with reference to their origin, mode of occurrence, properties, both physical and chemical, locality and uses. The ores of gold, silver, copper, lead, zinc, and iron will be studied in this course. Primarily a laboratory course.
First semester; 2 credit hours; time to be arranged.
XIV. ECONOMIC GEOLOGY.—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 III and IV. Texts, Ries, Economic Geology of the United States; Rowe, Economic Geology of Montana. Prerequisite: Geology I or II.

Second semester; 2 credit hours; M. F., 11:30; Lab. M., 1:30.

XV. ADVANCED ECONOMIC GEOLOGY.—This course should follow course XIV, 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.

XVI. 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 Follo; Geology and Ore Deposits of the Coeur d’Alene District, Idaho; The Leadville District, etc.

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

XVII. SPECIAL ADVANCED ECONOMIC GEOLOGY OR ORE DEPOSITS.—Character of work to be arranged upon application.

First semester; credit and time to be arranged.

XVIII. FIELD GEOLOGY.—The mapping and interpretation of the geology of certain localities.

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

XX. SPECIAL GEOLOGY OR MINERALOGY.—Character of work to be outlined upon application.

Second semester; credit and time to be arranged.

XXII. PETROLOGY.—A careful study of rocks as to composition, physical properties, locality, decomposition products, origin and uses. Text, Pirsson’s Rocks and Rock Minerals.

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

XXIV. MINING, MINERAL AND GEOLOGICAL LAW.—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.

XXVI. 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.

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

MAJOR REQUIREMENTS

A student making Physics his major subject will be expected to take, in addition to his work in Physics, courses I, II, III and IV in Mathematics, courses I and II in Chemistry, and courses I, II, III and IV in German or French. Other courses in Mathematics, Astronomy, Chemistry or Engineering 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 I, II, III, and nine additional hours.

COURSES IN PHYSICS

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.

I. 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 I a.
First semester; 4 credit hours; Lect., T. Th., 11:30; Lab., M. W., 1:30.

II. ELECTRICITY, SOUND AND LIGHT.—This course is a continuation of course I, and with it constitutes a general survey of the subject. It is required of all students in Engineering. Prerequisite: Physics I.
Second semester; 4 credit hours; Lect., T. Th., 11:30; Lab., M. W., 1:30.

III. GENERAL PHYSICS.—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 II.
First semester; 3 credit hours; M. W. F., 10:30.

IV. ADVANCED LIGHT.—This is primarily a laboratory course in the advanced phases of the subject. Prerequisite: Physics III.
Second semester; 3 credit hours; time to be arranged.

V or VI. ADVANCED SOUND.—This is a lecture-laboratory course. The subject will be introduced with a study of Hydrodynamics. Prerequisite: Physics III.
First or second semester; 3 credit hours; time to be arranged.
VII or VIII. ADVANCED HEAT.—This is primarily a laboratory course, similar to IV above. Prerequisite: Physics III.

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

IX and X. 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. Prerequisites: Physics III, IV, V and VII; Mathematics IV.

Both semesters; 2 or 5 credit hours; time to be arranged.

XI. ELECTRICAL MEASUREMENTS.—This is a lecture-laboratory course dealing with the theory and practice of electrical measurements and measuring instruments. (See Eng'g Vla.) Prerequisites: Physics I and II.

First semester; 3 credit hours; Lect., M., 10:30; Lab., W. F., 1:30.

XIV. CULTURAL PHYSICS.—This is a lecture demonstration course intended for students whose preparation will not permit of their taking Physics I and II, but who desire some further acquaintance with the subject. Therefore, some of the fundamental and ordinary phenomena from each of the fields will be treated descriptively and non-mathematically. This course will not be accepted as a prerequisite to any other, nor has it any prerequisite.

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

XVI. PEDAGOGY OF HIGH SCHOOL PHYSICS.—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 at the disposal of practically any school.

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

XXI or XXII. METEOROLOGY.—This course will consist in the study of some good textbook supplemented with laboratory and observation work. The latter will be done, in part, in connection with the U. S. Weather Bureau station, located on the campus.

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

CHEMISTRY

MAJOR REQUIREMENTS

Students wishing to take Chemistry as a major subject will be required to take the following courses: General Chemistry, 8 hours; Qualitative Analysis, 4 hours; Quantitative Analysis, 8 hours; Organic Chemistry, 10 hours; Physical Chemistry, 8 hours. Candidates for the Teacher’s Certificate in this department must have completed acceptably the above courses.

Supplementary courses should be taken as follows: English, I and II; German, I, II, III, IV; Mathematics, I, II, III, IV; Physics, I and II.
FOUNDATION COURSES IN CHEMISTRY

I and II. 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, Alexander Smith’s Chemistry for Colleges. Prerequisite: High School Physics.

Both semesters; 4 or 5 credit hours; Lect., T. Th., 9:30; Lab., section I, M. W., 1:30; section II, T. Th., 1:30.

III and IV. QUALITATIVE ANALYSIS.—A study of methods for detecting and separating the principal bases and inorganic acids, followed by analysis of various substances in solid and liquid form. Text, Stieglitz’s Qualitative Analysis. Must be preceded by courses I and II.

Both semesters; 4 credit hours; Lect., T., 10:30; Lab., M. W. F., 1:30.

V or VI. QUANTITATIVE ANALYSIS.—An introduction to quantitative methods and the chemistry upon which these are based. Students perform simple analyses which involve the use of apparatus ordinarily employed in analytical work. Must be preceded by courses I, II or III.

Either semester; 4 credit hours; Lect., T., 11:30; Lab., M. W. F., 1:30.

VII. GENERAL CHEMISTRY.—A brief course in General Chemistry intended for those who do not wish to specialize in chemistry, yet desire a knowledge of the subject.

First semester; 5 credit hours; Lect., M. W. F., 9:30; Lab., T. Th., 1:30.

COURSES IN ORGANIC CHEMISTRY

XI and XII. ORGANIC CHEMISTRY.—A study of the carbon compounds with reference to their properties and constitution. Special attention given to such matters as saturation, polymerization, structural formulae and stero-isomerism. Prerequisite: Courses I and II.

Both semesters; 4 credit hours; 2 lectures and 2 laboratory periods; time to be arranged.

XIII. ADVANCED ORGANIC CHEMISTRY.—A consideration of special topics in organic chemistry.

Credit and time to be arranged.

XIV. ORGANIC PREPARATIONS.—A laboratory course in preparation of organic compounds.

Credit and time to be arranged.

COURSES IN PHYSICAL CHEMISTRY

XXI and XXII. PHYSICAL CHEMISTRY.—In this course a study is made of the more important principles of physical chemistry. The students will be required to solve a large number of problems, and the aim will be to develop power to deal with physico-chemical questions. Prerequisites: Chemistry I, II, III; Physics I and II.

Both semesters; credit and time to be arranged.

XXIII and XXIV. PHYSICAL CHEMISTRY LABORATORY.

Both semesters; credit and time to be arranged.

XXV and XXVI. ADVANCED PHYSICAL CHEMISTRY.

Both semesters; credit and time to be arranged.

XXVII and XXVIII. ELECTRO CHEMISTRY.

Both semesters; credit and time to be arranged.
COURSES IN ANALYTICAL AND APPLIED CHEMISTRY

XXXI. HOUSEHOLD AND SANITARY CHEMISTRY.—A consideration of the problems met with in domestic science, as sanitation, preservation of food, food values, dietaries and beverages. Open to those who have had high school chemistry, course VII, or courses I and II.
First semester; 2 credit hours; time to be arranged.

XXXII and XXXIII. ADVANCED QUANTITATIVE ANALYSIS.—A continuation of V or VI.
Both semesters; credit and time to be arranged.

XXXIV and XXXV. ENGINEERING CHEMISTRY.—Analysis of such bodies as are met with in commercial work. Analysis of minerals, iron and steel, foods, water, gas. Brick and cement testing.
Both semesters; 4 credit hours.

XXXVI and XXXVII. ORGANIC ANALYSIS.—Analysis of organic substances. Courses V or VI, and XI and XII, are prerequisites.
Both semesters; credit and time to be arranged.

XXXVIII. ASSAYING.—Laboratory practice in grinding and sampling of ores, fire assay for lead, gold, silver, copper and bullion.
Second semester; 2 credit hours; time to be arranged.

XXXIX. WET ASSAYING.—This course is designed for those who expect to become chemists in smelters and for those who are interested in mining work. Prerequisite: Chemistry I.
First semester; 2 credit hours; Lab., T. Th., 1:30-4:00.

XL. TECHNICAL FUEL, OIL AND GAS ANALYSIS.—A short course in the technical analysis of fuels and of gases with Hempel's and Orsat's apparatus.
Either semester; 2 credit hours; time to be arranged.

XLIII. FUELS AND THE METALLURGY OF IRON, STEEL AND LEAD.—Lectures and laboratory work.
First semester, alternate years; 3 credit hours; time to be arranged.

XLIV. THE METALLURGY OF COPPER.—Three or four hours, including laboratory work, and visits to the smelters.
Second semester; 3 credit hours; time to be arranged.

COURSES IN BIOLOGICAL CHEMISTRY

L. PUBLIC HYGIENE.—A study of the general principles of sanitary science. This course will include, in addition, such a study of the elementary principles of bacteriology, and of the chemistry of foods as is essential as a preparation for the understanding of the science of public health. It will be given jointly with the Department of Biology and a number of special lectures will be given by experts in public health work and by physicians. Open to all students.
Second semester; 2 credit hours; time to be arranged.

RESEARCH COURSES

LX and LXI. RESEARCH IN ANALYTICAL AND APPLIED CHEMISTRY.—Open to such students as may be properly prepared.

LXII and LXIII. RESEARCH IN PHYSICAL CHEMISTRY.—The problems under investigation during 1912 include the study of energy relations at the boundary between liquid phases, electromotive forces in fused salts, the conductivity of salts in non-aqueous solvents, and the solubility of tri-ionic, and di-ionic, di-divalent salts.
A course in Engineering Chemistry, first established in 1909, is adapted to the needs of students who expect to devote their time to the application of chemistry to the arts. Students graduating from this course find employment as analysts, electrochemists, managers or superintendents having to deal with problems of construction or management of smelters, sugar refineries, gas plants, fertilizer works, and various other branches of industry where special preparation is necessary. For detailed information regarding the subjects in the course, descriptions in the various departments should be consulted. Students may be allowed a limited number of substitutions. Where possible two or more years of high school German should be presented for entrance.

**FIRST YEAR**

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SCHOOL OF ENGINEERING

GENERAL PLAN AND SCOPE OF THE SCHOOL

The rapid industrial development of the West makes the profession of Engineering one of very great importance. The University of Montana is contributing to the needs of the community which it serves by maintaining its School of Engineering, in which to give professional training in the main principles underlying the practice of Civil, Mechanical and Electrical Engineering. After finishing the four years' courses along these lines the graduates will be prepared to go into successful practice or to undertake more advanced and specialized studies.

The principles of designing and constructing engineering projects, and the theoretical phases of engineering, are given prominence in order to cultivate that breadth which ultimately leads to the greater professional success. At the same time practical experience is provided in laboratories, drawing rooms, field exercises and shops.

The degree of Bachelor of Science in Engineering is conferred upon students successfully completing the regular four years' courses in any one of the main fields of engineering.

Specialization in Civil, Mechanical, or Electrical Engineering, may be pursued in the student's third and fourth years, the subjects in the first two years of work being almost identical.

The Twelfth Legislative Assembly voted an appropriation of $50,000 for the erection of an Engineering Building for this department. The following descriptive account of lecture and drawing rooms, laboratories, shops, and equipment, applies only to their status at the time when this Register goes to press.

Plans are being matured for the new building to give the most desirable arrangement of laboratories and other facilities. Actual construction must wait upon action by the State Board of Examiners, but it is hoped that the work may be well advanced before the publication of the next issue of this Register. The new building, together with the appointment of additional instructors, will greatly strengthen the department.

A special circular, with detailed announcements, will be prepared as soon as plans are sanctioned.

ROOMS AND EQUIPMENT

The School of Engineering occupies the whole of the first floor and basement of Science Hall. Occupying the front of the building are the offices, lecture rooms, and drawing rooms. At
the rear, in the extension of the main building, are the steam laboratory, gas engine laboratory, fuel laboratory, wood shop, machine shop, forge room and foundry. In the basement are the boiler room and electrical laboratory.

**Drawing Rooms.**—The drawing rooms are suitably equipped with drawing tables and drawing boards. A collection of standard works, proceedings of various American institutes and current standard periodicals is provided.

**Wood Shop.**—The wood shop is 30x40 feet in size, and is lighted from opposite sides. There are places for bench work, furnished with benches, vises, and tool-cupboards stocked with the necessary tools. Ten lathes of 11-inch swing enable an equal number of students to engage in wood turning. There is also a large wood-turning lathe of 16-inch swing and 12-foot bed, with double-ended spindle, for large work. A double circular sawing table, with cross-cutting and rip-saws, a jig saw, a wood-trimmer, and a grindstone, etc., comprise the equipment of the shop.

**Machine Shop.**—Adjacent to the wood shop is the machine shop, which is 30x27½ feet in size and is also lighted from opposite sides. Its equipment consists of a Brown and Sharp Universal Milling machine, a 16-inch swing engine lathe, with taper and screw-cutting attachments, and equipped with chucks, faceplates and the necessary tools; also a 32-inch swing drill press, a small drill press, a 16-inch shaper, a power hack-saw, a wet emery grinder, a double emery grinder, and benches with vises for chipping and filing. At one side of the shop, space is partitioned off for a tool room, in which are kept the tools for use in the shop. A checking system, similar to that employed in modern shops, is used, and forms a valuable part of shop instruction.

**Forge Shop.**—Adjacent to the machine shop is the forge shop, 30x30 feet in size. Eight Buffalo down-draft forges, served by a Buffalo combination blower and exhaust system, a small portable forge, a combination shearing and punching machine, together with a complete outfit of anvils, hammers, tongs, and all the other tools necessary for forging, constitute the equipment of this part of the shops. This shop is well lighted by windows on two sides of the room.

**Foundry.**—The foundry is 30x30 feet in size and well lighted by windows on two sides of the room. Its equipment consists of a No. 0 Whiting Cupola, a Sturtevant pressure blower, a core oven and tools and apparatus necessary for foundry work.
Surveying Equipment.—For field work in surveying there is an adequate supply of transits, levels, plane tables, aneroids, solar attachments, rods, chains, etc.

Steam Laboratory.—In the boiler room there are three 70-horsepower multitubular boilers, which furnish steam for heating and power and are available for tests. There is also a steam pump and the power equipment of the University Paul-system steam-heating plant, which apparatus is also available for testing purposes.

In the steam laboratory there is also a Corliss engine direct connected to a Wolf ammonia compressor, also condensers, brine cooler, pumps, etc., forming a complete ammonia refrigerating system used only for testing purposes. The engine is available for instruction in setting of Corliss valves and for efficiency tests, etc. This laboratory is also well equipped with indicators, calorimeters and other instruments for the making of steam tests.

Gas Engine Laboratory.—The gas engine laboratory contains four gasoline engines of various types and the necessary indicators and other small appliances for making complete tests of this type of machines.

Hydraulics Laboratory.—In the hydraulics laboratory tests of discharge through orifices and other weirs, of friction losses in pipes, bends, valves, etc., may be made. The calibration and test of such apparatus as gauges, Venturi meters, hydraulic rams, water meters, may also be carried out.

Fuel Laboratory.—The fuel laboratory is equipped with the various instruments required for determining the heating value, physical properties and constituents of the various fuels, including coals, oils, illuminating gases, producer gases and other engine fuels. Parr Calorimeters and the Junker calorimeter are used for heating value determinations. There are also Hempel, Orsat and other gas analysis apparatus. Determination of the constituents of the products of combustion are also made.

Cement Testing Laboratory.—The cement testing laboratory contains a Fairbanks-Morse cement testing machine, vicat and specific gravity apparatus, moist closet and immersion tank, together with the necessary moulds, trowels, sieves, etc., for making, tension, time of setting, fineness, and other physical tests of cement.

Electrical Laboratory.—The equipment of the electrical laboratory includes one 15 K.W., 110 volt, direct current Watson generator, one 10 K.W., 220 volt, direct current Western Electric generator, and a 10 K.W., 3 phase, 60 cycle, 110 volt,
Crocker-Wheeler alternator with .8 K. W. belted exciter. These generators supply whatever current may be needed in the laboratory. For either motor or generator tests there are also a 15 H.P., 220 volt direct current motor, a 6 H.P., 250 volt Allis-Chalmers series motor, a 2 K.W., 6 ring Westinghouse synchronous converter, all equipped with starting devices for motor operation. A 5 H.P., 3 phase General Electric induction motor, equipped with auto starter, and three transformers arranged with taps for phase, as well as voltage transformation complete the list of heavy machinery. Two small machines, a commutating pole motor and a two-phase induction motor, are used chiefly for lecture room demonstration. There is also a good supply of rheostats, brakes, inductances, etc., in addition to stock for instruction in interior wiring. The stock of measuring instruments keeps pace with the general laboratory equipment.

PHOTOMETRY LABORATORY.—There has just been installed a complete Reichanstalt bar photometer, including necessary appliances, for work in illuminating engineering.

COURSE IN CIVIL ENGINEERING

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#### SOPHOMORE YEAR

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<th>First Semester—</th>
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<td>Kinematics</td>
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#### JUNIOR YEAR

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### SENIOR YEAR

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<td>VIIk 2</td>
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<td>VIIh 2</td>
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<td>Designing and Drawing</td>
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<td>Gas Engines</td>
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This table outlines the course requirements for each year of study in the Mechanical Engineering program, detailing the number of credits for each course in both the first and second semesters.
# COURSE IN ELECTRICAL ENGINEERING

## FRESHMAN YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
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## JUNIOR YEAR

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## SENIOR YEAR

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<td>VII</td>
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<td>VIIk</td>
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<td>Illumination</td>
<td>VII</td>
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<td>Telephone Engineering</td>
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# COURSES IN MECHANICAL DRAWING

Ia. DRAWING.—Freehand lettering, geometrical problems, construction of various curves and orthographic projection and development of surfaces.

Freshmen, first semester; 2 credit hours.

Ib. DRAWING.—Isometric drawing, machine drawing, making working drawings, including conventions and standards, etc., following best practice of commercial drafting rooms. Prerequisite, Drawing, Ia.

Freshmen, second semester; 2 credit hours.
Ic. DRAWING.—Advanced machine and structural detailing, sketching machine parts, making assembly drawings, etc. Prerequisite, Ia and Ib.

Sophomores, first semester; 2 credit hours.

Id. DESCRIPTIVE GEOMETRY.—Lectures and drawing, dealing with lines, planes, solids, tangents, intersections. Prerequisite, Ia and Ib.

Sophomores, first semester; 2 credit hours.

COURSES IN SHOP WORK

IIa. SHOP WORK.—Carpentry, wood turning, pattern making and foundry.

Freshmen, first semester; 2 credit hours.

IIb. SHOP WORK.—Forge work, bench work, chipping and filing, machine tool work.

Freshmen, second semester; 2 credit hours.

IIc. MACHINE WORK.—Metal turning, exercises on milling machine, shaper and planer and bench work.

Sophomores, second semester; 2 credit hours.

COURSES IN SURVEYING

IIIa. SURVEYING.—The use and adjustment of the level and the transit; taping; differential and profile leveling; surveying with transit and tape; computation for areas; the use of the slide rule and planimeter.

Sophomores, first semester; 2 credit hours.

IIIb. SURVEYING.—Continuation of course IIIa. The use of the plane table and the solar attachments; public land surveying; resurveys; use of the stadia; topographic surveying and map making; city surveying; lot surveys; subdivisions.

Sophomores, second semester; 3 credit hours.

IIIc. SURVEYING.—Higher surveying; determination of meridian; latitude; astronomy for engineers; theory of triangulation; precise leveling; topography by photography; topographic details.

Juniors, first semester; 2 credit hours.

IIIId. SURVEYING CAMP.—Two weeks in June immediately following the work at the University are spent in camp, making a preliminary survey for a few miles of railroad. The camp routine is that of any well organized camp.

Sophomores; required without credit.

IIIe. RAILROAD SURVEYING.—The theory and practice of railroad surveying; computation and field location of simple, compound, and transition curves; keeping notes; solution of various problems involving the mathematics of location.

Sophomores, second semester; 2 credit hours.
COURSES IN MACHINE DESIGN

IVa. KINEMATICS.—Recitations and drawing, covering theory of mechanism, instant centers, pulleys, cams, gears, linkages, velocity and acceleration diagrams. Prerequisite, Ia and Ib.
Sophomores, second semester; 3 credit hours.

IVb. VALVE GEARS.—Lectures and drawing, constituting a study of the different types of valves and valve gears. Prerequisite, Ia, Ib, Ic and IVa.
Juniors, first semester; 2 credit hours.

IVc. MACHINE DESIGN.—The student is to undertake the complete design of a machine or of machine parts, making theoretical calculations and modifying them by practical considerations. Assembly drawing is made and several sheets of details. Prerequisite, Ia, Ib, Ic and IVa.
Juniors, first semester; 2 credit hours.

IVd. DESIGNING AND DRAWING.—Graphical statics of roofs and various other structures is taken up, discussion of problems met in the design, construction and equipment of mills, factories, etc. Prerequisite, Ia, Ib, Ic, IVa and IVc.
Seniors, first semester; 2 credit hours.

IVe. DESIGNING AND DRAWING.—A continuation of course IVd. This work will be carried on in connection with course VIIId.
Seniors, second semester; 1 credit hour.

COURSES IN MECHANICS AND STRENGTH OF MATERIALS

Va. MECHANICS.—The same as Mathematics V, which see.
Sophomores, second semester; 3 credit hours.

Vb. MECHANICS.—The same as Mathematics VI, which see.
Juniors, first semester; 3 credit hours.

Vc. APPLIED MECHANICS.—The elastic properties of materials; stress and deformation; the theory of stresses in beams; the flexure of beams; the theory of columns and arches; torsion; the stresses in cylinders. Prerequisite, Va.
Juniors, first semester; 3 credit hours.

Vd. APPLIED MECHANICS.—A continuation of Vc. The stresses in hooks, flat plates, springs, arch ribs, flitched beams, etc.
Juniors, second semester; 2 credit hours.

Ve. MATERIALS OF CONSTRUCTION.—Lectures and reading on the manufacture and physical properties of cast iron, wrought iron, steel, cement, concrete, timber, and other materials of engineering construction. Laboratory work in the testing of cement. Prerequisite, Vc.
Seniors, first semester; 2 credit hours.

COURSES IN ELECTRICAL ENGINEERING

Via. ELECTRICAL MEASUREMENTS.—An introduction to laboratory and commercial methods of testing electrical apparatus, including the study of instruments, calibration and manipulation. Prerequisite, Physics II and Mathematics IV.
Juniors, first semester; 2 credit hours.
Vlb. DIRECT CURRENTS.—A study of the fundamental principles of direct current generators and motors, the analysis of performance curves, and the selection of electrical apparatus. Prerequisite, Physics I and Mathematics IV.

Juniors, first semester; 3 credit hours.

Vic. DIRECT CURRENTS.—A continuation of course Vlb, covering practical operation, principles of design, commutation, etc. Prerequisite, Vlb.

Juniors, second semester; 3 credit hours.

VId. ALTERNATING CURRENTS.—Solution of circuits containing resistance, inductance and capacity; single phase and polyphase systems; study of the alternator, synchronous motor and rotary converter. Prerequisite, Vic.

Seniors, first semester; 3 credit hours.

Vie. ALTERNATING CURRENTS.—Continuation of VId, including study of the transformer, induction motor and single phase motors. Prerequisite, VId.

Seniors, second semester; 3 credit hours.

VIf. ELECTRICAL LABORATORY.—Characteristics curves of direct current machinery. Accompanies Vic. Prerequisite, Vlb.

Juniors, second semester; 1 credit hour.

Vig. ELECTRICAL LABORATORY.—Laboratory work to supplement course VId. Prerequisite, Vic and VIf.

Seniors, first semester; 2 credit hours.

VIh. ELECTRICAL LABORATORY.—A continuation of Vig. Accompanies Vie. Prerequisite, VId and Vig.

Seniors, second semester; 2 credit hours.

VII. ILLUMINATION AND PHOTOMETRY.—The study of light, incandescent and arc lighting, with photometric tests for candle power, light distribution and efficiency. Prerequisite, Vla and Vic.

Seniors, first semester; 2 credit hours.

VII. ELECTRIC POWER PLANTS.—The selection of apparatus for the electrical end of power plants; high tension transmission line calculation and design; the study of distribution systems and methods of charging for electrical energy. Prerequisite, VId.

Seniors, second semester; 3 credit hours.

VII. TELEPHONE ENGINEERING.—A study of the common types of telephone apparatus and systems, with laboratory practice in telephone installation, testing, location of faults, etc. Prerequisite, Vie.

Seniors, second semester; 2 credit hours.

COURSES IN POWER ENGINEERING

VIIa. HEAT-POWER ENGINEERING.—Principles of the mechanical theory of heat and their application to the various forms of steam engines, turbines, internal combustion engines, refrigerating machines, and air compressors. Prerequisite, Physics II and Chemistry II.

Juniors, first semester; 3 credit hours.

VIIb. HEAT-POWER ENGINEERING.— Continuation of VIIa, taking up boilers, furnaces, combustion, fuels, engines, valve gears.

Juniors, second semester; 3 credit hours.
VIIc. POWER PLANTS.—A study of construction, operation, maintenance, and economy of power plants.
Seniors, first semester; 3 credit hours.

VIIId. POWER PLANTS.—Design of power stations for the production of mechanical or electrical energy. Each student makes at least one complete design of a power station. Consideration of local conditions, construction cost and cost of operation.
Seniors, second semester; 3 credit hours.

VIIe. STEAM TURBINES.—Theory and construction of the principal types of steam turbines and their application. Prerequisite, VIIa.
Seniors, second semester; 2 credit hours.

VIII. HEATING AND VENTILATING.—Principles underlying the design and construction of heating systems; steam, hot water, and hot air heating systems.
Seniors, first semester; 2 credit hours.

VIIIg. COMPRESSED AIR.—A study of the theory and construction of air compressors and compressed air machinery; uses of compressed air. Prerequisite, VIIa.
Seniors, second semester; 2 credit hours.

VIIIh. GAS ENGINES.—Theory and construction of gas, gasoline and producer gas engines; Diesel motor and other oil engines. Prerequisite, VIIa.
Seniors, first semester; 2 credit hours.

VIIIi. MECHANICAL LABORATORY.—Calibration of instruments; efficiency of simple machines; oil testing and transmission of power. Lectures and laboratory.
Juniors, second semester; 1 credit hour.

VIIIj. MECHANICAL LABORATORY.—Determination of the efficiencies occurring in the steam boiler, steam, gas, and gasoline engines; setting of various types of engine valve gears. Lectures and laboratory.
Seniors, first semester; 2 credit hours.

VIIIk. MECHANICAL LABORATORY.—Determination of power plant losses and efficiencies; operation and construction of refrigerating plants. Lectures and laboratory.
Seniors, second semester; 2 credit hours.

VIII. TECHNICAL FUEL, GAS AND OIL ANALYSIS.—Lectures and laboratory instruction in the technical analysis of coals, illuminating and fuel gases and the products of combustion; the use of oils and oil analyses.
Juniors, first semester; 1 credit hour.

COURSES IN HYDRAULIC ENGINEERING

VIIIa. HYDRAULICS.—Hydrostatics, hydrodynamics, flow of water through orifices, over weirs, through pipes, conduits, open channels, etc. Prerequisite, Vb.
Juniors, second semester; 3 credit hours.
VIIIb. HYDRAULIC ENGINEERING.—Determination of run off, flow in streams, study of the various forms of water wheels and pumps; the turbine as applied to power stations, etc.
Seniors, first semester; 3 credit hours.

VIIIc. HYDRAULIC LABORATORY.—Calibration of instruments, tests of flow through orifices, over weirs, etc.
Juniors, second semester; 1 credit hour.

COURSES IN RAILROAD ENGINEERING

IXa. RAILROAD ENGINEERING.—The notes taken in the summer camp are mapped, and from them a location and estimate made. The laboratory time is supplemented with a study of the economics of railroad location.
Juniors, first semester; 3 credit hours.

IXb. RAILROAD ENGINEERING.—A study of the efficiency of different systems of organization in maintenance of way department; track, buildings, yards; economics; standards.
Juniors, second semester; 3 credit hours.

COURSES IN STRUCTURAL ENGINEERING

Xa. GRAPHICS.—The graphical determination of stresses in roof trusses and other simple structures. The design of a roof truss in wood and in steel.
Juniors, first semester; 2 credit hours.

Xb. BRIDGE ANALYSIS.—The analysis of the stresses in bridges, due to various forms of loading; the action of counters; wheel loads; partial bracing; economic depth, economic panel length; combination of stresses, impact.
Juniors, second semester; 2 credit hours.

Xc. STRUCTURAL ENGINEERING.—Each student makes a complete design and detail drawing of a plate girder railroad bridge and of a pin connected Pratt truss.
Seniors, first semester; 4 credit hours.

Xd. STRUCTURAL ENGINEERING.—A study of various types of bridge and roof trusses, the determination of stresses by the consideration of the elastic deformation; cantilever bridges; suspension bridges; details in building construction; shop methods.
Seniors, second semester; 4 credit hours.

Xe. MASONRY CONSTRUCTION.—Methods of design and construction of piers, abutments, retaining walls and foundations; study of the materials of masonry; reinforced concrete construction; the theory of the elastic arch; stereotomy.
Seniors, first semester; 3 credit hours.
SANITARY AND MUNICIPAL ENGINEERING

XIIa. SEWERAGE.—Combined and separate sewer systems; a study of the question of "run off"; current practice in the design of sewer systems; specifications, the problem of sewage disposal and purification; discussion of current literature.
Seniors; second semester; 2 credit hours.

XIIb. WATER SUPPLY.—Quantity and quality required for water supply, per capita consumption and growth of population; sources of supply: intakes, wells and impounding reservoirs; pipe lines, equalizing reservoirs, distributing systems, fire streams and hydrants; loss of head and calculation of flow through compound pipe system; cast iron, steel and wood pipe; coagulants.
Seniors, second semester; 2 credit hours.

XIIc. ROADS AND PAVEMENTS.—A study of the location, construction and maintenance of earth, gravel and broken stone roads; a comparison of the various pavements, adaptability to various conditions, cost, and method of construction; specifications, inspection; patent pavements.
Seniors, first semester; 2 credit hours.

COMMERCIAL ENGINEERING

XIIa. PRINCIPLES OF MANUFACTURING.—Lectures on shop standards, processes, tools and equipment; scientific methods of cost and timekeeping; general management and operation of factories.
Seniors; second semester; 2 credit hours.

XIIb. CONTRACTS AND SPECIFICATIONS.—A study of the laws of contracts pertaining to engineering work and the preparation of engineering specifications.
Seniors, second semester; 1 credit hour.

SEMINARY AND THESIS

XIIIa. SEMINARY.—The preparation, reading and discussion by the students of papers on engineering topics of current interest, reference being made to transactions of engineering societies and engineering periodicals.
Seniors, second semester; 1 credit hour.

XIIIb. THESIS.—The preparation by each student of a thesis consisting of an original investigation or design in some field of engineering.
Seniors, second semester; 3 credit hours.
ENGINEERING EXTENSION WORK

The University Engineering Extension Work has been inaugurated in order to give engineering instruction to those who desire information along engineering lines and who have not the time or the opportunity to attend the university. The courses, arranged so as to aid those engaged in practical work, consist of lectures, discussions, recitations, drawing, etc. When a sufficient number apply for one or more courses, classes are organized and an engineering instructor visits the classes, once a week to lecture or to conduct class recitations. In this way the student comes in direct contact with the teacher. Classes have been formed in several of the larger cities of Montana and the work will be extended to other points. For information, inquirers should address the Registrar of the University. Among the courses offered are the following:

1. SHOP CALCULATIONS.—Calculations of shop problems; size of gear, pulleys, etc.
2. DRAWING, COURSE 1.—Instruction in the use of instruments, lettering and projections.
3. DRAWING, COURSE 2.—Development of surfaces and the drawing of simple machine parts.
4. DRAWING, COURSE 3.—Machine details, shop drawings, assembly drawings of machines.
5. DRAWING, COURSE 4.—Design of simple machines.
6. DESIGN OF SIMPLE STRUCTURES.—Determination of stresses in simple structures, including the design of a simple truss in wood and steel. Especially adapted to the needs of carpenters, builders and contractors.
7. VALVE GEAR.—A study of valve movements as applied to locomotive and other engines. The Zeuner diagram.
8. ELECTRICAL MACHINERY.—Direct currents, a study of the construction and operation of direct current machinery.
9. ELECTRICAL MACHINERY.—Alternating currents, a study of the construction and operation of alternating current machinery.
10. HEAT AND STEAM.—Nature of heat, steam table, efficiency of the perfect engine, compounding, jacketing, superheating.
11. INTERNAL COMBUSTION ENGINES.—Gas, gasoline and producer gas engines, gas producers.
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 school offers a standard law course, covering three academic years, which constitutes an adequate preparation for the practice of law in Montana or any state in the country or in Canada.

EQUIPMENT

The Law School occupies comfortable quarters in University Hall, where rooms for the Law Library, the offices of the Faculty, and the classes of the Department are provided. 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. The library thus established by her is known as the W. W. Dixon Memorial Library in memory of Judge Dixon. This library of about three thousand eight hundred volumes is constantly being enlarged and brought down to date. It embraces several sets of state reports, the reports of all the federal courts, the American Digest and National Reporter 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. Honorary Dean Clayberg has presented a set of over two hundred volumes of English common law and chancery reports.

ADMISSION TO THE LAW SCHOOL

Pre-Legal Course

Admission to the pre-legal course is governed by the same rules as apply to entrance to the University in general.

Undergraduate students taking college work with a view to admission to regular standing in the Law School are expected to select their courses, to the amount of 62 credit hours, subject to the following University requirements:
Required of all:

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

It is desirable that within these limits a pre-legal student shall select his courses under the advice and direction of the Faculty of the Law School, and shall so far as possible from the start attend the special evening lectures and moot court trials of the department. Special attention to Public Speaking, Argumentation and Debate is recommended to pre-legal students. Geology and Surveying are useful in Mining Law.

REGULAR AND SPECIAL STANDING

Students may register in the Department of Law either in regular or in special standing. Regular students, who are candidates for the degree of Bachelor of Laws 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 its equivalent 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 equivalent education. 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.
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

Matriculation fees of $10 per year must be paid on the first day of registration in each academic year by all students except those holding honor scholarships from accredited high schools.

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 $2.00 per semester credit hour. 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 upon the study of Law.

The cost of text books in the Law courses will average twenty dollars per year for the three years of the professional curriculum.

COURSES OF INSTRUCTION

The prescribed course of study extends over a period of three full years, and is so arranged as to require credits amounting to fifteen hours each week. 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:
GENERAL METHODS

LAW OFFICE OR LAW SCHOOL.—The lawyers of former generations got their preliminary training in an office. But in the words of Chief Justice Waite, "The time has gone by when an eminent lawyer in full practice, can take a class of students into his office and become their teacher. Once that was practicable, but now it is not. The consequence is that law schools are now a necessity."

The young man who supposes that passing the bar examination makes him a lawyer, and who yields to the infatuation of entering an office to be initiated into the profession, will find that he has begun at the wrong end, and that he has mistaken the work of an office clerk for training in the law. The student in an office will be utilized in serving papers and answering the telephone, or left to his own devices, while the busy lawyer is occupied with his clients. A more speedy and more practical preparation for the bar is to be had by three years of solid and
systematic work at a good law school under experienced teachers, than by an equal term of desultory reading and clerical service in a law office.

**Cases, Text Books, Lectures.**—Law schools now make it their aim, not so much to store the memory with legal knowledge, as to develop in the student the power of independent legal reasoning and argument. This is best accomplished in most courses by a discussion of selected cases covering the various fields of law, supplemented by hypothetical instances and modifications suggested by the professor in charge. The study of cases develops the power to analyze and to state clearly and concisely a complicated state of facts, a power which in no small degree distinguishes the good from the poor and indifferent lawyer. The student, by the study of cases, acquires the habit of legal thought which must be acquired by him either as a student or after he has become a practitioner, if he is to attain any success as a lawyer.

The study of cases does not of course exclude the use of texts and commentaries or lectures by professors. Law lectures may be exceedingly well adapted to certain courses, and when delivered by a really eminent expert may illuminate and vitalize many an important subject and cover ground that could not possibly be covered in the more gradual case system.

As auxiliary to the use of case-books the problem method furnishes a useful supplement. The student, who is given a suppositional case or set of facts to work out for himself, and write an opinion on, is compelled to become familiar with the methods of legal research and to develop resourcefulness and independence of thought.

The Faculty of the Montana State Law School will use such methods as appear to be adapted to secure the best results in their several courses.

**Office and Court Practice.**—A special effort is made to enable the student to acquire 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. University courses in public speaking, argumentation, and debate are open to students of the Law School. 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
law points will also be given. In general, the aim of the school will be to teach ‘real’ law and practice as well as legal history, theory and the potential sources of law.

THE PRACTICE COURT

The practice court work is put on the basis of a regular course, and active participation therein is required during each year of the course. It is presided over by the members of the Faculty and by practicing lawyers who are invited to sit from time to time as presiding judges. The other officers, including clerk and sheriff, are elected from among the students. Actual controversies are arranged and assigned for trial, and the students draw the pleadings, empanel the jury, prepare instructions, examine witnesses, object to evidence, make arguments to the court and jury, and go through all the procedure for a contested trial, thus fitting themselves to manage a client’s case in the courts, an art which students in most law schools seldom acquire.

SPECIAL LAW LECTURES

Practical talks are given from time to time by prominent lawyers and judges of the state, designed to acquaint the students with matters that they will be called upon to meet in practice. Such lectures have been given by the following special lecturers, who will doubtless continue a similar interest in the school in the coming year:

Chief Justice Theodore Brantly, on “Jurisdiction and Procedure in the Supreme Court, with Special Reference to the Extraordinary Writs.”
Justice Henry C. Smith, on “Employers’ Liability.”
Justice William L. Holloway, on “Law and Lawyers.”
Judge Lew L. Callaway, on “Trial of a Law Suit from the Judge’s Standpoint.”
Judge E. K. Cheadle of Lewistown.

DESCRIPTION OF LAW COURSES

First Year

CONTRACTS AND QUASI CONTRACTS.—This course deals with the fundamental principles underlying all agreements by which one person obligates himself to another, as preliminary to the study of the specialized forms of obligations that have their foundation in contract and are treated in separate courses. It embraces mutual assent and the
formation of contracts, consideration and the grounds of enforcement, the reciprocal duties of contracting parties, the performance and discharge of these duties, and the various defenses to the enforcement of contracts.

Under the head of quasi contracts is embraced all that very large class of obligations arising from benefits received or prejudice suffered at the hands of another, giving rise to a claim enforced as if there were a contract. The subject of damages for breach of contract is also considered in this course.


TORTS.—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. Measure of damages in tort.

AGENCY.—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.

CRIMINAL LAW AND PROCEDURE.—Analysis of criminal act and criminal intent; conditions of criminal responsibility; analysis of particular crimes with especial reference to the Penal Code of Montana. Successive steps in the criminal prosecution under the code.

EQUITY I: SPECIFIC PERFORMANCE AND INJUNCTIONS.—Historical development of equity; relation between equity and law; general principles relating to jurisdiction, procedure, remedies. Specific performance of contracts with special emphasis on the relations between vendors and purchasers of realty; introduction to mortgages. Injunctions against torts, including waste, trespass, nuisance, disturbance of easements, infringement of patents, copyrights and trade names.

BRIEF MAKING AND THE USE OF LAW BOOKS.—Use of reports, digests, encyclopedias and treatises; practice in preparation of briefs on questions involved in the main courses.

PUBLIC SPEAKING AND ARGUMENTATION.—See courses in departments of English and Public Speaking.

Second Year

PLEADING AND PRACTICE. PART I.—A general survey of common law, equity and code pleadings, based upon lectures, assigned reading, and the study of selected cases and forms.

PART II.—Exercises in preparation and criticism of pleadings; the complaint; demurrers, general and special; answers, including denials and allegations of new or affirmative matter, and set-off and counter claims; the replication; amendment to pleadings.
PART III.—Montana practice; organization and jurisdiction of the courts; court files and records; service and return of process; appearances; default; provisional remedies, attachment, claim and delivery; forcible entry and detainer, arrests and bail, etc.; the trial, selection of a jury, introduction of evidence, findings or verdict, the judgment and its entry, effect and satisfaction; exceptions and bills of exceptions; costs; execution, its issue, levy and return; motions for new trials; appellate procedure; original writs, certiorari, mandamus, habeas corpus, prohibition and supervisory control.

EQUITY II: TRUSTS.—Nature and requisites of trusts with respect to consideration, subject matter or 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.

EVIDENCE: PART I, THEORY.—Respective functions of judge and jury; law and fact; judicial notice; operation of presumptions; burden of proof and rebuttal; method of production of oral and written evidence; restrictions on what is admissible; relevancy; character, confessions and admissions, hearsay; opinion evidence; “best evidence” rule; “parol evidence” rule.

PART II.—Art 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.

NEGOTIABLE PAPER AND BANKING.—Law relating to bills, notes, checks and all instruments in writing whereby the maker requests, orders or promises payment of a certain sum of money; execution and delivery; acceptance; indorsement; transfer, bona fide purchasers; presentment, demand, notice and protest; payment and discharge. Relation between bank and depositor; forged or altered paper; set off by bank; liabilities of bank to depositor; payee or owner; collections; insolvency of collecting or transmitting bank; negligence of collecting bank.

PARTNERSHIP.—The nature of a partnership; formation and dissolution; nature of partner's interest; the firm, its powers and property; actions between partners; representation of firm by partner; retirement and admission of partners; death of partner; dissolution, settlement and accounting; distribution of assets to creditors and between partners; limited partnership.

PROPERTY II: WILLS AND ADMINISTRATION.—Law which regulates the succession to property rights of a deceased owner in real and personal property; the making and revocation of wills; testamentary capacity; contracts to devise or bequeath; probate; construction; advancements, ademption, satisfaction and lapse; executors and administrators, appointment, powers and duties; sales and conveyances.

SALES.—Transfer of title; bills of lading and jus disponendo; seller's lien and right of stoppage in transitu; fraud; warranty, express and implied; remedies for breach of warranty; conditional sales; Statute of Frauds.
WATER LAW.—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 instructions as to the actual trial of the same.

Third Year

Note—First given in 1912-13.

CONFLICT OF LAWS.—Jurisdiction; territorial jurisdiction; personal jurisdiction and non-residents; foreign-acquired rights in contract and tort; domicil and status; powers of foreign executors, administrators and receivers; situs of property for taxation.

CONSTITUTIONAL LAW.—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.

CORPORATIONS.—Formation and organization of corporations; irregular and de facto incorporation; corporate powers and ultra vires; promoters; directors; stockholders; creditors; stock issue, payment, transfer; assessments and calls; dissolution; foreign corporations.

BANKRUPTCY.—Effect of bankruptcy act on state insolvency laws; voluntary and involuntary proceedings; acts of bankruptcy; what property passes to the trustee; proof of claims; exemptions and discharge; composition; procedure.

MUNICIPAL CORPORATIONS.—Nature of municipal corporations; corporate capacity; self government; creation, annexation, division; dissolution, succession; legislative control; officers and agents; governmental 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.

SURETYSHIP, MORTGAGES AND COLLATERAL SECURITY.—Personal suretyship compared with other forms of security; also with contracts of insurance and indemnity; guaranty and other forms of suretyship in relation to the Statute of Frauds; surety's defenses; surety's right to subrogation, indemnity, contribution or exoneration. Mortgage security, real and chattel; foreclosure, redemption; renewal and discharge; assignment. Pledges of choses in action and transactions construed as pledge.

MINING LAW.—The course will cover the history of mining law 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.
EXTENSION DEPARTMENT

THE UNIVERSITY EXTENSION IDEA

Through this department of its work the University of Montana plans to give practical assistance to the teacher, the student, the mechanic, the professional and business man. It seeks especially to serve those who are unable to attend established educational institutions, giving every citizen of the state an opportunity to get the best education possible at the least practical cost, carrying the advantages of the University to all the people of the state.

Not all the advantages or classes of instruction offered by the University can thus be brought to citizens of the state because of the lack of funds to carry on the work. Only a limited amount of Extension and Public Welfare work can at present be done. But it is the purpose of the University to extend this feature of its work as rapidly as possible.

I. CORRESPONDENCE STUDY

GENERAL INFORMATION

1. For Whom Intended.—There exists in every community a considerable class of persons who are unable to continue their study in regular school and university courses. Yet they desire to keep abreast of the times with reference to the advances of knowledge which relate to their own profession or business; some wish to pursue courses for their own culture; others wish to acquire units of credit towards a University degree or to finish work required for entrance to the University. The Correspondence Study Department of the University seeks to serve their needs by offering effective individual instruction which can be pursued in accordance with the requirements of each student in his own home.

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 directed 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. 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.

5. The Lesson.—Each course, therefore, consists of a definite number of assignments, 14, 21, 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’s work, as at school.
6. 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.

7. RECOGNITION OF WORK.—(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 towards entrance or graduation requirements.

(d). The maximum credit 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.

(e). At the completion of each Correspondence Study Course, taken for University credit, the student must pass an examination held at the University under the direction of the instructor giving the course, or at some other convenient place under conditions approved by the University.

(f). In special cases where students are mature and beyond the high school age, credit is allowed for Correspondence Study Courses of preparatory grade to satisfy entrance requirements to the University.

8. 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.
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.

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.

The fees for Correspondence Courses are payable in advance and are as follows: $10 for any one course; $16 for two courses taken together; $20 for three courses registered for at one time. These amounts cover the cost of the necessary outlines, laboratory materials, etc., but do not cover the cost of the necessary text books which may be purchased from the Extension Department of the University at cost. The fees for this work have been fixed at the lowest possible rate, as the motive is purely one of public service.

COURSES OF INSTRUCTION

The Correspondence Courses now arranged for and as outlined below will appeal especially to teachers, engineers, mechanics, foresters, business men, citizens, and various classes of students.

ART
1. HISTORY OF PAINTING IN THE ITALIAN RENAISSANCE.—This course will cover the growth of painting in Italy from the time of Giotto to its decadence. 2 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. 2 credit hours.—Miss Knowles.

BOTANY
1. BOTANY FOR TEACHERS.—A course in structural botany with special reference to the pedagogy of the subject. The course is more or less adjustable to individual needs. Material and preparations are furnished by the department for which a small fee is required. Fourteen assignments, 2 credit hours.—Professor Kirkwood.

2. FOREST BOTANY.—A course dealing with the identification of trees of the Northwest, their structural characteristics, etc. It also considers their geographical distribution and the conditions which affect distribution, local and general. Emphasis is laid upon the relations of trees to moisture, soil, light, etc., and the relations which these factors sustain to the management of the species. Designed for rangers. 3 credit hours. Professor Kirkwood.
CHEMISTRY

1. GENERAL CHEMISTRY.—This course will give a general survey of the chemistry of the non-metals, and is open to those who have completed a course in high school physics. Those who take this course must have access to a good chemical laboratory. 4 credit hours.—Mr. Hill.

ECONOMICS

1. ECONOMIC PRINCIPLES.—A study of the economic process of producing and distributing 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 text-book. Other books will be read on specified subjects.—Professor Underwood.

2. BUSINESS ORGANIZATION.—A study of financial institutions, e.g., trust companies, building associations, insurance companies; the organization and problems of corporations, as capitalization, bonding reserves, monopoly; stock exchanges, brokerage; investments.—Professor Underwood.

EDUCATION

HISTORY OF EDUCATION.—This course gives 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 educational ideals to the contemporary industrial and social conditions, traces the chief stages in the development of theory and practice and forms the basis for evaluating present day problems in education. 5 credit hours.—Dr. Stoutemyer.

ENGLISH

1. AMERICAN PROSE AND VERSE.—A survey of American literary history, and other discussion of notable works in prose and in verse. Stress is laid on the individual writers, particular attention being given to the literature of the nineteenth century. 3 credit hours. Professor Corbin.

2. ENGLISH COMPOSITION.—Theme writing for students who have had at least a High School course in English. Each assignment will include a prescribed selection for reading, and a theme based upon it of 200-500 words. 2 credit hours.—Professor Reynolds, Mr. Palmer or Miss Stewart.

GEOLOGY

1. ELEMENTARY MINERALOGY.—This course will deal with the common ordinary minerals found in nature. They will be studied purely from a physical standpoint and will require no knowledge of Chemistry. It is intended that 150 to 200 minerals will be studied during the year. The minerals will be taken up along their commercial lines and the course is not only arranged for those desiring a general knowledge but also for those wishing to get a practical knowledge of minerals. It is therefore meant for general students, miners, prospectors, etc. Mineral specimens will be sent to the students taking this course and the text to be used will be Rowe's Practical Mineralogy Simplified. A fee of $2.00 will be required for the use of specimens. One-half hour of credit will be given for the completion of 100 minerals; another one-half hour credit will be given for the completion of the remaining minerals found in the text.—Professor Rowe.
GERMAN

1. GERMAN COMPOSITION AND READING.—The work offered will be taken up individually with those applying. Prerequisites: The ability to read easy German at sight (such works as "Immensee," "Hoher als die Kirche.") No work in beginning German will be given. 3 credit hours.—Professor Schuech.

HISTORY

1. CIVICS.—An elementary course designed to explain the salient features of federal and state government with a special study of the government of Montana. Genesis of the federal government, relation of state and federal governments, machinery of government, administrative, legislative, and judicial, political parties and party problems, State and municipal government in Montana. Text book, assigned readings and reports. ½ entrance unit.—Dr. Phillips.


LATIN

1. LATIN COMPOSITION AND READING.—Courses in reading Latin and in Latin composition will be given; college work only. The authors read and the kind of composition work will depend upon the preparation and desires of the applicants. 3 credit hours.—Professor Aber.

MATHEMATICS

Professor L. C. Plant, Instructor E. F. A. Carey

Academic Courses

1. ELEMENTARY ALGEBRA.—This course begins with the fundamentals of the subject and continues through quadratic equations. 1 entrance unit.

2. ELEMENTARY ALGEBRA.—A continuation of Course 1, with a repetition of some of the topics therein contained treated more exhaustively. ½ entrance unit.

3. PLANE GEOMETRY.—The fundamental propositions of plane geometry are demonstrated with the aim of placing the student in possession of methods of attacking "original exercises." 1 entrance unit.

4. SOLID GEOMETRY.—The minimum number of propositions with application to mensuration. ½ entrance unit.

5. TRIGNOMETREY.—Definitions of the trigonometric functions; their properties; and solution of triangles. ½ entrance unit.

Collegiate Courses

1. COLLEGE ALGEBRA.—This course aims to give a clearer insight in the academic mathematics as well as lay the foundation for more advanced mathematics. 3 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 curves. 4 credit hours.

3. DIFFERENTIAL CALCULUS.—3 credit hours.

4 INTEGRAL CALCULUS.—3 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 statics to simple machines; brief discussion of graphical statics with applications to structures. 4 credit hours.

6. TEACHING OF MATHEMATICS.—A critical review of secondary mathematics, including a discussion of current developments in methods of teaching. 2 credit hours.

Practical Mathematics

7. SHOP MATHEMATICS—This course aims to meet the needs of those engaged in Mechanical Engineering trades. 1 credit hour.

8. MATHEMATICS FOR FORESTERS.—This course deals with such subjects and problems as are of practical use to the forester. 1 credit hour.

9. 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. 1 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. 1 entrance unit.—Professor Thompson.

PSYCHOLOGY

1. ELEMENTARY PSYCHOLOGY.—A general introductory course acquainting the student with the main facts of mental life. It will give the necessary basis for future work in Philosophy and Education. Some attention will be given to the applications of Psychological laws to education and life.—Professor W. F. Book.
ZOOGEOGRAPHY

1. ZOOLOGY. INVERTEBRATES.—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. 4 credit hours.—Professor M. J. Elrod.

2. ZOOLOGY. VERTEBRATES.—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 anatomical standpoint, but from broad view as given above. Material from the University will be furnished at cost. 4 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. 2 credit hours.—Professor M. J. Elrod.

ENGINEERING

Professors Richter, Plow and Biegler, Instructor Cunningham

1. SHOP CALCULATIONS.—Rules and problems of practical value to machinists, consisting of estimates of speed, size and strength of gears, pulleys, shafting and belts, etc. Calculating horse power engines and boilers. 2 credit hours.

2. DRAWING.—Free hand lettering, use of instruments, fundamentals of mechanical drawing. Assembled and detailed drawing of machines and machine parts, tracing, sketching, etc. 2 credit hours.

3. COMPASS SURVEYING.—A course for forest rangers, covering the uses and adjustments of the surveyor's compass; methods of measurement, chaining, and pacing; calculating areas, and error of closure by latitude and departure method. Public land surveys. Prerequisite, Mathematics IV. 1 credit hour.

4. TRANSIT SURVEYING.—A continuation of compass surveying, taking up the uses and adjustments of the transit, plane, table and level. Methods of note keeping, lettering, mapping and computations. Observations on Polaris for the meridian. Prerequisite, Engineering III. 2 credit hours.

5. HEAT.—A study of the principles of the mechanical theory of heat, leading to a study of the various forms of steam, gas, producer gas, gasoline and oil engines. 3 credit hours.

6. HEAT ENGINES.—A study of the theory, construction and operation of steam, gas, gasoline and producer gas engines, steam turbines. The choice of engines for power stations. Testing of power stations and power station machinery to determine cost of operation. Prerequisite, Heat V. 5 credit hours.

7. POWER STATION FUELS.—A study of the various kinds of fuels used in power stations. Determination of the heating value and analysis of coals, city and producer gas and other fuels. Boiler economy. 2 credit hours.
8. DIRECT CURRENTS.—A study of the usual forms of direct current machinery and receiving apparatus, together with numerous illustrative problems. The choice of apparatus for power station and distribution systems is emphasized. 5 credit hours.

9. ALTERNATING CURRENTS.—The same as described in "Direct Currents" applied to Alternating Currents, including a study of high tension transmission. Prerequisite, Mathematics IV. 5 credit hours.

II. INSTRUCTION BY LECTURES

1. THE STATE UNIVERSITY IDEA.—The idea that a University is a place where any one may come and study anything under proper conditions and guidance has in recent years been supplemented by the ideal of the modern State University which seeks to offer to any one anywhere within the borders of the state the opportunity of studying anything he chooses under the helpful and stimulating guidance of a specialist.

Instruction by lectures is, therefore, one of the ways by which a State University may be of service to the state, stimulating learners here and there, bringing to them the light of truth and learning represented by a University.

The University of Montana can not, at present, establish a state-wide free lecture course, but it is able to offer through its Extension Department some Lecture Instruction in practically all the departments represented at the University. It is the plan to place Lecture Courses of two, three, five or more lectures in as many of the hundred villages, towns, and cities of the state as possible.

2. AIM OF THIS LECTURE INSTRUCTION.—The introduction by lectures offered by the University Extension Department, while planned to appeal to all classes of society, is, nevertheless, educational in every particular. The University is not establishing an entertainment bureau, but aims to bring to the citizens of the state such messages of information and inspiration as will be educative and uplifting.

3. METHOD OF INSTRUCTION.—The general plan pursued in this lecture instruction is as follows: There will be a University lecture or series of lectures given by a member of the University Extension Staff. Each lecture will be followed, in the case of those desiring to do more intensive work, by a discussion of the syllabus prepared by the instructor and the results of the assigned readings. Written work will also be assigned to those who desire more lasting educational results from the work. Not
all will care to follow out this entire program, but there will be few to whom the program does not offer something. Some will have time only for the lectures, while others may wish to do some outside reading and attend the meetings of the study club.

4. **Applications for Lectures.**—All applications for University Extension Lectures should be made to the Director of Extension Work, University of Montana, Missoula, or to the President of the University. The members of the Extension Staff may be secured for single lectures or for a course of lectures as announced below. In some cases they may be had for any day in the week but for places at a considerable distance from Missoula and whenever possible lectures should be arranged for the last two days of the week. Committees desiring lectures should in every case, indicate a first and second choice for lecturer, subject and date. Every effort will be made to meet their wishes.

5. **Study Clubs.**—The Extension Department of the University stands ready to assist all study clubs within the state, either in supplying them with the desired Lecture Study Courses or in helping them stimulate interest in this sort of educational work. It will also gladly assist local centers in organizing and perfecting the organization of such clubs wherever possible.

6. **University Credit.**—Lectures may be attended by those who desire merely to be hearers or by those who wish to do systematic reading and who may be looking forward to enrolling in the University. Where the study work of the club is of a character approved by the Faculty of the University, a certificate of credit may be awarded to those passing a satisfactory examination, a certificate entitling them to University credit should they ever study at the University.

7. **Commencement Addresses.**—The Extension Department of the University will be glad to arrange for commencement addresses to be delivered by members of its staff. The charges for these lectures will in each case depend upon the speaker desired.

8. **High School Extension.**—One or more educational and scientific lectures by members of the Extension Staff may be arranged for by the various High Schools of the state free of cost to the local schools. Inquiries regarding this work will receive prompt attention by the committee.

9. **Expense.**—There are no fees to be paid to the University or its lecturers for Extension Lecture Courses. The University
pays the salaries of its lecturers and all travel expenses. The cost to any organization for obtaining these lectures is, therefore, limited to local expenses—for hall, printing, hotel charges, etc. These liberal terms can now be offered because the state granted a special appropriation to develop Extension Work.

EXTENSION LECTURES

ART

Instructor Eloise Knowles

1. RENAISSANCE PAINTING.—One or three illustrated lectures. (1) The Zenith of the Italian Renaissance; (2) Three Venetian Artists; (3) Dutch and Flemish Painting.

2. RECENT AMERICAN ART.—One or three illustrated lectures. (1) Recent American Sculpture; (2) American Landscape Painters; (3) Recent Mural Paintings.

BOTANY

Professor J. E. Kirkwood

Six single lectures, which may also be given in groups.

1. MEXICAN PLANTS AND PEOPLE.—An illustrated lecture dealing especially with the plateau region of Central Mexico.


3. EVERGREENS, THEIR HABITS AND DISTRIBUTION. (Illustrated.)

4. FERNS AND THEIR RELATIVES. (Illustrated.)

5. GUAYULE, A DESERT RUBBER PLANT OF NORTH AMERICA. (Illustrated.)

6. EXPERIMENTAL EVOLUTION.—A discussion of recent theories of descent.

CHEMISTRY

Professor W. D. Harkins

Five lectures, to be given singly or in groups.

1. THE CHEMISTRY OF PLANT AND ANIMAL LIFE AS RELATED TO THE ELEMENT CARBON.

2. CATALYTIC ACTION AND ITS IMPORTANCE IN LIFE AND INDUSTRY.

3. THE CHEMISTRY OF THE HUMAN BODY AS RELATED TO DISEASE.

4. HIGH TEMPERATURE AND THE CHEMISTRY OF THE METALS.

5. RADIIUM AND THE DISINTEGRATION OF THE ELEMENTS.
ECONOMICS
Professor J. H. Underwood

1. THE SOCIAL QUESTION.—Six lectures. (1) The Social Question, a question of economic distribution; (2) The Answer of Economics, the theory of competition and "individualism"; (3) The Answer of Socialism, the theory of co-operation; (4) The Answer of Business, the development of economic organization; (5) The Answer of the Church, the ideal of altruism; (6) The Answer of Sociology, synthesis and sociability.

2. THE FACTORS IN SOCIAL PROGRESS.—Six lectures. (1) Physical and Economic, competition; (2) Economic, co-operation; (3) Ethical, altruism; (4) Intellectual, the "Social Mind"; (5) The Social Order, a balance of interests; (6) The Social Ideal, rational progress.

EDUCATION
Professor W. F. Book

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.

2. PSYCHOLOGY OF LEARNING.—A course of six or more lectures for teachers. The process of learning, as exhibited in the acquisition of skill, in mastering school subjects, and in "reasoning" or meeting new situations, will be examined and the methods adopted by those who are trying to learn will be classified and criticised in reference to their effectiveness.

3. CONSERVATION OF BOYS AND GIRLS.—One lecture.

4. THE MODERN SCHOOL BUILDING (Illustrated.)—One lecture by Dr. Stoutemyer.

ENGLISH
Professor G. F. Reynolds

1. THE ART OF DRAMA.—A course of six lectures. (1) Suderman's "Magda"; (2) A Story and a play; (3) The First Act; (4) Contrast in Drama; (5) The Theme; (6) The Play and the Playhouse.

2. THE ENGLISH LANGUAGE.—One lecture.

3. THE POETRY OF ALFRED NOYES.—One lecture.

4. THOMAS HARDY'S DYNASTS.—One lecture.

5. JOSEPHINE PRESTON PEABODY'S "THE PIPER."—One lecture.

Instructor G. M. Palmer

1. THE ROMANTIC PERIOD.—A course of four lectures. (1) Romanticism; (2) The Romanticists in Politics, Rousseau taken as a type; (3) The Romanticist in Religion, Cardinal Newman as a type; (4) A Type of Pure Classicist, Edmund Burke.
2. THE EARLY ROMANTICISTS.—As many lectures as desired, including such names as Thompson, Young, Gray, Walpole, MacPherson, Chatterton, etc. One lecture on each or a lecture for two as desired.

3. THE PHILOSOPHY OF TENNYSON.—One lecture.

4. THE PHILOSOPHY OF EMERSON.—One lecture.

5. THE PHILOSOPHY OF JONATHAN EDWARDS.—One lecture.

6. THE NEW JAPAN.—One lecture.

7. THE NEW CHINA.—One lecture.

8. AMERICAN EDUCATION IN THE PHILIPPINES.—One lecture.

Miss Mary Stewart

1. THE DEVELOPMENT OF THE NOVEL.—Four or six lectures. A general survey of the rise and growth of the novel as a literary form, together with interpretation of various types of the "great novel."

2. JEAN VALJEAN.—One lecture.

3. PARIS.—One lecture.

GEOLOGY

Professor J. P. Rowe

Four lectures, to be given singly or in groups.

1. GLACIERS, MOUNTAINS AND VOLCANOES. (Stereopticon.)

2. MINERALS AND ROCKS AND HOW TO KNOW THEM. Illustrated by specimens.

3. THE EARTH AND ITS HISTORY. (Stereopticon.)

4. ANIMALS BEFORE MAN. (Stereopticon.)

HISTORY

President C. A. Dunlway

1. THE AMERICAN REVOLUTION.—Three or six lectures. Courses of three lectures each on "Political Aspects of the Revolution," and on "Military Aspects of the Revolution." The course of six lectures covers the following topics: (1) Underlying Causes; (2) Revolution Precipitated; (3) Declaration of Independence; (4) Military History 1775-1778; (5) Decisive Movements of the War; (6) Fruits of Victory.

3. FEDERALIST AND ANTI-FEDERALIST ADMINISTRATIONS, 1789-1812.—Six lectures.

4. ARBITRATION AND WORLD PEACE.—One lecture.

5. VISITS TO GREAT PARLIAMENTS.—One lecture.

**LAW**

Professor H. W. Ballantine

Two lectures, which may be given singly.


2. POPULAR DISCONTENT WITH THE LAW.—Recall of the judges; reform of civil and criminal procedure; public rights and private interests.

Professor A. N. Whitlock

Two lectures, which may be given singly.

1. LAW AND MORALS.—A discussion of the relation of Law and Morals, the influence of morals in shaping the Law, and the attitude of the layman toward the Law from a moral standpoint.

2. THE SACRIFICY OF OWNERSHIP.—The nature and origin of property rights; property rights as contrasted with personal rights; some modern tendencies.

**PUBLIC SPEAKING**

Miss Mabel R. Smith

1. AMERICAN HUMORISTS.—Course of three lectures. Lectures with illustrative readings from Dunbar, Harris, Riley.

2. STORY TELLING FOR CHILDREN.—Single lecture, with examples.

3. PHYSICAL TRAINING FOR GIRLS.—Single lecture.

**ZOOLOGY**

Professor M. J. Elrod

Six illustrated lectures, which may be given singly or in groups.

1. THE GLACIAL NATIONAL PARK.
2. LEWIS AND CLARK IN MONTANA.
3. FORESTS AND THEIR UTILITY.
4. SOME WONDERS OF THE SEA.
5. BIRDS AS FRIENDS AND FOES.
6. GAME BIRDS AND ANIMALS.
III. GENERAL INFORMATION AND WELFARE

1. PURPOSE.—State Universities and institutions of higher learning can not forget that those who contribute to their support have a right to share in all their fruits. In the study and consideration of all questions which concern the people of a state the State University should, therefore, play a leading role.

Much may be done by the Departments of Education, History, Political Economy, Geology, Chemistry, Biology, Forestry, Law, etc., by way of collecting and disseminating useful information on the topics and questions of vital interest to the citizens of a state. The masses of technical and scientific literature may be carefully gone through by experts and the essential facts made available to the citizens of the state. The people of Montana may appeal to their University for needed information and help in the solution of all important questions where expert knowledge is valuable.

2. WHAT MAY BE DONE.—The best literature and latest researches relating to food, public hygiene, sanitation and the prevention of disease may be made available through the help of the Departments of Bacteriology and Chemistry. Information and literature in regard to present economic, political, social and ethical questions may be furnished by the Department of Political Science. Much information and reference to the best literature relating to school hygiene, the construction of school houses, and general and special education can be provided by the Departments of Psychology and Education. Suggestions and literature relating to home furnishing and decorations and all forms of music and art may be supplied through the Departments of Music and Art. Much helpful information and the results of the latest scientific discoveries relating to all questions pertaining to mining and minerals may be provided by the Departments of Geology and Mineralogy. Information and reference to the best literature on such problems as conservation, recreation and social health, child labor statistics and laws, city government, water supplies, disposal of garbage, the abatement of noise, etc., can be furnished by other departments of the University.

3. WRITING FOR INFORMATION.—By addressing the Registrar of the University the inquirer will obtain the services of the appropriate professor or department. No fees are charged for this work for public welfare.
SUMMER SCHOOL

OFFICERS OF ADMINISTRATION

CLYDE AUGUSTUS DUNIWAY, President of the University.
GEORGE FULLMER REYNOLDS, Director of the Summer School.
JAMES BERYL SPEER, Registrar.

SUMMER SCHOOL FACULTY

CLYDE AUGUSTUS DUNIWAY, Ph. D., (Harvard)
   President of the University

FREDERICK C. SCHEUCH, M. E., A. C., (Purdue)
   Professor of Modern Languages

MORTON J. ELROD, Ph. D., (Illinois Wesleyan)
   Professor of Biology

FRANCES CORBIN, B. L., (Ohio College)
   Professor of Literature

JOSEPH HARDING UNDERWOOD, Ph. D., (Columbia)
   Professor of History and Economics

LOUIS CLARK PLANT, A. M., (Chicago)
   Professor of Mathematics

JOSEPH EDWARD KIRKWOOD, Ph. D., (Columbia)
   Professor of Botany and Forestry

GEORGE FULLMER REYNOLDS, Ph. D., (Chicago)
   Professor of English and Rhetoric

GUSTAV L. FISCHER,
   Professor of Music

JOHN S. McINTOSH, Ph. D., (Upper Iowa University)
   Acting Professor of Latin
HERBERT G. CHILDS, Ph. D., (Columbia University)
Acting Professor of Education

WILLIAM G. BATEMAN, A. M., (Stanford University)
Acting Professor of Chemistry

ROBERT NEAL THOMPSON, B. S., (University of Nashville)
Assistant Professor of Physics

ELOISE KNOWLES, Ph. M., (Chicago)
Instructor in Fine Arts

EUGENE F. A. CAREY, B. S., (California)
Instructor in Mathematics

JOHN HOWARD STOUTEMYER, Ph. D., (Clark)
Instructor in Education

GEORGE M. PALMER, A. M., (Illinois)
Instructor in English

PAUL C. PHILLIPS, Ph. D., (Illinois)
Instructor in History

G. A. GROSS
Instructor in Engineering Shops

STEPHEN F. BALL, (Portland Public Schools)
Instructor in Intermediate Education

NETTIE A. SAWYER, (Seattle Public Schools)
Instructor in Primary Education

MILDRED CLARK, (Missoula Public Schools)
Instructor in Public School Music

MARGERY BELL, (Chicago Playground Association)
Instructor in Supervised Play
GENERAL INFORMATION

Appropriations for University Summer School.

The Summer School of the University of Montana was provided for by appropriations of $5,000 for each of the years 1911 and 1912. The session of 1911 could not be held because the State Board of Examiners deemed it necessary to forbid the expenditure of that year's appropriation. The session of 1912 has been made possible by the release of the appropriation granted by the last legislature.

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:

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 in High Schools. This certificate renders teachers' examinations unnecessary.

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 in 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.

The Faculty.

A corps of twenty-two professors and instructors, two-thirds from the University staff, and one-third from other institutions, will give courses in seventeen departments.
Scope of Courses.

Instruction will be given in the following departments: Biology, Botany, Chemistry, Economics, Education, English, Fine Arts, History, Latin, Library, Literature, Manual Training, Mathematics, Modern Languages, Music, Physics, Playgrounds. Over sixty courses are listed in these departments.

Session of 1912.

The Summer School of 1912 will begin its session on Monday, June 10, and continue until Saturday, July 20, a period of six weeks.

Registration.

As far as possible students should enroll at the office of the Registrar on Monday, June 10. Instruction begins at 8 a.m. the following day, Tuesday, June 11.

Admission.

There are no formal requirements for admission to the Summer School. Its courses are open to all students qualified to pursue them to advantage.

Credits.

University credits toward degrees will be given only to those students who present certificates and other credentials in satisfaction 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.

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.

Fees.

The Registration Fee for the Summer School is $10.00, regardless of the number of courses taken. This fee is required of those who wish to attend courses as visitors as well as of those who do regular work and obtain credits.

There are no tuition fees, except for private instruction in Music. A charge of $10.00 is made for two lessons a week during six weeks.

All fees must be paid in advance upon enrolling at the office of the Registrar in University Hall.
Laboratory Deposits.

Deposits to cover cost of materials furnished to students or of breakage, for which they may be responsible, will be required as follows:

Botany,—
   Course 1, $1.00; 2, $2.00.

Biological Station,—
   Any course, $5.00.

Chemistry,—
   One course, $7.00; for each additional course, $3.50.

Fine Arts,—
   Course 2, $1.00; course 3, $2.00.

Manual Training,—
   Course 1, $2.00; course 2, $2.00.

Physics,—
   Course 2, $2.00; course 7, $2.00.

Board and Room.

Women students will find accommodations in Craig Hall, where board and lodging will be provided for $25.00 per month. Rooms in the dormitory are completely furnished, except that occupants must supply their own linen.

Men attending the Summer School will readily find comfortable rooms at prices ranging from $5.00 to $12.00 per month. A list of available rooms will be found at the office of the Registrar. Table board in Craig Hall for men will be provided for $4.25 per week.

Library.

The University Library will be open throughout the Summer School, and full library privileges are extended to Summer School students.

Recreation.

Social and recreational features will be made attractive. Receptions, informal dances, picnics, trout fishing, excursions up the mountains and to the Bitter Root and other points of interest, will be frequent. The gymnasium, tennis courts, ball field and track, invite physical culture.
Lectures, Concerts, Theater.

A course of lectures of general interest, to be given at least once a week, will be arranged.

Professor Fischer has charge of weekly concerts, at which the best of music will be heard.

Missoula's theater gets the best attractions coming through the Northwest.

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.

DEPARTMENTS AND COURSES OF INSTRUCTION

BOTANY

Professor J. E. Kirkwood.

1. ELEMENTARY BOTANY.—Structural. A study of the structure of plants representative of the principal natural groups of algae, fungi, mosses, ferns and seed plants. Methods of collecting, preserving and preparing such material for class use will also be discussed. Field work will constitute an important part of the work. Three lectures and three laboratory periods per week on Monday, Wednesday and Friday. One or two semester credit hours.

2. ELEMENTARY BOTANY.—Physiological. A study of the functions of plants. Experiments with plants to determine their relations to light, moisture, temperature and other factors influencing their growth and development. A study of the methods of conducting experiments will form a part of this course also. Two lectures and two laboratory periods per week on Tuesday and Thursday. One semester credit hour.

3. SYSTEMATIC BOTANY.—Excellent opportunity is provided at the University for a study of the flora of Montana. The Department has an excellent herbarium, and the local flora about Missoula is rich in representatives of many of the principal groups of seed plants. This is chiefly a laboratory course on the classification of plants and methods of herbarium work. Time to be arranged. One or two semester credit hours.
CHEMISTRY
Acting Professor W. G. Bateman.

1. 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, Alexander Smith's Chemistry for Colleges. Prerequisite: High School Physics and Laboratory. Lectures daily. Four semester credit hours.

2. QUALITATIVE ANALYSIS.—A study of methods for detecting and separating the principal bases and inorganic acids, followed by analysis of various substances in solid and liquid form. Must be preceded by courses I and II. Credit to be arranged.

3. QUANTITATIVE ANALYSIS.—An introduction to quantitative methods and the chemistry upon which these are based. Students perform simple analyses which involve the use of apparatus ordinarily employed in analytical work. Credit to be arranged.

ECONOMICS
Professor J. H. Underwood.

1. ECONOMIC PRINCIPLES.—The use and the production of wealth; the distribution of product into wages, rent, interest and profits. Introduction to some of the current questions of economic life, such as conservation, tariffs, trusts, labor unions. This course will present those basic economic principles without which intelligent study of current economic and political questions is impossible. Two semester credit hours.

2. SOCIAL PROBLEMS.—Introduction to the study of current movements and institutions of social reform and philanthropy, socialism, co-operation; child and woman labor; labor legislation; prison reform; organized charity; welfare work; church and social reform; social education; social settlements, etc. This course will be a survey of the present day efforts for social betterment, with a more special study of selected subjects. Two semester credit hours.

EDUCATION AND PSYCHOLOGY
Acting Professor H. G. Childs.
Instructors J. H. Stoutemyer, Stephen F. Ball, Nettie A. Sawyer.

1. GENERAL INTRODUCTION TO PSYCHOLOGY.—A study of the facts and laws of consciousness and their relation to the body and nervous system. Special attention will be given to those chapters in Psychology which are fundamental for Education. Three lectures and two laboratory periods per week. Two semester credit hours.

2. CHILD STUDY.—A study of the unfoldment of the mental powers of the child. The physiology and psychology of childhood, with special reference to the pedagogical principles involved; the hygiene of physical and mental growth; a study of the literature and investigations on the study of children, with critical discussion of methods and results. Five periods per week. Two semester credit hours.

3. CLASSROOM MANAGEMENT.—A study of the practical problems of the classroom. The attempt will be made to give students such help as
will enable them to solve the practical problems of instruction and discipline in the most scientific and economic way. Five periods per week. Two semester credit hours.

4. HISTORY OF EDUCATION.—The ancient and mediaeval periods. An investigation of the beginnings of education in primitive society and the evolution of educational ideals, materials, methods, theories and institutions of the ancient world, particularly the Greeks and the Romans, and the peoples of Western Europe to the Italian Renaissance. To be followed in 1913 by a course in the History of Modern Education. This course applies on the University Certificate of Qualification to Teach. Five periods per week. Two semester credit hours.

5. SCHOOL HYGIENE.—Treats of the hygienic aspects of school architecture and equipment, the important principles involved in physical development, mental hygiene and hygiene of instruction, including such topics as tests of hearing, vision, fatigue, etc. This course applies on the University Certificate of Qualification to Teach. Five periods per week. Two semester credit hours.

6. MENTAL TESTS.—Education and examination of subnormal and supernormal children. Study of standard tests and their application to the classroom. Other topics are included, such as individual differences, elimination, retardation, grading and promotion, special schools, individual versus class instruction. Two lectures and one laboratory period per week. One semester credit hour.

7. NORMAL COURSE IN PLAY.—A course of lectures and assigned readings dealing with such topics as the educational significance and function of play in development and learning, modern theories of play, child nature and play, school and home games, the playground movement, administration of playgrounds, place of organized play in the school curricula. Two lectures per week with observation on playgrounds. One-half of one semester credit hour.

8. THEORY AND PRACTICE OF TEACHING IN THE ELEMENTARY GRADES.—A theoretical and practical study of the aims, subject matter, materials and methods of instruction in the first primary and elementary grades. A development and formulation of the best methods in teaching reading and literature, spelling, writing and arithmetic. Lectures, assigned readings and discussions and observation of actual school room methods in the teaching of these subjects. Five periods per week. Two semester credit hours.

9. PRIMARY METHODS FOR RURAL OR GENERAL PRIMARY TEACHERS.—A practical study of the subjects taught in the first four grades from the standpoint of principles of method. The preparation of lesson plans and the subject of teaching children how to study will receive consideration. One of the chief aims of the course will be to work out the best use to be made of the instincts and self activity of children in the practical and formal instruction of the public schools. Five periods per week. Two semester credit hours.

10. GRAMMAR GRADE METHODS.—A theoretical and practical discussion of the aims, subject matter and methods of instruction in the grammar grades. Lectures, assigned readings and discussions. Five periods per week. Two semester credit hours.

11. THE TEACHING OF ARITHMETIC, GEOGRAPHY, GRAMMAR, HISTORY, READING AND COMPOSITION.—A practical study of the teaching of various school subjects from the standpoint of principles of method.
A brief history of the subjects taken up, a discussion of the types of subject-matter adapted to the needs of various kinds of schools and stages of development, the sequence and correlation of topics and subjects, the classical and modern methods of presenting the subjects are among the topics treated. Lectures, assigned readings and discussion. Five periods per week. Two semester credit hours.

**ENGLISH**

Professor G. F. Reynolds  Instructor G. M. Palmer.

1. CORRECT ENGLISH.—Practice in writing and speaking English correctly; daily themes or exercises, and study of usage in grammar, spelling, pronunciation, punctuation, diction and sentence structure. This course is advised for all persons intending to enter the University as Freshmen, and for teachers who wish to become acquainted with practical and efficient methods of attacking these problems. Students passing in this course are excused from the preliminary Freshman examination in English. No semester credit.

2. ENGLISH COMPOSITION.—Practice in writing; short themes daily, three long themes. The student will usually be left free to choose his own subjects. The class work will center about the English essayists. Prerequisite, one year of college composition. Two semester credit hours.

3. ENGLISH VERSE.—The theory of English versification with exercises in verse writing; especially intended for students desiring to increase their appreciation of poetry or for those who intend to teach English in high schools. This course will largely confine itself to blank verse, heroic couplet. Two semester credit hours.

4. THE ROMANTIC MOVEMENT.—A lecture and reading course. A study of the pseudo-classical literature preceding the Romantic movement, with the principles of literary criticism held by the classicists; the origin of the Romantic movement, with a study of such early representatives of this movement as the Wartons, Young, Walpole, Thomson, Plake, Chatterton, Bickford, MacPherson, McCleod, and as much attention as it is possible to give to the later Romanticists of the nineteenth century. A study of the rise of Romanticism in France, with special emphasis on the influence of Rousseau, and a brief study of the beginnings of Romanticism in Germany, with a study of such representatives as the Schlegels, so far as possible. Two semester credit hours.

**FINE ARTS**

Instructor Eloise Knowles.

1. HISTORY OF PAINTING IN THE ITALIAN RENAISSANCE.—A study of the development of Italian painting from the time of Giotto to its decadence. Two semester credit hours.

2. ELEMENTARY DRAWING AND PAINTING.—A course in free-hand drawing and painting; especially adapted to teachers. One or two semester credit hours.

3. PRACTICE IN DESIGN.—The essential principles of design, with application in one of the following materials: Clay, leather, metal. One or two semester credit hours.
HISTORY
Instructor P. C. Phillips.

1. THE RENAISSANCE.—Political, economic, and social background; medieval culture; beginning of universities, influence of Byzantine Greeks, papacy and Renaissance; geographical, scientific and cultural progress, Christian Renaissance. Results of movement. Two semester credit hours.

2. SECESSION AND RECONSTRUCTION.—A detailed study of United States history, from 1850 to 1870. Two semester credit hours.

LATIN
Acting Professor John S. McIntosh.

1. LIVY.—Selections from Books XXI and XXII will be read. In connection with the reading the style of Livy and the history of the periods covered will receive special attention. Five periods per week. Two semester credit hours.

2. HORACE.—Selected Odes and Epodes. Special attention will be given to metrical reading, translation (oral and written) and a study of the literary forms. Five periods per week. Two semester credit hours.

3. PROSE COMPOSITION.—Translation into Latin of connected passages of English, and a review of the principles of Latin Syntax. Five periods per week. Two semester credit hours.

4. PROFESSIONAL COURSE.—This course is designed especially for teachers of Latin, or those who expect to teach. The history of Classical Philology, its scope and aim, will be briefly sketched. Then the four years' work in secondary Latin will be considered, beginners' books compared, and parts of Caesar, Cicero and Vergil will be studied. The viewpoint of the teacher in the secondary school is constantly kept in mind, and the difficult points in the teaching of these subjects are discussed. Five periods per week. Two semester credit hours.

LIBRARY
Librarian Buckhous.

The University Library with the aid of the Missoula Public Library will conduct a library institute for the benefit of those teachers who have, or may have, the care of high school or grade libraries.

The subjects taken up in this institute will include cataloging, classification, book ordering, mechanical processes of preparation, and charging systems. The work will require five afternoons, June 24th to 28th inclusive.

LITERATURE
Professor Frances Corbin.

1. AMERICAN LITERATURE.—A survey of American literary history, and the discussion of notable works in prose and in verse. This course is open to all students. College credit may be given to those who have finished freshman English or its equivalent. Five periods per week. Two semester credit hours.
2. VICTORIAN POETS.—Wordsworth, Coleridge, Shelley and Keats are studied in representative selections. This course is for advanced students. Two lectures per week. One-half of one semester credit hour.

3. TENNYSON AND BROWNING.—The critical study of selections from Tennyson and Browning. Open to mature students. Two lectures per week. One-half of one semester credit hour.

MANUAL TRAINING
Instructor E. A. Gross.

1. WOOD WORKING.—Bench work and wood turning. Five periods per week. One semester credit hour.

2. MACHINE SHOP.—Milling machines, the lathe, shaper, bench, etc. Five periods per week. One semester credit hour.

MATHEMATICS
Professor L. C. Plant Instructor E. F. A. Carey.

1. ELEMENTARY ALGEBRA.—Five periods per week.

2. PLANE GEOMETRY.—Five periods per week.

3. SOLID GEOMETRY.—Five periods per week.

N. B.—The above named courses will be given primarily to meet the needs of those teachers desiring to obtain first grade or professional certificates.

4. COLLEGE ALGEBRA.—This course aims to give a clearer insight into academic mathematics as well as to lay the foundation for more advanced work. Prerequisite: Elementary Algebra and Plane Geometry. Two semester credit hours.

5. ELEMENTARY ANALYSIS.—This course is designed for teachers of mathematics in the high school who wish to broaden their knowledge of the subject. Two semester credit hours.

6. TEACHERS' COURSE.—A critical review of secondary mathematics; discussion of current developments in methods of teaching and subject matter taught; comparative study of leading textbooks; correlation of mathematics with allied subjects; laboratory mathematics. Two semester credit hours.

MODERN LANGUAGES
Professor F. C. Scheuch.

1. GERMAN.—A beginning course in German, consisting of Grammar (Allen & Batt) and in connection reading of works similar to Brandt. Ten periods per week. Four semester credit hours.

2. GERMAN.—Grammar review and composition, planned mainly for those who may wish to supplement work taken previously. Five periods per week. Two semester credit hours.

3. GERMAN, INTERMEDIATE OR ADVANCED.—Corresponds to second or third year college work, the courses to be arranged after application for the work. One or two semester credit hours.
4. FRENCH.—Courses corresponding to the work outlined above in German may be arranged on request for sufficient numbers of applicants. One or two semester hours.

5. SPANISH.—Courses may be arranged if there is sufficient demand. One or two semester hours.

MUSIC

Professor Gustav L. Fischer. Instructor Mildred Clark.

1. PUBLIC SCHOOL MUSIC.—A first course for teachers who have not had previous training in the subject. Time to be arranged.

2. PUBLIC SCHOOL MUSIC.—A more advanced course, presupposing some training and skill. Time to be arranged.

3. PIANO.—Private instruction, adapted to the needs of each student. Lessons during the Summer School. Time and terms to be arranged.

4. VIOLIN.—Private instruction, adapted to the needs of each student. Lessons during the Summer School. Time and terms to be arranged.

5. MUSIC RECITALS.—Weekly recitals will be arranged by the department. Programs and times will be announced later.

PHYSICS

Assistant Professor Robert N. Thompson.

1. MECHANICS, MOLECULAR PHYSICS AND HEAT (Lectures).—This course comprises the lectures and recitations of course I in College Physics. The same subjects will be taken up and treated with the same thoroughness as in regular work. Five periods per week. Two semester credit hours.

2. MECHANICS, MOLECULAR PHYSICS AND HEAT (Laboratory).—This is the laboratory course corresponding to 1, and when satisfactorily completed with it will entitle the student to credit for course I in College Physics. Laboratory periods daily. Two semester credit hours.

3. ELECTRICITY, SOUND AND LIGHT (Lectures).—This is a course in these subjects similar to 1 above. Five periods per week. Two semester credit hours.

(Planned for 1913, but not to be given in 1912.)

4. ELECTRICITY, SOUND AND LIGHT (Laboratory.)—This course is similar to 2 above. Laboratory periods daily. Two semester credit hours.

(Not to be given in 1912.)

5. ELEMENTARY PHYSICS.—This course will cover the subjects of Properties of Matter, Mechanics and Heat. No credit will be given for this course until courses 6 and 7 are taken. These three are the equivalent of a standard high school course in Physics, and credit for them will entitle the candidate to one unit of entrance credit. Lectures five periods a week.

6. ELEMENTARY PHYSICS.—This course is a continuation of 5 and will cover the subjects of Electricity, Magnetism, Sound, Light and Radiation Phenomena. Lectures five periods a week.

(Not to be given in 1912.)
7. LABORATORY OF ELEMENTARY PHYSICS.—This course will include forty-five or fifty laboratory problems of elementary Physics and will constitute the laboratory work of courses 5 and 6. Laboratory periods daily.

8. PEDAGOGY OF HIGH SCHOOL PHYSICS.—This course will consist of discussions of, and assigned readings and reports on, the subject matter and methods in High School Physics. Some attention will be paid to satisfactory methods of demonstrating important phenomena by means of simple apparatus at the disposal of practically any school. The course will cover Electricity, Sound and Light. Two periods per week. One-half of one semester credit hour.  
(Not to be given in 1912.)

9. CULTURAL PHYSICS.—This is a lecture demonstration course with occasional recitations and intended for those who wish to review the subject matter of High School Physics and at the same time acquire something new in the subject. Consequently the matter will be presented in a manner slightly different from that of high school practice. Three periods a week, One semester credit hour.  
(Not to be given in 1912.)

PLAYGROUNDS AND SUPERVISED PLAY
Instructor Margery Bell.

1. SCHOOL PLAYGROUNDS.—Training for teachers in games adapted to public school playgrounds. Time to be arranged.

2. PUBLIC PLAYGROUNDS AND FESTIVALS.—The management of public playgrounds and festivals; practice on Missoula playgrounds. Time to be arranged.

THE UNIVERSITY OF MONTANA BIOLOGICAL STATION
Professor Morton J. Elrod, Director.

A station for instruction and research in Biology will be maintained by the University of Montana, as a part of its regular Summer Session, during six weeks, from June 18 to July 30 inclusive.

Location.

The station was formerly maintained at Bigfork, at the upper end of Flathead Lake. This year the station will be established and a substantial two-story building constructed at Yellow Bay, on a tract of 80 acres. The Yellow Bay site is on the east shore in wild and romantic country, at the foot of high mountains in the Mission range, with dense forests to the water's edge. The bay is a perfect harbor with fine beach. A mountain stream furnishes pure and cold water. The location is ideal for rest and recreation, for study of outdoor life in a new country, for collecting, and for investigation. Flathead Lake covers nearly 40 square miles, and its shores and nearby territory present a variety of collecting fields. The elevation is 3,000 feet.

The station at Yellow Bay is about fifteen miles from Poislon, at the southern end of the lake, seventeen miles from Bigfork, on the northeastern corner, and about twenty miles from Somers, the railroad terminus at the northwestern corner of the lake. A good wagon road extends from the bay northward, and during the summer a road will be constructed the entire length of the lake. By boat the different collecting fields are easily accessible.
Equipment.

The building to be constructed has been previously mentioned. A boat thirty feet long, fitted with twelve horse-power engine, the property of the station, makes transportation easy. A smaller gasoline boat and row boats are also supplied for use. The necessary collecting apparatus, nets and dredges, microscopes, books, etc., will be provided.

Plan of Work.

Since the Station is being established in a new location, where the country is new, but a limited number can be taken care of. Early application on the part of prospective students is very desirable.

It is not the purpose to duplicate the regular University work. It is intended to offer a place where out of door and field work may be carried on under favorable conditions, where collections may be made, and where opportunities may be had for study of problems by advanced students.

Courses.

Courses will be offered in Zoology and Botany, dealing with the forms of life in the vicinity; in Photography, and in Nature Study. Lectures will be given from time to time on general scientific topics. Weekly excursions will be made to more remote places. Instruction will be given in camp equipment and camping.

Fees and Expenses.

Each student will be charged a registration fee of $10.00, and must make a deposit of $5.00 for laboratory materials, the necessary expenses of gasoline for boats, and the like.

Except for living expenses, there will be no other charges.

Board and Lodging.

Tents will be used for living quarters. Each tent will be provided with board floor, and with a few necessary articles of furniture. A few tents may be rented. Each person must provide necessary toweling, linen and bed clothes. Table board will be provided at cost.

Information.

Address the Director, Morton J. E'rod, for detailed information.
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 J. H. Underwood and H. W. Ballantine, and Registrar J. B. Speer.

(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.
DEGREES CONFERRED, JUNE, 1911

Averill, Florence Hale.....................B. A. (Literature)
Bennett, William Andrew....................B. A. (Economics)
Bishop, Arthur Fowler......................B. S. (Forestry)
Bowman, Conrad Henry........................B. A. (History and Economics)
Pullerick, Millard S........................B. A. (Economics and History)
Catlin, Florence E............................B. A. (Literature)
Coffee, Eva M..................................B. S. (Biology)
Dinsmore, Oliver Raymond...................B. S. in Engineering
Eldell, Isma Caroline.......................B. A. (Literature)
Elrod, Mary....................................B. S. (Biology)
Forbis, Hugh Temple........................B. S. (Geology)
Gleason, Frank Elliott......................B. S. in Engineering
Hanon, Jessie.................................B. A. (Latin and Greek)
Hansen, Mary..................................B. S. (Biology)
Hoffman, Charles Henry.....................B. S. in Engineering
Hughes, Ethel Grace........................B. A. (Modern Languages)
Lucy, Abbie Catherine......................B. A. (Modern Languages)
McCowan, Charles Stuart....................B. A. (Economics and History)
McCullough, Massey Sanderson..............B. S. (Geology)
McGregor, Mildred Alene....................B. A. (Literature)
McLean, Gladys Ann........................B. A. (History and Economics)
Maclay, Harry David.........................B. S. in Engineering
Marshall, Mary Lucile......................B. A. (Modern Languages)
Reardon, Stephen James......................B. S. in Engineering
Rolfe, Lucia Ione............................B. A. (Latin and Greek)
(x) Rolfe, Martha Edith......................B. A. (Modern Languages)
Ross, Marjorie................................B. A. (Modern Languages)
Simpson, Morton Dixon......................B. S. in Engineering
Smith, Ralph Wallace.......................B. S. in Engineering
Spencer, Harvey George....................B. S. (Chemistry)
Steele, Mary Edith..........................B. S. (Biology)
Williams, Lillian.............................B. A. (Literature)

(x) Degree conferred as of the Class of 1910.
### REGISTER OF STUDENTS, 1911-12

#### ENROLLED IN REGULAR COURSES

**Note.**—Choice of major department is made at the beginning of the Junior year, except in technical departments. Credit hours are stated as completed by February 1, 1912.

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Little, Nathaniel Stanton .................... 45
Lovett, Ernest K............................... 81
Lyden, Mabel Mary............................. 49
Lyman, Hazel Marshall ....................... 60
McCarthy, Patrick Thomas..................... 46½
McCullough, Maude Brooks .................... 105
McGuire, George Clarence.................... 4½
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McLaughlin, Winifred Beatrice 10½
McClay, Holmes............................... 106
Maddox, Coburn Fletcher ..................... 14
Marsh, Hilda Frances ......................... 16½
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Mathematics.............Missoula
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Cheyenne, Wyo.
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Libby
Modern Languages........Dupuyer
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Butte
Anaconda
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<td>Maurer, Raymond Elijah</td>
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<td>Ott, Alonzo Hugo</td>
<td>Missoula</td>
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<td>Parker, Arthur William</td>
<td>Anaconda</td>
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<tr>
<td>Siria, Carl H.</td>
<td>Dillon</td>
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<td>Townsend, Harold</td>
<td>Anaconda</td>
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<tr>
<td>Vealey, Charles Edward</td>
<td>Missoula</td>
<td></td>
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<tr>
<td>Waller, George</td>
<td>British Columbia</td>
<td></td>
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<tr>
<td>Whelchel, Frederick C.</td>
<td>Kellogg, Idaho</td>
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<tr>
<td>Wurth, Thomas Cleveland</td>
<td>St. Maries, Idaho</td>
<td></td>
<td></td>
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<tr>
<td>Young, Winthrope Hayes</td>
<td>Stevensville</td>
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SUMMARY OF REGISTRATION

For Academic Year 1911-12

<table>
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<tr>
<th></th>
<th>Men</th>
<th>Women</th>
<th>Total</th>
<th>&quot;Old&quot; Students</th>
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<td>Senior</td>
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<td>Junior</td>
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<td>Sophomore</td>
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<td>36</td>
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<td>87</td>
<td>203</td>
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<td>87</td>
<td>230</td>
<td>107</td>
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Note.—The above numbers do not include special students of the Department of Music, students doing summer work at the Biological Station, or students enrolled in Correspondence and Lecture courses of the University Extension department.

*ANALYSIS OF RESIDENCE OF STUDENTS*

For Academic Year 1911-12

<table>
<thead>
<tr>
<th>Montana—</th>
<th>Men</th>
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<tr>
<td>Beaverhead County</td>
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<tr>
<td>Broadwater County</td>
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</tr>
<tr>
<td>Cascade County</td>
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<tr>
<td>Choteau County</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Custer County</td>
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<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Deer Lodge County</td>
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<td>1</td>
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<tr>
<td>Fergus County</td>
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<tr>
<td>Flathead County</td>
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<tr>
<td>Granite County</td>
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<td>Jefferson County</td>
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<td>8</td>
<td>11</td>
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<td>Lincoln County</td>
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<tr>
<td>Madison County</td>
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</tr>
<tr>
<td>Meagher County</td>
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<tr>
<td>County</td>
<td>Men</td>
<td>Women</td>
<td>Total</td>
</tr>
<tr>
<td>------------------------</td>
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<tr>
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<tr>
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<tr>
<td>Sweet Grass County</td>
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<td>Teton County</td>
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<tr>
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**Other States—**

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<tr>
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<td>Indiana</td>
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<td>Iowa</td>
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<td>Minnesota</td>
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<tr>
<td>Missouri</td>
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<tr>
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<tr>
<td>Oklahoma</td>
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<tr>
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**Other Countries—**

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<td>Japan</td>
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Totals: 116

*Short Forestry course students not included.
## *Analysis of Major Subjects*

*For Academic Year, 1911-12*

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<th>Subject</th>
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<td>History and Economics</td>
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<td><strong>29</strong></td>
<td><strong>26</strong></td>
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(x) Also majors in Engineering:
- Sophomores: 8
- Freshmen: 19

(xx) Also special majors in Law:
- Sophomores: 5
- Freshmen: 3

* Short Forestry course students not included.
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.  .  Missoula
George Hempstead Kennett, B.S. (M.D., Rush Medical College)
Helen McCracken, B.A. (M.A., University of Chicago)  .  St. Ignatius
Charles Pixley, B. A. (M.D., Rush Medical College)  .  Missoula

1900

Charles Earl Avery, B.Ph.  .
Mary Gertrude Buckhous, B.S.  .  Missoula
Caroline Harrington Cronkrite (Mrs. C. T. DeWitt Grubbs),
B.S.  .
Lu Knowles (Mrs. R. J. Maxey), B.S.  .  Camp Josman, Iloila, P. I.
Eben Hugh Murray, B.A.  .  (Address unknown)
Percy Shelley Rennick, B.Ph. (M.D., Kentucky Medical College),
Sidney Elery Walker, B.S. (LL.B., University of Michigan)
(Address unknown)

1901

Estelle Bovee, B.Ph.  .  .
Hugh Alexander Graham, B.S.  .  16 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.
<table>
<thead>
<tr>
<th>Year</th>
<th>Name and Degree</th>
<th>Location</th>
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<tr>
<td>1902</td>
<td>George Barnes, B.A. (Classical) (D.D., Oxford University)</td>
<td>Anaconda</td>
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<tr>
<td>1902</td>
<td>Harold Blake, B.S. (in M.E.)</td>
<td>Helena</td>
</tr>
<tr>
<td>1902</td>
<td>William O. Craig, B.S.</td>
<td>Missoula</td>
</tr>
<tr>
<td>1902</td>
<td>Helene Kennett (Mrs. Geo. Wilcox) B.A. (Literary)</td>
<td>Great Falls</td>
</tr>
<tr>
<td>1902</td>
<td>Helen La Caff (Mrs. Roy Jackson) B.A. (Classical, (Deceased Jan. 1910)</td>
<td>Missoula</td>
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<tr>
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<td>Agnes McDonald, B.A. (Classical)</td>
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<tr>
<td>1902</td>
<td>Homer McDonald, B.S.</td>
<td>Missoula</td>
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<td>1902</td>
<td>Helen McPhail, B.A. (Classical)</td>
<td>Missoula</td>
</tr>
<tr>
<td>1902</td>
<td>Fanny Maley, B.A. (Literary)</td>
<td>Missoula</td>
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<tr>
<td>1902</td>
<td>Jeannette Pickering Rankin, B.S.</td>
<td>Missoula</td>
</tr>
<tr>
<td>1902</td>
<td>Katherine Ronan (Mrs. E. C. Trask), B.A. (Classical)</td>
<td>Missoula</td>
</tr>
<tr>
<td>1902</td>
<td>Margaret Ronan, B.A. (Classical)</td>
<td>Missoula</td>
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<tr>
<td>1902</td>
<td>Pearl Scott (Mrs. Fritz Kroger), B.A. (Classical)</td>
<td>Phillipsburg</td>
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<td>1902</td>
<td>Guy Emerson Sheridan, B.S.</td>
<td>Juneau, Alaska</td>
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<td>1902</td>
<td>Benjamin Stewart, B.S.</td>
<td>Missoula</td>
</tr>
<tr>
<td>1903</td>
<td>Myrtle Weber Avery (Mrs. Charles E. Avery), B.A. (Classical)</td>
<td>Missoula</td>
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<tr>
<td>1903</td>
<td>Miriam Hatheway, B.A. (Classical)</td>
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<tr>
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<td>Mabel Emily Jones, B.A. (Literary)</td>
<td>Missoula</td>
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<tr>
<td>1903</td>
<td>Martin Jones, B.S.</td>
<td>Cabangan, Nueva, Luzon, P. I.</td>
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<td>1903</td>
<td>Lillian F. Jordan (Mrs. I. L. Bendon), B.A. (Literary)</td>
<td>Glendive</td>
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<tr>
<td>1903</td>
<td>Rella Likes, B.A. (Literary)</td>
<td>Missoula</td>
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<tr>
<td>1903</td>
<td>Lucy Likes, B.A. (Literary)</td>
<td>Missoula</td>
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<td>1903</td>
<td>Claude Otto Marcyes, B.A. (Literary)</td>
<td>Forsyth</td>
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<td>Wellington Duncan Rankin, B.S.</td>
<td>Helena</td>
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<tr>
<td>1903</td>
<td>Ida Rigby, B.A. (Literary)</td>
<td>(Deceased Feb. 19, 1904) Carlton</td>
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<tr>
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<td>Eloise Rigby, B.S.</td>
<td>Missoula</td>
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<tr>
<td>1903</td>
<td>Harriet Laura Rankin (Mrs. Oscar Sedman), B.A. (Classical).</td>
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<tr>
<td>1903</td>
<td>Leslie Mitchell Sheridan, B.S. (in M.E.)</td>
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1904

<table>
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<tr>
<td>1904</td>
<td>Page Bunker, B.A. (Classical)</td>
<td>Kalispell</td>
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<td>Moncure Cockrell, B.A. (Classical)</td>
<td>Deer Lodge</td>
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<tr>
<td>1904</td>
<td>Walter Hammer, B.A. (Literary)</td>
<td>Foster</td>
</tr>
<tr>
<td>1904</td>
<td>Alice Herr, B.A. (Literary)</td>
<td>112 Rutgers St., Belleville, N. J.</td>
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<td>1904</td>
<td>Roxane Howell (Mrs. J. A. Derge), B.A. (Classical)</td>
<td>Missoula</td>
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<tr>
<td>1904</td>
<td>Georgia Evelyn Polleys (Mrs. D. T. Mason), B.A. (Literary).</td>
<td>Missoula</td>
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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)  Lewistown
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)
  209 Wells Fargo Bldg., Portland, Ore.

1906

Fred Elliot Buck, B.S. (in M.E.)  Missoula
Joseph Buckhouse, B.S. (in M.E.)  St. Ignatius
Maud Burns, B.A.  Missoula
Edwin Reed Corbin, B.S. (in M.E.)  Nampa, Idaho
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.)  Anaconda
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.  Lima
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 Mich-
  igan)  Forest Service, St. Maries, Idaho
Margaret Summers, B.A. (Literary)  Missoula
Ruth Ward (Mrs. D. I. Grush), B.A.  Anaconda
Debora Wagy, B.A.  Stevensville
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) . . . Townsend
Charles Scovill Dimmick, B.S. (in Engineering) . . . Missoula
Frederic Eugene Dion, B.S. (in Engineering) . . . Glendive
Stella Louise Duncan, B.A. (Classical) . 701 Clark St., Evanston, Ill.
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Lawrence Edward Goodbourne, B.A. (Classical) . Roseburg, Ore.
Laura May Hamilton (Mrs. R. L. Harmon), B.A. (Literary) . . . Walla Walla, Wash.
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Daisy Kellogg (Mrs. Lynn Ambrose), B.A. (Literary) . . Missoula
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William Hovey Polleys, B.S. (in Engineering), (Deceased, Aug. 2, 1910)
Joseph William Streit, B.S. . . . . . Missoula
Montgomery De Smith, B.S. (in Engineering) . . . Hamilton
Lillian Warren, B.A. (Classical) . . . (Deceased, Feb. 22, 1908)
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1908

Ethel Olive Ambrose (Mrs. H. L. Hitchcock), B.A. (Literary) Visalia, 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) . . . Radersburg
Fanny Hatheway (Mrs. John Lucy), B.A. (Classical) . . . Missoula
Frances Margaret Jones, B.A. (Literary) ........................................ Anaconda
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Edward Angus Wenger, B.S. (Engineering) ................................... Anaconda

1909

Almeda Andrews (Mrs. Charles F. Farmer), B.A. (Classical), Missoula
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Bess Margaret Bradford (Mrs. Charles Popkins), B.A. (Literary) ........ Sapulpa, Okla.
Dera Montana Buswell, B.A. (Literary) ........................................ Missoula
Ida May Cunningham, B.A. (Literary) .......................................... Colville, Wash.
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Alice Anne Wright, B.A. (Literary) ............................................. Missoula
William Montgomery Van Eman, B.S. (Engineering) ...................... Augusta

1910

Mary Elizabeth Burke, B.A. (Latin) ............................................. Thompson
Anna Hazel Butzerin (Mrs. C. A. Bisbee), B.A. (Latin) ................. Missoula
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Josephine Mary Henderson, B.A. (Literature) ............................Hall
Renee Jane Henderson, B.A. (Literature) ....................................Hall
Edna Frances Hollensteiner, B.A. (Latin) ..................................LoLo
Laura Seawright Johnson, B.A. (History and Economics) .............Boise, Ida.
Lizzie Beulah Leaf, B.A. (Latin) .............................................Superior
Arbie Eugene Leech, B.A. (Economics) ......................................Dupuyer
Robert Campbell Line, B.A. (Economics and History) (A.M.,
Harvard University) ........................................Cambridge, Mass.
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, B.A. (Latin) ........................................Columbus
Martha Edith Rolfe, B.A. (Modern Languages) .............................Stanford
Edna Pearl Rosean, B.A. (Literature) ........................................Columbus
Roberta Satterthwaite, B.A. (Literature) ................................Kent, Wash.
Frederick Thayer Stoddard, B.S. (Geology) ................................Missoula
William James Tait, B.S. (Engineering) ......................................Anaconda
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Languages) ............................................................................St. Ignatius
Wilford Joseph Winninghoff, B.S. (Chemistry) ............................Institute of Technology, Boston, Mass.

1911.

Florence Hale Averill, B.A. (Literature) ................................Townsend
William Andrew Bennett, B.A. (Economics) ...............................Anaconda
Arthur Fowler Bishop, B.S. (Forestry) .......................................Helena
Conrad Henry Bowman, B.A. (History and Economics) ...............Corvallis
Florence E. Catlin, B.A. (Literature) ........................................Anaconda
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Oliver Raymond Dinsmore, B.S. (Engineering) .............................Missoula
Isma Caroline Eidell (Mrs. H. H. Slaughter), B.A. (Literature) .......Fort Missoula
Mary Elrod, B.S. (Biology) ....................................................Missoula
Hugh Temple Forbis, B.S. (Geology) .........................................Missoula
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Jessie Hanon, B.A. (Latin and Greek) .......................................Lewistown
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Mildred Alene McGregor, B.A. (Literature) ...............................Victor
Gladys Ann McLean, B.A. (History and Economics) . . Anaconda
Harry David Maclay, B.S. (Engineering) . . Missoula
Mary Lucile Marshall, B.A. (Modern Languages) . . Missoula
Stephen James Reardon, B.S. (Engineering) . .
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Mary Edith Steele, B.S. (Biology) . . . . Billings
Lillian Williams, B.A. (Literature) . . . . Deer Lodge

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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The following scientific publications have been issued:


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 29, 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.

