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1914-1915 Course Catalog

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THE TWENTIETH
REGISTER
1914-1915
ANNOUNCEMENTS
FOR 1915-1916

MISSOULA, MONTANA
FEBRUARY, 1915.

Entered at Missoula, Montana, as second-class matter, under Act of Congress, August 24, 1912.
Bulletins for 1914-1915

University Extension
School of Law
School of Pharmacy
Home Economics
School of Music
Commerce and Accounting
Annual Catalogue and Register
School of Forestry
Woman's Bulletin
Correspondence Study
Graduate Department
Preliminary Announcement of Summer School
Complete Announcement of Summer School
Short Course in Forestry
Twelfth Annual Interscholastic Meet
School of Journalism
Forest Rangers
THE TWENTIETH
REGISTER
OF THE
University of Montana
1914-15

ANNOUNCEMENT
FOR 1915-16

MISSOULA, MONTANA
### Calendar for 1915

#### January

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### Calendar, for 1916

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### Notes

- The calendar for 1915 and 1916 is presented in a tabular format, showing the days of the week and the dates for each month.
- The months span from January to December, with each month providing a full view of the days and their corresponding dates.
UNIVERSITY CALENDAR
1915-1916

SUMMER SESSION

1915—
June 14, Monday..................................................Registration Day
June 15, Tuesday..................................................Instruction Begins
July 23, Friday..................................................Instruction Ends

First Semester

1915—
September 15, Tuesday...........................................Registration Days
September 16, Wednesday........................................Instruction Begins
September 17, Thursday........................................Instruction Begins
November 24, Wednesday, 12:30 p. m. ......................Thanksgiving Recess
to November 29, Monday, 8:30 a. m. .......................Thanksgiving Recess
December 17, Friday, 4:00 p. m. ..........................Christmas Holidays
to January 4, Tuesday, 8:30 a. m. ..........................Christmas Holidays
January 28, Friday, 4:00 p. m..............................First Semester Ends

Second Semester

1916—
January 31, Monday............................................Registration Days
February 1, Tuesday..........................................Instruction Begins
February 18, Friday............................................Charter Day
March 3, Friday................................................Buckley Oratorical Contest
May 9, Tuesday, 8:00 p. m..............................Final Debate, High School League
May 9-13 Tuesday-Saturday................................Interscholastic Meet
June 2, Friday................................................Instruction Ends
June 4, Sunday................................................Baccalaureate Day
June 5, Monday, 8:30 p. m...............................Annual Music Recital
June 6, Tuesday, 8:00 p. m...............................University Play
June 7, Wednesday, 10:30 a. m..........................Class Day Exercises
June 7, Wednesday, 7:00 p. m..........................Alumni Annual Dinner
June 8, Thursday, 10:30 a. m..........................Commencement Exercises
MONTANA STATE BOARD OF EDUCATION

EX-OFFICIO.

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

APPOINTED.

S. D. LARGENT ...................................................... Term Expires February 8, 1916
W. S. HARTMAN ...................................................... " " " 12, 1916
JOHN DIETRICH ...................................................... " " " 10, 1917
J. C. SMITH ...................................................... " " " 10, 1917
J. BRUCE KREMER ...................................................... " " " 1, 1918
C. H. HALL ...................................................... " " " 7, 1918
O. W. McCONNELL ...................................................... " " " 1, 1915
W. H. NYE ...................................................... " " " 1, 1915

EXECUTIVE BOARD OF UNIVERSITY

H. A. DAVEE ...................................................... Clerk of the Board
E. B. CRAIGHEAD ...................................................... Chairman (ex-officio)
J. H. T. RYMAN, Treasurer ...................................................... Term Expires April 19, 1917
J. M. KEITH ...................................................... Term Expires April 19, 1915
J. D. DUNLOP ...................................................... Secretary
THE FACULTY

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

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

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

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

FREDERICK C. SCHEUCH, M. E., A. C. 319 South Fifth Street West
Professor of Modern Languages.
Attended Public Schools, Barcelona, Spain, 1874-1882; Graduate, Gymnasium, Frankfort on the Main, Germany, 1888; Graduate, Colegio Santo Tomas, Barcelona, Spain, 1889; Secretary, U. S. Consulate, Barcelona, 1888-1889; M. E., Purdue University, 1893; A. C., same 1894; Instructor in French, same, 1893-1894; Secretary of the Faculty, University of Montana, 1885-1909; Professor of Mechanical Engineering, University of Montana, 1895-1897; Professor of Modern Languages, University of Montana, since 1895.

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

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

Professor of Literature.

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

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

Professor of Geology.

B. S., University of Nebraska, 1897; M. A., 1903; Ph. D. 1906; Student University of Oregon, 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; Member, American Institute of Mining Engineers, Fellow Geological Society of America, Fellow American Association for the Advancement of Science, National Geographic Society; Field Geologist, U. S. Geological Survey, 1906 and 1907; President, Montana State Teachers' Association, 1908; Author of Practical Mineralogy Simplified, Elements of Mineralogy, Geography and Geology of Montana (in preparation), Practical Petrology (in preparation), Volcanic Ash Beds of Montana, Montana Coal and Lignite Deposits, Some Economic Geology of Montana; contributor to American Geologist, American Journal of Science, Science, Engineering and Mining Journal, Mines and Minerals, Mining World, etc.

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

Professor of History and Economics.

B. A., Western College, 1902; M. A. State University of Iowa, 1904; Ph. D., Columbia University, 1907; LL. D., Otterbein University, 1910; Graduate Scholar in Economics, State University of Iowa, 1902-03; Fellow in Economics, State University of Iowa, 1903-04; University Fellow in Sociology, Columbia University, 1904-05; Student, University of Chicago, 1906; Instructor in English and History, Nora Springs (Iowa) Seminary, 1905-06; Professor of History and Political Science, Leander Clark College, 1906-07; Professor of History and Economics, University of Montana, since 1907; Member, American Economics' Association, American Academy of Political and Social Science, American Sociological Association; Author of Distribution of Ownership, Taxation of Inheritances, Homestead Exemption, Social Distribution of Wealth.
JOSEPH EDWARD KIRKWOOD, A. M., Ph. D. 319 University Avenue

Professor of Botany.

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

GEORGE FULLMER REYNOLDS, Ph. D. 1122 Higgins Avenue

Professor of English and Head of the Department.

Ph. B., Lawrence College, 1898; Ph. D., University of Chicago, 1908; Fellow in English, University of Chicago, 1909-02; head of the department of English, Shattuck School, 1902-09; Assistant Professor in English and Rhetoric, University of Montana, 1909-10; Professor of English and Rhetoric since September 1, 1910; Director of Summer School, University of Montana, 1912; Director of University Extension, 1913; Instructor in Literature, University of Minnesota (Summer Session), 1914; Member of Modern Languages Association; Author of Some Principles of Elizabethan Staging; Why Go to College; (in preparation) The Art of Playreading; contributor to Modern Philology, Education, The Drama, Modern Language Notes, Poet Lore, etc.


Acting Dean and Professor of Law.

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

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

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

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

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

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

Professor of Chemistry.

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

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

Professor of Pharmacy.

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

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

Professor of Law.

B. S., Upper Iowa University, 1899; Graduate Student in English and History, University of Chicago, Summer Quarters, 1899-1901; J. D., University of Chicago Law School, 1906; Assistant Instructor in Biology, Upper Iowa University, 1898-1899; Principal of Waucoma Public Schools, Waucoma, Iowa, 1899-1901; Superintendent of City Schools, West Union, Iowa, 1901-1903; Instructor Teachers' Institutes, Fayette County, Iowa, 1902-1903; Admitted to Practice in Illinois, 1906; Practicing Law, Chicago, 1906-1913; Professor of Law, University of Montana, since September 1, 1913; Admitted to Practice in Montana, 1914.
C. W. LEAPHART, A. M., LL. B. .............................. 515 McLeod Avenue

Professor of Law.

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

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

Professor of Law.

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

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

Professor of Mathematics

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

DE LOSS SMITH...................................................... Beckwith and Maurice Avenues

Head of the School of Music and Professor of Voice

Attended Eureka College, Ill., 1892-1903; Graduate from Music Department, Campbell University, Kansas, 1895; Attended Metropolitan School of Music, Indianapolis, 1896-1897; Director of Music and Teacher of Voice, Western Normal College, Ill., 1898-1899; Studied voice under Professor L. A. Phelps of Chicago, 1903-1905; with Mr. and Mrs. Mehan, New York, 1908-1913, and summer of 1914; Teacher of tone production and interpretation, Summer School, Columbia University, since 1911; Professor of Voice, University of Montana, since September, 1913; Compiler of “Sons of the King,” “Solos for the Average Man.”

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

Dean of College of Forestry

Special Student in Engineering and Forestry, Michigan Agricultural College, 1900-1903; Assistant Forest Expert, United States Forest Service, 1904; Student Assistant United Bureau of Forestry, 1903; State Forester of
Michigan, 1905-06; Special Student Graduate School of Forestry, University of Michigan, 1904-06; Forest Assistant, United States Forest Service, 1906-08; Acting Forest Supervisor, Coeur d'Alene National Forest, 1908; Forest Examiner in Timber Sales, District 6, United States Forest Service, 1908-09; Forest Supervisor, Kootenai National Forest, 1909-15; Logging Engineer, Districts 1 and 3, United States Forest Service, 1913-1915; Special Lecturer in Lumbering, University of Montana, since 1913. Member Society American Foresters; American Forestry Association; Pacific Logging Congress. Author of Principles of Stumpage Appraisals; Forest Engineer's Handbook (in preparation). Contributor to Proceedings of the Society of American Foresters; American Forestry, Forestry Quarterly, The Timberman, American Lumberman, Mississippi Valley Lumberman, West Coast Lumberman, Lumber World Review, Engineering Record, Bulletins of the United States Forest Service.

CARL HOLLIDAY, M. A., Litt. D. ................................. 223 S. Fifth East

Professor of English

B. S., University of Tennessee, 1901; M. A., same, 1913; Litt. D. Campbell College, 1915; student in English, University of Chicago, 1902; University of Tennessee, 1902-1903, University of Virginia, 1906-1907; Fellow in English, University of Virginia, 1906-1907; Instructor in English for five years in private and public schools in Tennessee and North Carolina; Professor of English, Alabama State Normal College, 1903-1906; Instructor in English and lecturer on Southern Literature, University of Virginia, 1906-1907; Professor of English, Cox College, 1907-1908; Professor of English, Southwestern Presbyterian University, 1908-1910; Acting Professor of English, Vanderbilt University, 1910-1912; Associate Editor, American Library of Reference, 1913; Assistant Professor of English and Director of Department of Journalism, University of Montana, 1913-1914; Director of Bureau of Public Information, 1913; Professor of English, since September, 1914; Instructor in Virginia State Summer School, 1907-1912; Lecturer in Monticello Chautauqua, 1912; Member of National Council of English Teachers, National Committee for Revision of Grammar Terminology, 1912-1913, Religious Education Association, Author's League of America, Classical Association of the South and Middle West; President, Tennessee Intercollegiate Oratorical Association, 1908-1912; Director, Montana State High School Debating League, 1913; Daughters of American Revolution Prize for the best treatise on Tennessee history, 1903; Colonial Dames Prize for the best treatise on Colonial Virginia, 1906; Author of A History of Southern Literature, The Wit and Humor of Colonial Days; The Literature of Colonial Virginia, Three Centuries of Southern Poetry, The Cavalier Poets, English Fiction From the Fifth to the Twentieth Century, The Poets Laureate of England (in preparation), etc. Contributor to McClures, Leslie's, Americana, American Educational Review, Youth's Companion, World's Work, Independent, Book News Monthly, New York Times Book Review, etc.
GEORGE R. COFFMAN, Ph. D............................................Rozale Apartments
Professor of English
A. B., Drake University, Iowa, 1903; A. M., Harvard University, 1909; Ph. D., University of Chicago, 1913; Assistant in Greek, Drake University, 1901-1903; Instructor in English and History, Moulton High School, 1903-1904; Instructor in English and History, East High School, Des Moines, Iowa, 1904-1906; Assistant in English, Bradley Polytechnic Institute, 1906-1908; Reader in English, University of Chicago, Summer Quarter, 1906; Instructor in English, Washington University, St. Louis, 1909-1911; Fellow in English, University of Chicago, 1911-1913; Substitute Instructor in English, University of Chicago, Summer Quarter, 1913; Assistant Professor of English, University of Montana, 1913-1914; Professor of English, since September 1, 1914. Member of Modern Language Association, Tau Kappa Alpha; President, Montana State High School Debating League, 1914-1915. Author of A New Theory Concerning the Origin of the Miracle Play, The Miracle Play in England, and History of Mediaeval Saints’ Plays (in preparation).

ARTHUR L. STONE, A. B........................................416 East Pine Street
Dean of School of Journalism
Worcester Polytechnic, 1884; instructor in chemistry, Worcester Polytechnic, 1885; graduate student, Yale 1885; chemist in charge of soda-field investigation, Wyoming, 1886-88; teacher of natural science, Helena High School, 1889; superintendent of schools, Anaconda, 1889-91; reporter and correspondent, Anaconda Standard, 1891-1904; managing editor, Anaconda Standard, 1904-1906; editor and manager, Missoulian, 1906-1914. Author of “Following Old Trails;” “History of Jesuit Missions in Western Montana;” contributor to magazines on northwestern topics.

WILLARD M. DRAKE, M. S. F..................................242 S. Fourth Street West
Professor of Forestry
A. B., Bates College, Lewiston, Maine, 1902; Student Assistant, U. S. Bureau of Forestry, in Maine, 1902; Instructor in Chemical Laboratory work, Bates College, 1902-03; Student Assistant, U. S. Bureau of Forestry, in Nebraska and New Mexico, summer 1903; Professor of Chemistry and Physics, Prichett College, Glasgow, Missouri, 1903-04; Graduate study in Geology, Harvard Summer School, 1904; Sub-master, Cony High School, Augusta, Maine, 1904-05; University of Michigan, Graduate School of Forestry, 1905-06; M. S. F., University of Michigan, 1906; Forest Assistant, U. S. Forest Service, Washington and Medicine Bow National Forests, 1906; Forest Assistant, San Francisco Mountains, Grand Canyon, and Black Mesa National Forests, 1907-08; Forest Assistant, Coconino National Forest, 1908-09; Deputy Acting Forest Supervisor, Coconino National Forest; 1909-10; Forest Supervisor, Coconino National Forest, 1911-14; Professor of Forestry, University of Montana, since September 1914. Member of Society of American Foresters, and American Forestry Association.
CECIL BURLEIGH

Professor of Violin and Musical Theory

Graduate, Music Department, Wesleyan University, Normal, Ill., 1903; Private instruction in violin with Anton Wetik; Student, Klindworth-Scharwenka Conservatory, Berlin, 1903-1905; Private instruction in violin with Emile Sauret, Chicago, 1905-1906; Concert tours, America and Canada, 1906-1908; Private instruction in violin with Hugo Heermann and in Composition with Felix Borowski, Chicago, 1908-1909; Director, Violin Department, Western Institute of Music and Dramatic Arts, Denver, Colo., 1909-1911; Director, Violin and Theoretical Departments, Morningside College, Sioux City, Iowa, 1911-1914; Professor of Violin and Musical Theory, University of Montana, 1914; Composer of Ascension Sonata, Indian Sketches, Rocky Mountain Sketches, Twelve Short Poems, etc.

JAMES DENTON DUNLOP

Registrar.

ROBERT NEAL THOMPSON, B. S.

Assistant Professor of Physics.

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

ELOISE KNOWLES, Ph. M.

Assistant Professor of Fine Arts.

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

EUGENE F. A. CAREY, M. S.

Assistant Professor of Mathematics.

B. S., University of California, 1905; M. S., 1914; Graduate Student, University of California, 1905-09; Assistant in Physics, ibid, 1905-07; Instructor in Matriculation Physics, Summer Session, ibid, 1907; Assistant in Mathematics, ibid; 1907-09; Instructor in Mathematics, University of Montana, 1909-13; Assistant Professor of Mathematics, since 1913; member of the American Mathematical Society.
PAUL CHRISLER PHILLIPS, Ph. D. ..........................122 Burlington Avenue
Assistant Professor of History.
A. B., Indiana University, 1906; A. M., 1909; Ph. D.,
University of Illinois, 1911. Member American Historical
Association, American Political Science Association,
Mississippi Valley Historical Society, Illinois State
Historical Society, Adjunct Member Public Archives
Commission; Assistant in History, Indiana University,
1907; Fellow in History, University of Illinois, 1908-1910,
traveling fellow, 1910; Assistant in History, 1910-1911,
Instructor in History, University of Montana, 1911-13;
Assistant Professor of History, since September, 1913.
Author, Non-religious Elements of the English Reformation,
The West in the Diplomacy of the American Revo-
lation. The Public Archives of Montana, in Reports
of the Public Archives Commission, (in preparation)
Documents in French Archives Regarding the Mis-
sissippi Valley, 1760-1783; contributor to the Missis-
pippi Valley, Historical Review.

HENRY HAXO, Ph. D. .........................................319 University Avenue
Assistant Professor of Romanic Languages.
A. B., Leland Stanford Junior University, 1910; A. M.,
Leland Stanford Junior University, 1911; Ph. D., Uni-
versity of Chicago, 1913; Teacher of French, Pommeret
Sprach Schule, Berlin, 1901-1902; Berlitz School of
Languages, San Francisco, 1902-1907; student, Unive-
sity of California, summer 1908-09; assistant in French
and Spanish, Leland Stanford Junior University, 1910;
fellow in Romanic Languages, University of Chicago,
1911-1913. Author of "Denis Pyramus, La Vie Seint
Edmund;" Contributor to Modern Philology.

WILLIAM GEORGE BATEMAN, A. M. .....................814 Hastings Avenue
Assistant Professor of Chemistry.
A. B., Stanford University, 1907; A. M., Stanford Uni-
versity, 1909; Assistant in Chemistry, Stanford Univer-
sity, 1905-1908; Instructor, 1908-1910; Professor of
Chemistry, Imperial Pei-Yang University, Tientsin,
China, 1910-12; Acting Professor of Chemistry, Univer-
sity of Montana, Summer Session 1912-1914; In-
structor in Chemistry, University of Montana, 1912-13;
Assistant Professor of Chemistry, since September,
1913; Author of General Inorganic Chemistry, Lab-
oratory Manual of Qualitative Analysis; contributor to
Educational Psychology, Journal American Chemical
Society, Journal Biological Chemistry.

CHARLES C. STEAHLING, Ph. B. ..........................340 Beckwith Avenue
Assistant Professor of Commerce and Accounting.
Graduate, School of Commerce and Accounts, Kankakee,
1904; Ph. B., University of Chicago, 1908; Instructor in
the Department of Commerce, University of Oklahoma
Preparatory School, 1908-1909; Head of the Department
of Commerce, State Normal School, Warrensburg, Mo.,
1909-1911; Head of the Department of Commerce, South
High School, Milwaukee, 1911-1913; Instructor in Busi-
ness English, Evening Industrial School, Milwaukee;
Practical Work in Auditing and Systematizing, Milwau-
kee, 1911-1913; Head of the Department of Commerce, Missoula County High School, 1913; Assistant Professor of Commerce and Accounting, University of Montana, since September, 1913; Author of "Theory and Methods in Writing for Secondary Schools" (In preparation); "Vocational Guidance for High Schools and Colleges." (In preparation.)

JOSEPHINE SWENSON ...................................................... 811 Hilda Avenue
Assistant Professor of Piano.

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

L. S. HILL, M. A................................. 324 S. Sixth Street East
Assistant Professor of Mathematics.

A. B. Columbia University, 1911; M. A., ibid, 1913; Fellow in Mathematics, Columbia, 1912-1913; Special Student, Regia Universita di Bologna, Italy, first quarter, 1913-1914; Graduate student University of Chicago, 1914; Member, Circolo Matematico di Palermo; Assistant Professor of Mathematics, University of Montana, since September, 1914.

HARRISON ANTHONY TREXLER, Ph. D. .................. 601 Daly Avenue
Assistant Professor of Economics.

Ph. B., Bellevue College, 1906; Ph. D., Johns Hopkins, 1914; Graduate Student University of Chicago, 1906-07, 1910; Professor of History and Economics, Hardin College, 1907-09; Graduate Student University of Missouri, 1907-08; University of Bonn, 1909-10; Acting Professor of History and Economics, Allegheny College, 1910-11; Graduate Student, Johns Hopkins University, 1911-12; University Fellow and Instructor Johns Hopkins University, 1912-13; Acting Professor of Economics, University of Montana, 1913-1914. Author "The Slavery System of Missouri." Contributions to the Missouri Historical Review. Member American Historical Association; Mississippi Valley Historical Association; The State Historical Society of Missouri.

CARL HENRY GETZ, A. B......................... 223 South Fifth Street, East
Assistant Professor of Journalism.

A. B., University of Washington, 1913; Student Assistant in Journalism, University of Washington, 1912-1913; Instructor in Journalism, University of Washington, 1913-1914; Assistant Professor of Journalism, University of Montana, 1914. Practical newspaper experience as reporter and copy-reader in Seattle and Tacoma, Wash., Salt Lake City, Utah, and Denver, Col. Editor of East Washingtonian, Pomeroy, Wash., 1914. Practical experience in publicity work at University of
Washington. Vice-president of Sigma Delta Chi, national journalism fraternity. Editor of Quill, official publication of Sigma Delta Chi. Member of American Association of Teachers of Journalism. Secretary, Western Association of Teachers of Journalism. Contributor to Editor and Publisher and Journalist, Fourth Estate, Publisher's Guide, National Printer-Journalist, etc.

JAMES H. BONNER, B. S. ................................. 538 South Third Street
Assistant Professor of Forestry.

B. S. (In Engineering), University of Montana, 1907; Assistant in office United States Surveyor General for Montana 1907; Instructor in Surveying and mapping, Engineering School, University of Montana, 1908; County Engineer, Missoula County since January 1, 1909; Engineer for Bitter Root Power and Electric Co., 1911; Engineer Montana Pulp and Paper Co., 1912; Instructor in Forest Engineering, 1913-1914; Assistant Professor of Forestry since June, 1914; Contributor to the Engineering Record.

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, 1905-1907; Student, Columbia University, summer of 1908; Dean of Women, University of Montana, since 1907.

GERTRUDE BUCKHOUS, B. S. .......................... 206 S. Fourth Street West
Librarian.

B. S., University of Montana, 1900; Illinois State Library School, 1900-01; Special Course in Government Documents, Wisconsin State Library Commission, 1902; Librarian, University of Montana, since 1902.

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

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

W. WALTER H. MUSTAINE, B. S. .......................... 22 Rozale Apts.
Director of Physical Education.

B. S., The Centre College of Kentucky, 1899; Postgraduate work, major, Physiology, the State University of Kentucky, 1910, 1911, 1912; Graduate, Yale Summer School of Physical Education, 1905; Graduate, Chautauqua, N. Y., School of Physical Education, 1905; Graduate, Harvard Summer School of Physical Education, 1911; Instructor in Gymnastics and Athletics, Hogsett Military Academy, 1897-1901; Director Boyle-Humphrey Gymnasium, Centre College, 1901; Director Physical Education, State University of Kentucky, 1902-1912;
Director, Lexington, Ky., Business Women's physical Training Club, 1906-12; Supervisor, Public Playgrounds, Lexington, Ky., 1907; President, Kentucky Physical Education Society and Member National Council A. P. E. A., 1910; Director, Physical Education, University of Montana, since November, 1912.

MARY ELIZABETH EDMONDS, B. S. Sacajowea Lodge  
Instructor in Home Economics.  
B. S., Ohio State University, 1910; Student Assistant in Chemistry, Ohio State University, 1908-10; Instructor in Home Economics Extension Department, Ohio State University, 1910-13; Instructor, Summer Session, Ohio State University, 1912; Instructor in Home Economics, University of Montana, since beginning of Summer Session, 1913.

ALICE WICKLUND MACLEOD. Rozale Apartments  
Instructor in Public Speaking and Physical Education.  
B. S., Oregon Agricultural College, 1905; Student at Western Academy of Dramatic Art, Portland, Oregon, 1905-1906. Traveled and studied abroad, 1908-1910; conducted Studio of Expression, 1910-1911. Graduated Cumnock School of Oratory, 1912; Post Graduate Cumnock School of Oratory, 1913; Instructor of Public Speaking at University of Montana, since beginning of Summer School, 1913.

BELLE KEMP BATEMAN, B. A. 814 Hastings Avenue  
Instructor in Fine Arts.  
B. A., Stanford University, 1909; Student of Jean Mannheim; Instructor in Art, Shasta County High School, California, 1909-1910; rug designer, China, 1910-1912; Instructor in Fine Arts, University of Montana, Summer Session, 1913; Instructor in Fine Arts, University of Montana, since October 1, 1913.

ADAM GEORGE HEILMAN, Ph. B., M. D. The Penwell  
Instructor in Biology, Coach of Football and Track Teams.  
Ph. B., Franklin and Marshall College, 1908; M. D., University of Pennsylvania, 1913; Instructor in Biology and Coach of Football and Track teams, University of Montana, since September, 1913; Member of the American Medical Association; The Graduate Medical Association of the University of Pennsylvania; The John B. Deaver Surgical Society of Philadelphia. Author of First Aid, (in preparation). Contributor to Lebanon Co. Historical Society Publications. Athletic record: Member of the Football, Basketball and Track Teams of Franklin and Marshall College, 1904-1908; Second place in the All-around Championship Indoor Athletic Meet, same, 1908; Y. M. C. A. Championship Basketball Team, Lancaster, 1907-1908; Freshman Football, Basketball and Track Teams, University of Pennsylvania, 1908-1909; University Crew Squad, same, 1909; Rowed for Undine Barge Club, Philadelphia, 1909; University Football Team, 1909-1912; Captain Second Football Team, University of Pennsylvania, 1909; University Basketball Team, same, 1911-1912; Member, Pennsylvania Varsity Club and Central Board of Football Officials.
A. W. L. BRAY, B. S., B. A...............................................................................................

Instructor in Biology.

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

HARRIET LOUISE KIDDER, A. M.................................................................661 University Avenue

Assistant in the Library.

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

FRED HOFMANN RHODES, Ph. D............................................................................

Instructor in Chemistry.

A. B., Wabash College, 1910; Ph. D., Cornell University, 1914; Assistant in Mathematics, Wabash College, 1909-1910; Assistant in Qualitative Analysis, Cornell University, 1910-1912; Special Research Assistant in Inorganic Chemistry, Cornell University, 1912-1914; Instructor in Chemistry, University of Montana, 1914; Contributor to Journal of Industrial and Engineering Chemistry, Journal of the American Chemical Society, Cornell Chemist, etc; Author of Laboratory Manual of Advanced Inorganic Chemistry (in preparation).

ROBERT V. EVANS............................................................................................................

Instructor in Botany.

B. S., University of Nebraska, 1913; A. M., University of Nebraska, 1915; Nursery Practice, Pennsylvania Park Commission, 1910; New York Conservation Commission (On The White Pine Blister Rust and The Chestnut Bark Disease), 1911; Forest Assistant, Kaniksa National Forest, 1912; Private Lumbering Operations, Pennsylvania and Louisiana, 1913-14; Instructor in Botany, University of Montana, 1914.

CARLES P. VALENTINE, Ph. C.................................................................The Penwell

Instructor in Pharmacy.

Ph. C., Montana State College of Agriculture, 1910; Registered Pharmacist in Montana, 1910; Prescriptionist for La Peyre Brothers, Great Falls, 1911-1913; Student Jefferson Medical College, Philadelphia, 1913-1914; Prescriptionist for George B. Evans, Philadelphia, 1913 and Colbert Drug Co., Butte, Mont., 1914; Instructor in Pharmacy, University of Montana, 1914.
CHARLES F. FARMER, B. S. ................................................315 Tremont Street
Special Instructor in Surveying and Mapping.
B. S. (In Engineering), University of Montana, 1909; Assistant in office of Geography, District Number One, United States Forest Service.

WILLIS E. RAY ..................................................................................520 Third Street
Instructor in Camp Blacksmithing and Machine Shop.
Student Assistant in Forge Shop, Montana State College, 1904; Ten years general experience in Blacksmithing and Advanced Machine Work; Student in Law School, University of Montana, 1915.

MRS. FLORENCE REDGRAVE-SMITH................................................................
Organist and Accompanist.
Student of Piano, Christian College, Columbia, Mo., 1900-02; Madison Institute, Richmond, Ky., 1903-04; Cincinnati Conservatory of Music, 1905, and with Professor Becker, Los Angeles, Cal., 1906-07; Student of Organ in University of Southern California, 1906-07; Organist Central Christian Church, Long Beach, Cal., 1906-07; Student of Organ with Professor W. K. Kraft, Columbia University, N. Y., 1911-13; Organist Central Christian Church, New York, 1911-13; Official Accompanist, University of Montana, since September, 1913.

GERTRUDE CURTISS PAXTON, B. S.................................................................
Instructor in Home Economics.
B. S., Iowa State College, 1904; Stout Institute, Menomonie, Wisconsin, 1910; Instructor in Davenport High School, Iowa, 1909-1912; Assistant Supervisor, Minneapolis Public Schools, 1912-1914; Instructor in Home Economics, University of Montana, since September, 1914.

LECTURERS IN LAW

C. L. F. KELLOGG, LL. B. .....................................................1130 S. Higgins Avenue
Lecturer on Abstracts and Examination of Title.
LL.B. University of Wisconsin, 1882; admitted to practice in Wisconsin, Washington, Minnesota and Montana; practiced law three years in Seattle; five years in St. Paul, remainder in Montana; President and General Counsel for Northwestern Abstract and Title Insurance Company.

F. C. WEBSTER, A. B. ..........................................................241 South Fifth Street, East
Lecturer on Probate Law and Procedure.
A. B., Yale University, 1873; law lectures at Yale University during last year; two years student in law office; admitted to practice in Connecticut, 1875; admitted to practice thereafter in Minnesota, Colorado, and Montana; Judge of District Court of Montana twelve years, 1901-1913; practicing attorney and law lecturer since 1913.
SPECIAL LECTURERS IN FORESTRY

C. B. FLEMING, B. S., B. S. A. ........................... Lecturer in Grazing
Lecturer in Grazing.

SPECIAL LECTURERS

J. F. PRESTON, A. B. .................................................. Assistant District Forester
Lecturer in Fire Protection.

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

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

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

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

P. R. HICKS, B. S. .................................................. Engineer in Forest Products

R. B. ADAMS .................................................. Superintendent of Telephone Construction
Lecturer in Forest Improvements.

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

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

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

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

H. H. FARQUHAR .................................................. Forest Examiner
Lecturer in Forest Planting and Extension.

S. S. MALVEN, A. B. .................................................. Forest Examiner
Lecturer in Forest Protection and Insect Control.

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

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

J. W. BUTLER, D. V. S. .................................................. State Veterinarian
Lecturer in Veterinary Science.
HON. J. M. KENNEDY..............State Com'r. of Agriculture and Publicity
Lecturer in Industrial and Community Development.

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

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

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

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

INSTRUCTORS IN OBSERVATION AND PRACTICE TEACHING.

CARROLL FAUST, B. S. (Oberlin College), M. A. (U. of Illinois).........
Botany and Biology

MABEL G. RICH, A. B. (University of Wisconsin)..................English

EMMA SCHOELERMANN, B. S. (Univ. of Iowa)........Modern Languages

CLARA SHUART, B. A. (Oberlin College), M. A. (Columbia University)
History

MAY JOHNSON, (Teachers College).................Home Economics

STUDENT ASSISTANTS.

WALTER CONWAY.........................Biology
SHIRLEY SHUNK.................................Library
FRANCES GARRIGUS.........................Library
MILDRED SCOTT.................................Library
J. WIRT GRAHAM...............................Physics
RALEIGH GILCHRIST.........................Chemistry
LANCING WELLS...............................Chemistry
MILLARD NESBIT..............................Chemistry
J. N. NISSEN.................................Physical Education
NAT LITTLE.................................Fine Arts
R. D. JENKINS.................................English
MABEL LYDEN.................................Mathematics
E. C. McCARTY.................................Botany
ROY WILSON................................Geology
JOHN F. SUCHY.................................Pharmacy
L. R. DARROW.................................Manual Arts
LAURA ANDERSON............................Domestic Science
BETTIE KRIES.................................Domestic Science
A. O. JOHNSON...............................Commerce and Accounting
LOUISE SINCLAIR...........................Modern Languages
ASSISTANTS IN OFFICE.

BERNICE OLDRI GDE ........................................ Bookkeeper and Stenographer
ANNA DAVIS ................................................................. Stenographer
DOROTHEA C. DAVIS ........................................ Stenographer
STELLA STILLWELL ...................................................... Registration Clerk

EMPLOYEES

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

Schedule of Courses for Prospective Teachers:
Kemp, Reynolds, Underwood, Edmonds, Rowe, Phillips.

Scholarship:
Kirkwood, Kemp, Stone, Stewart, Scheuch.

Admission and Registration:
Rowe, Kemp, Langmaid, Mollett, Bateman, Edmonds.

Athletics:
Mustaine, Rowe, Leaphart, Lennes, Skeels, Getz, Bonner.

Attendance:
Craighead, Aber.

Extension Lectures:
Reynolds, Kemp, Skeels, Ayer, Elrod.

Correspondence Study:
Lennes, Buckhous, Haxo, Staehling, Bray.

Graduate Work:
Jesse, Kemp, Kirkwood, Underwood, Holliday.

Lecture Courses:
Elrod, Buckhous, Smith, Macleod, Rowe, Phillips.

Student Affairs:
Scheuch, Whitlock, Knowles, Hill, Stewart, Trexler.

State Fair Exhibit:
Aber, Scheuch, Ayer, Stone, Mrs. Bateman, Paxton.

Schedule and Examinations:
Carey, Phillips, Coffman, Langmaid, Drake, Rhodes.

Recommendations:
Kemp, Corbin, Bolton, Thompson.

Publications:
Holliday, Stone, Skeels, Ayer, Jesse.

Public Exercises:
Bolton, Macleod, Smith, Swenson, Burleigh.

Public Accountancy:
Staehling, Dunlop, Neff.

Interscholastic:
Rowe, Jesse, Thompson, Elrod, Mustaine, Mrs. Wilson, Heilman, Leaphart.

Self Help:
Phillips, Scheuch, Aber, Bonner.

Summer School:
Kemp, Stone, Ayer, Burleigh.

President and Vice-President are ex-officio members of all Com-
mittees.
GENERAL INFORMATION

HISTORICAL SKETCH

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

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

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

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

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

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

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

In 1912, Dr. Edwin Boone Craighead, for eight years President of Tulane University, was appointed President of the University of Montana.
The development of the University of Montana during the past two years has been greater probably than that of any other University in the nation. The Law Department has more than doubled, both in number of students and in size of faculty, while the College of Arts and Sciences has shown surprising growth. Departments of Commerce and Accounting, Journalism, Pharmacy, Domestic Science and Household Arts, and Manual Arts have been added. Three highly efficient musicians have been added to the School of Music, while the School of Forestry has been reorganized and made the equal in equipment and standard of work of any similar school in the Northwest.

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

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

The last general legislative assembly of the state substantially increased the appropriation for maintenance of the University, and much useful equipment and many highly trained specialists have also recently been added. Members of the faculty are carrying on works of investigation of genuine benefit to the citizens of Montana, and opportunities are offered to those properly prepared for original study.

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

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

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

BUILDINGS

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

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

Science Hall contains in the first floor eight rooms, equipped for the Departments of Pharmacy, Domestic Science and Household Arts, and Manual Arts. Nine rooms on the second floor are occupied by the Department of Chemistry. In the basement are the boilers for the heating plant of all the buildings, and the engine which runs the machinery of the shops.
Craig Hall was constructed to furnish a home for women students. It is 136 by 46 feet in its ground dimensions and has four floors, including the basement, which is so largely above ground as to be well lighted. In the basement are the dining room, kitchen, laundry room, storage rooms, etc. The first floor contains the office, parlor and some students' rooms. The second and third floors are entirely devoted to students' rooms. The entire building is well furnished and amply supplied with electric lights, steam heat and every sanitary convenience.

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

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

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

The Forestry and Journalism buildings are frame structures for temporary use only, until sufficient funds may be granted by the state for permanent buildings befitting such important departments.

UNIVERSITY SURROUNDINGS

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

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

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

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

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

ADMISSION ON CERTIFICATES

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

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

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

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

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

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

ADMISSION ON EXAMINATION

Applicants wishing to receive entrance credits on subjects for which they do not present satisfactory certificates are required to take examinations on days prescribed in the calendar.
of the University. For the academic year 1915-1916 these days are September 15 and February 1.

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

**MATHEMATICS**

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

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

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

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

**ENGLISH**

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

(2) **Literature.**
The applicant should be able to get from a printed page of either prose or verse of average difficulty, a clear and organized idea of the thought, with at least some appreciation of its literary merit. This power to read intelligently may have been ob-
tained through the reading of any suitable books of permanent value in English or American literature. The books suggested by the National Conference of Uniform Entrance Requirements in English furnish a good list for such training, but are not insisted upon.

**HISTORY**

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

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

The third unit may be in English history.

The fourth should embrace American history and civil government.

**LATIN**

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

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

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

**GERMAN**

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

**FRENCH**

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

**PHYSICS**

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

**CHEMISTRY**

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

**BIOLOGY**

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

**CONDITIONAL ADMISSION**

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

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

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

**ADMISSION OF SPECIAL STUDENTS**

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

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

**ADMISSION TO ADVANCED STANDING**

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

ACCREDITED HIGH SCHOOLS

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

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

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

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

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

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

In December, 1906, the Board appointed a committee "to for-
mulate a uniform plan for accredited high schools." The com-
mittee formulated a plan and a brief outline of work for accred-
ited high schools, which was adopted.

In December, 1905, the President of the University recom-
mended that the Preparatory Department of the University be
discontinued after September 1, 1908, and that at this date the
accredited High Schools be required to sustain a four-year course
of study. The recommendation was adopted and a committee
was appointed to prepare a four-year course of study for accred-
ited 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 Presi-
dent of the University. These regulations are as follows:

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

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

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

(1) Languages, other than English, 4 years, 4 units.
(2) Mathematics, 2 years, 2 units.
(3) Science, 3 years, 3 units.
(4) History (including Civics and Economics), 3 years,
   3 units.
(5) Drawing, 2 years, 2 units.
(6) Commercial Subjects, 4 years, 6 units.
(7) Industrial Subjects, 4 years, 6 units."
### List of Accredited High Schools

<table>
<thead>
<tr>
<th>City</th>
<th>1913-1914 Principal</th>
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<tbody>
<tr>
<td>Anaconda</td>
<td>C. L. Markley</td>
</tr>
<tr>
<td>Belt</td>
<td>H. H. Sauer</td>
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<tr>
<td>Billings</td>
<td>W. H. McCall</td>
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<tr>
<td>Butte</td>
<td>B. E. Milliken</td>
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<tr>
<td>Chinook</td>
<td>G. H. Willman</td>
</tr>
<tr>
<td>Columbus</td>
<td>J. D. Ray</td>
</tr>
<tr>
<td>Conrad</td>
<td>J. F. Goodrich</td>
</tr>
<tr>
<td>Eureka</td>
<td>A. R. Ford</td>
</tr>
<tr>
<td>Forsyth</td>
<td>H. Mackenzie</td>
</tr>
<tr>
<td>Fort Benton</td>
<td>C. M. Luce</td>
</tr>
<tr>
<td>Glasgow</td>
<td>D. S. Williams</td>
</tr>
<tr>
<td>Great Falls</td>
<td>James Rae</td>
</tr>
<tr>
<td>Hamilton</td>
<td>Henry Schwarm</td>
</tr>
<tr>
<td>Harlowtown</td>
<td>J. A. Johnson</td>
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<tr>
<td>Havre</td>
<td>Grace M. Easter</td>
</tr>
<tr>
<td>Helena</td>
<td>A. J. Roberts</td>
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<tr>
<td>Laurel</td>
<td>D. S. Clinger</td>
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<tr>
<td>Libby</td>
<td>George B. Neff</td>
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<tr>
<td>Moore</td>
<td>Miss Wood</td>
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<tr>
<td>Plains</td>
<td>W. H. Shipley</td>
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<tr>
<td>Polson</td>
<td>H. L. Hayden</td>
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<tr>
<td>Pony</td>
<td>Lee Tower</td>
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<tr>
<td>Roundup</td>
<td>F. P. Baird</td>
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<tr>
<td>Stevensville</td>
<td>J. D. Kegler</td>
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<tr>
<td>Terry</td>
<td>C. W. Grandey</td>
</tr>
<tr>
<td>Virginia City</td>
<td>J. D. Dawson</td>
</tr>
<tr>
<td>Victor</td>
<td>W. T. McWhinney</td>
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<tr>
<td>Whitehall</td>
<td>O. W. Wilkins</td>
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</tbody>
</table>

### COUNTY HIGH SCHOOLS

<table>
<thead>
<tr>
<th>County</th>
<th>City</th>
<th>Principal</th>
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</thead>
<tbody>
<tr>
<td>Beaverhead</td>
<td>Dillon</td>
<td>Byron Toan</td>
</tr>
<tr>
<td>Broadwater</td>
<td>Townsend</td>
<td>A. E. Myers</td>
</tr>
<tr>
<td>Carbon</td>
<td>Red Lodge</td>
<td>C. W. Thompson</td>
</tr>
<tr>
<td>Custer</td>
<td>Miles City</td>
<td>J. A. Burger</td>
</tr>
<tr>
<td>Dawson</td>
<td>Glendive</td>
<td>R. L. Hunt</td>
</tr>
<tr>
<td>Fergus</td>
<td>Lewistown</td>
<td>H. L. Sackett</td>
</tr>
<tr>
<td>Flathead</td>
<td>Kalispell</td>
<td>E. L. Cummings</td>
</tr>
<tr>
<td>Gallatin</td>
<td>Bozeman</td>
<td>E. J. Parkin</td>
</tr>
<tr>
<td>Granite</td>
<td>Philipsburg</td>
<td>G. T. Bramble</td>
</tr>
<tr>
<td>Jefferson</td>
<td>Boulder</td>
<td>H. E. Harry</td>
</tr>
</tbody>
</table>
PRIVATE SCHOOLS

Central High School, Butte...............................Rev. M. McCormack
Mount Angela Ursuline Academy, Great Falls......Mother Xavier
Sacred Heart Academy, Missoula.............Sister Martha of Bethany
Saint Vincent's Academy, Helena.............Sister Mary Berchmans
Butte Business College, Butte............................

REQUIREMENTS FOR GRADUATION

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

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

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

Required and Elective Work

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

Restricted Electives:
2 Courses in Science ............................................. 6 to 10 hours
4 Courses in Language, other than English .............. 12 to 20 hours
2 Courses in History or Economics ......................... 6 to 10 hours
*English 17, 18 or two courses in Philosophy ............ 6 to 10 hours

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

*English 19, 20, 21, 22 may be substituted if absolutely necessary.
MAJOR DEPARTMENT ELECTIVES

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

FREE ELECTIVES

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

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

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

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

SCHOLARSHIP AND REGISTRATION REGULATIONS

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

1. Any student who has (and no student who has not) done exceptionally good work in any semester may be allowed to register for more than $16\frac{1}{2}$, but not more than $18\frac{1}{2}$ hours credit in the succeeding semester.

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

2. Students of marked ability, if health and other circumstances are favorable, and if they have done exceptionally good work in previous semesters, should be encouraged to register for more than the normal average of 15 or $15\frac{1}{2}$ 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 16½ credit hours and who are failing during a semester to do at least passing work in any course shall have their registration reduced to 16½ credit hours or less.

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

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

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

SPECIAL AND IRREGULAR STUDENTS

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

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

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

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

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

DEGREES OF B. A. AND B. S.

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

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

ADVANCED DEGREES

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

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

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

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

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

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

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

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

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

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

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

THE UNIVERSITY CERTIFICATE OF QUALIFICATION TO TEACH

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

1. To encourage and promote the study of educational science.
2. To teach the history of education and of educational systems and doctrines.

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

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

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

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

1. **Special Prerequisite.**
   The candidate must show special professional intention and interest, and possess some native fitness to teach.

2. **General Scholarship.**
   Each candidate for such a teacher's certificate must hold a bachelor's or master's degree from this University, and must have maintained a good standard of scholarship throughout his college course.

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

Required—

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>6</td>
</tr>
<tr>
<td>Physical Culture</td>
<td>2</td>
</tr>
</tbody>
</table>

Restricted Electives—

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modern Languages</td>
<td>14</td>
</tr>
<tr>
<td>Mathematics or Science</td>
<td>6</td>
</tr>
<tr>
<td>History or Economics</td>
<td>6</td>
</tr>
<tr>
<td>Literature or Philosophy</td>
<td>6</td>
</tr>
</tbody>
</table>

Total required and restricted electives: 40 hours

Major work 25 hours

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>13</td>
</tr>
<tr>
<td>Psychology prerequisite</td>
<td>6</td>
</tr>
<tr>
<td>Free electives</td>
<td>10</td>
</tr>
</tbody>
</table>

Total major and minor subjects: 53 hours

Two minors 23 hours

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>13</td>
</tr>
<tr>
<td>Psychology prerequisite</td>
<td>6</td>
</tr>
<tr>
<td>Free electives</td>
<td>10</td>
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Total: 35 hours

Major Work 35 hours

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Education</td>
<td>13</td>
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<tr>
<td>Psychology prerequisite</td>
<td>6</td>
</tr>
<tr>
<td>Free electives</td>
<td>10</td>
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</tbody>
</table>

Total: 35 hours

Total: 122 hours
In addition, a course in Observation and Practice under the supervision of the Department of Education which will be the equivalent of not more than 4 hours per week for one semester.

Candidates for Teachers' Certificates should select their major work at the beginning of the Sophomore year. Major work should include a course in Special Method of the subject, of the value of at least 1 credit hour.

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

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

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

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

FEES AND DEPOSITS

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

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

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

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

From students previously matriculated who present themselves for registration after the official registration days, a special registration fee is required.
Tuition fees in the Law School are $40 per year, or $20 per semester. To those carrying less than ten semester credit hours of Law courses, the tuition charge will be $2.00 per semester credit hour.

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

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

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

EXPENSES

Women students who do not make their homes with their families in or near Missoula, are expected to live in Craig Hall and Craig House, unless permission to live elsewhere is obtained from the faculty. These buildings are well furnished, lighted, and heated for their special purpose, and will comfortably house about ninety students. The University itself has the entire management of the Hall, making a combined charge of $23.00 and upward per month for room and board. Each room must have two occupants. A plat of the halls may be obtained from the Registrar of the University. Rooms are fully furnished except that each student is expected to supply her necessary linen, sheets, pillow cases, towels, curtains and table napkins.

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

Students will be permitted to live in only those places approved by the faculty.

EMPLOYMENT AND AIDS FOR STUDENTS

A large number of students of the University earn either the whole or a part of their expenses while in college. Students intending to work their way can usually do so if they come with sufficient means to support themselves for the first half year, though many have made all their expenses from the beginning.
The University cannot guarantee work for students, but it is believed that those who are strong and willing to do any work that offers will not lack opportunities. A number of students find work about the University, as stenographers, assistants in the laboratories, in the library, in Craig Hall, as carpenters, janitors, gardeners, and in other capacities. Others find employment in town as draftsmen, bookkeepers, clerks, reporters, janitors, newsboys, helpers in homes, etc.

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

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

SCHOLARSHIP AND CONDUCT

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

No prescription 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.

ATTENDANCE RULES

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

2. Four weeks after the opening of the semester, reports on the delinquent students shall be sent by the instructors to the Scholarship Committee. At the end of six weeks after the open-
ing of the semester, the first "Complete Scholarship Report" shall be made. Thereafter regular reports shall be made on delinquents every four weeks. All reports shall be made in specific grades. (Specific grades means letters A, B etc.)

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

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

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-year courses in the University.

BONNER SCHOLARSHIP

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

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

KEITH SCHOLARSHIP

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

Applications for the scholarship, directed to the President of the University, should be accompanied by credentials showing the amount and quality of high school work done by the student,
and by recommendations showing promise of the applicant's future usefulness. The scholarship can be granted only to student who was a member of a high school class graduating in the year in which it was awarded. It was held by Bruce Hopper of Billings in 1914.

CLARIBEL LEGGAT COUSE SCHOLARSHIP

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

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 1914 by Mr. Bruce Hopper of Billings.

THE ANNIE LEWIS JOYCE MEMORIAL MEDAL

This prize was founded by Attorney M. M. Joyce of Missoula, and is awarded every year for the best essay, thesis or poem by an undergraduate. In 1914, the subject was "The Charm of the Mountains," and the prize was won by Miss Blanche Yates of Missoula. The subject for 1915 is "Montana Types."

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 receive an endowment of $400, the annual proceeds of which will be given as a prize (in money or in a medal of equivalent value, at the option of the successful contestant) for the best essay by any student of the University, on some topic pertaining to good government.

The subject for 1913-14 was "The Cost of Living vs. the High
Cost of Production.” The prize was won by Gordon Watkins of North Dakota.

THE 1904 CLASS PRIZE

The endowment fund for this prize was donated by the members of the class of 1904, who, in rotation, name the particular excellence for which the prize shall be given. For the year 1904-05 it was awarded to the student holding the highest rank in the first year college class in Latin, and was won by Miss Cora Averill; for the year 1905-06 to the student representing the University State Oratorical Contest, won by Miss Olive Hall; for 1906-07, to the student making the greatest progress in Chemistry, won by Dean King; for 1907-08, to the student having the highest standing in Economics, won by Frederick Greenwood; for 1909-10, to the student making greatest progress in Greek, won by Miss Viola Golder; for 1910-11, to the student doing the best work in Geology, won by Mr. E. A. Winstanley; for 1911-12, to the best student in Elementary Chemistry, won by Rayleigh Gilchrist; for 1912-13, to the best student in Engineering, won by Mr. Royal D. Sloan. It was not awarded in 1913-1914.

MUSIC MEDALS

A medal is given annually in the Department of Music by Mrs. E. L. Bonner for advanced piano technique. It was not awarded in 1913-14.

THE C. A. DUNIWAY SCHOLARSHIP BOOKS

A fund of $400 established by former President Duniway provides standard books within the various fields of knowledge to be awarded annually to students distinguishing themselves by scholarship in the several departments. In 1914 these books were given as follows:

Biology, Mr. Edward Allen; Botany, Miss Lelia Logan; Education, Miss June Whiting; English, Miss Esther Bireley; Fine Arts, Miss Frances Birdsall; Geology, Mr. Paul Gervais; German, Mr. Chas. P. Troyer; History and Economics, Mr. Gordon Watkins; Latin and Greek, Miss Irma Wilson; Law, Mr. R. L. Brown; Literature, Miss June Whiting; Mathematics, Miss Orpha Culmer; Pharmacy, Mr. E. A. Fiske; Pharmaceutical Manufactur-
ing, Mr. P. C. Parkhurst; Public Speaking, Miss Grace Saner; Psychology, Miss Helen Smith; Romanic Languages, Miss E. Louise Sinclair.

**MISCELLANEOUS**

**UNIVERSITY PUBLICATIONS**

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

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

**SOCIETIES**

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

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

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

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

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

A Dramatic Club, a Writers' Club, a Science Association, a Chemical Club, a Press Club, and a Pharmaceutical Society perform functions indicated by their titles.
DEBATING CONTEST

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

In 1915 the University of Montana was represented in the
debate with Gonzaga by Mr. Clarence Streit and Mr. Clarence
Ward, and in the debate with the Montana State College of
Agriculture and Mechanic Arts by Mr. Will Long and Mr.
Payne Templeton.

PUBLICATIONS BY STUDENTS

The Associated Students of the University publishes The
Weekly Kaimin as a newspaper. The paper, through the effec­
tive effort of its corps of editors, has become a permanent fac­
tor in the University life.

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

ATHLETICS

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

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

ANNUAL INTERSCHOLASTIC MEET

For twelve years the University has held annual interscho­
lastic 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 Mon­
tana 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 promo-
tion and control of athletics.

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

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

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

The meet for 1915 will be held May 11, 12, 13, 14, 15.

HIGH SCHOOL DEBATING LEAGUE

A Debating League having for its object improvement in
debate among students in high schools of the state was organ­
ized by high school principals and superintendents at a meet­
ing held at the University on May 17, 1906. Among the pro­
visions of the constitution is one that the president shall be a
member of the Faculty of the University. Another is that the
final contest shall occur at the University at or before the time
of the Interscholastic meet. In 1915 will be held on May 12.
The several series of contests have been held for eight years,
beginning in 1907.

THE LIBRARY

The General Library, consisting of about 28,000 volumes and
10,000 pamphlets, occupies the main floor of the Library building.

Reference books, including general encyclopedias, diction­
naries, 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, admin­
istrative officers, graduate students and members of the senior
class; other students may be admitted upon recommendation of
their instructors. Students are allowed to withdraw books from
the Library under reasonable regulations.

The system of departmental libraries prevails to a limited
extent, collections of books specially needed in connection with
laboratories and class room work being deposited in several de­
partments.
The Library receives over 400 periodicals, the current numbers of which are available in the reading room, as are newspapers and college exchanges. Through the courtesy of the editors a large number of the city and county newspapers of Montana are sent to the reading room for the use of students.

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

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

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

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

THE MUSEUM

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

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

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

**EDUCATIONAL LIBRARY OF REFERENCE, SCHOOL TEXTS AND EXHIBITS**

There is being built up in connection with the Department of Education in University Hall, an Educational Library of Reference, School Text and Exhibits, designed to present illustrative materials of the entire educational field to the students of education in the University and to the teachers of the state. When finally completed it will contain in its several sections, (1) the best school texts in all elementary and secondary school subjects; (2) charts, maps, school supplies and such other illustrative material as may show the application of the newest and most advanced ideas in education and methods; (3) a carefully selected list of the best books on the psychology of learning, on the methods and art of teaching, on the growth and development of children, on educational psychology and the psychology of special methods in the several school branches, on mental and school
hygiene, etc.; (4) old text books and materials illustrating the 
history and development of methods; (5) a collection of all na-
tional, state and city reports, the published proceedings of edu-
cational associations, and societies, copies of school laws, of the 
various countries and states, reports of Boards of Education, 
educational bulletins, and all general and special books of refer-
ence; (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 Mon-
tana 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 edu-
cational news and results of current investigations of educational 
problems.
College of Arts and Science
DEPARTMENTS AND COURSES OF INSTRUCTION

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

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

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

BIOLOGY

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

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

There are about 40 compound microscopes, besides the various pieces of special and general apparatus found in a well-regulated laboratory, preserved material for study, glassware, etc. The apparatus is all new and of late pattern. Demonstration material, charts, library books, museum specimens and supplies of various kinds are provided in sufficient quantity to enable the student to carry any work offered with good success. Every student receives individual attention.

MAJOR REQUIREMENTS

Students doing their major work in Biology will be required to take courses 11, 12, 13, 14, and Seminar work during the senior year to the amount of four credit hours. They must also take two years of Modern Language and one year of Botany. A year each in Chemistry and Physics is strongly recommended. A minimum of 30 hours credit in Biology will be required.
COURSES OF INSTRUCTION


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

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


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

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


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

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


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

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

15. Economic Zoology.

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

Four credit hours, two laboratory periods.


A study of the life history of various protozoans, their structure, habits, reproduction, distribution; their relation to animals and man as producing diseases, and remedies therefor. A textbook and numerous library references will be used. Prerequisite: Biology 11.

Second semester; 4 credit hours; lectures and recitations, T. Th., 8:30; Laboratory; time to be arranged.

17. Entomology.

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

First semester; 3 to 5 credit hours; recitation, M. F., 11:30; laboratory, time to be arranged.

18. Entomology.

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

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

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

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

20. Advanced Bacteriology.

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

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


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

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

22. Normal Histology and Microscopical Technique.

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

First semester; 3 credit hours, to be arranged.

23. Histology.

A continuation of preceding courses, the two making the work of a year. In this course more advanced work and problems will be undertaken.

Second semester; 3 credit hours, to be arranged.


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

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

25. Descriptive Anatomy.

A study of the human body taking in the general architecture
of the body. It includes osteology: myology: the nervous, cir-
culATORY, and respiratory systems, with their relations to the
body in general. It also takes up the general descriptive study
of the viscera, their relations to each other; their functions and
the position with reference to the body wall. General anatomical
land marks are also outlined with their significance. Intended
for students in the pre-medical and physical education courses.

First semester; 4 credit hours; lectures and quiz hours to
be arranged.


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

27. Photography.

A study of lenses, cameras, paper, development, practical
demonstration in printing, toning, developing, negative making,
and the various manipulations necessary to produce a completed
and perfect picture. This is not an elementary course, but
demands a knowledge of both physics and chemistry, which are
requisite for admission. No attempt is made at portraiture.
During the first semester a series of negatives is made by each
student, with different lenses, and on plates of different kinds.
This is followed by the use of four or five different kinds of
paper, with different methods of treatment. This subject must
be chosen for the year.
First semester; 2 credit hours; lecture F., 8:30; laboratory, F. 1:30.


Continuation of 25, which is a prerequisite. Laboratory work with class demonstrations or lectures. Each student works alone at hours to be arranged. The work is devoted to the various methods in practical photography. Copies are made of black and white printed pages and illustration, of colored prints, oil painting and water colors, and such varied subjects as may be found. Lantern slides, transparencies, bromide enlargements and other positives are made. Scientific specimens and interior subjects of many different kinds are photographed. Second semester; 2 credit hours; time to be arranged.

29. Biology.

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

30. Entomology.

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

31. Forest Zoology.

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

32. Biological Seminar.

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

33. Biological Seminar.

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

34. Advanced Study.

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

Both semesters; credit and time to be arranged.

Biological Station.

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

GRADUATE WORK IN BIOLOGY

In the immediate vicinity of the University is a rich and virgin field for study and investigation. Unexplored mountains, streams and lakes offer a splendid opportunity for advanced study. The Biological Station at Flathead Lake presents to the student seeking problems a field and an opportunity rarely equaled.

Every facility possible will be given those electing to pursue graduate study. Courses for students will be outlined to meet individual requirements and needs.

SUGGESTED SCHEDULE FOR THOSE WHO WISH TO TAKE UP MEDICINE

Freshman.

First Semester—
Required English, 3 units
Physical Education, ½ unit
Chemistry
Biology
German

Second Semester—
Required English, 3 units
Physical Education, ½ unit
Chemistry
Biology
German

Sophomore.

First Semester.
Physical Culture, ½ unit
Physics
Qualitative Analysis
German or French
Biology or Botany
Geology

Second Semester.
Physical Culture, ½ unit
Physics
Qualitative Analysis
German or French
Biology or Botany
Geology

Junior

Psychology
Bacteriology
Descriptive Oratory
Elective to make up the required hours

Psychology
Protozoology
Physiology
Elective to make up the required hours
COURSES IN BOTANY


This course presents the general subject of plant life and classification. It begins with a series of lessons on the nature of the plant, offered in lectures and laboratory work on typical plant structures and functions. After this introduction to the nature of plant life in general, attention is turned to the broader outlines of classification, as represented by the form and mode of reproduction of typical members of the larger natural groups. The work of the first semester deals with the simpler forms of the plant world, their origin and relation to environment. This course forms with 12 the continuous work of a year.

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


The second course continues the study of classification from the same points of view as in course 11, but with special reference to the flowering plants native to this region. Field trips will furnish opportunity for the study of habitat and local distribution.

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


An introduction to the study of plant structure and physiology forms the first part of the work, followed by a study of the anatomy of woody plants, especially with reference to the structural features of different woods, particularly those of commercial value. This course is designed especially for students in forest engineering.

First semester; 3 credit hours; Th. 9:30; laboratory T. Th., 1:30.
14. **General Botany.**

A continuation of course 13, but with special reference to classification of plants. Typical members of the larger natural groups are studied in class room and laboratory, with special attention to the plants of forest.

Second semester; 3 credit hours; Th. 9.30; laboratory and field work, T. Th., 1.30.

15. **Plant Histology.**

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

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

16. **Plant Physiology.**

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

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

17. **Histology and Physiology.**

A shorter course in structure and functions of tissues of plants for students in forestry engineering. Special attention to the functions of growth, absorption, nutrition, sap-movements, reproduction, etc., in trees.

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

18. **Comparative Morphology.**

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

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

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. Prerequisites: Botany 11 and 12 or equivalent.

Both semesters; credit and time to be arranged.


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

Both semesters; credit and time to be arranged.


The work contemplated under this subject is the study of the classification of the forest trees of the United States and Canada, based upon the study of their form, silvical characters, distribution and structural and morphological features. The work in this subject extends through two semesters. The divisions of the course being 21a and 21b, three credit hours in each division, six hours for the whole course. Time to be arranged.

22. Dendrology.

A shorter course in the classification and distribution of forest trees, following Botany 17, and designed for students in forest engineering.

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


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

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


Lectures and laboratory work on the structure and physical properties of woods; identification of woods and examination of gross and microscopic structure; the uses of various woods, their durability, preservation, etc.
First semester; 3 credit hours; time to be arranged.

25. Forest Pathology.

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

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


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

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

27. Botanical Seminar.

A continuation of Course 26. 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 26 and 27 are open only to seniors, but are required of all students doing major work in the department.

GRADUATE WORK IN BOTANY

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

GRADUATE COURSES.

31. Special Morphology.

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

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

32. Cytology.

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

Both semesters; 4 or 5 credit hours; time to be arranged.
Opportunity is given for the pursuit of original work in the fields of structural and morphological botany, in ecology and in forestry, by graduate students and others showing special fitness for the work.

Both semesters; credit to be arranged.

CHEMISTRY

MAJOR REQUIREMENTS

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

SUPPLEMENTARY COURSES.

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

Those who wish to follow chemistry as a profession should take the course outlined on page 72.

COURSES OF INSTRUCTION

The courses in Chemistry are grouped as follows:

Primarily for Undergraduates:
Courses 11, 12, 11A, 12A, 13, 15, 16, 17, 35, 40, 41.

For Undergraduates and Graduates:
Courses 18, 19, 20, 24, 25, 27, 28, 29, 30, 32, 34, 36, 43, 44.

For Graduates:
Advanced Courses and Courses of Research.

11 and 12. General Chemistry.

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

Both semesters; 4 hours credit.

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

11A. Introductory Inorganic Chemistry.

A study of the fundamental laws of Chemistry, and of the characteristic chemical properties of the non-metallic elements. Lectures and laboratory work. Prerequisite: One year of high school chemistry.

First semester; 5 hours credit.

Note—Chemistry 11A and Chemistry 12A form a continuous course throughout the year. Credit for Chemistry 11A will not be given until the student has completed Chemistry 12A. Students registered in Chemistry 11A and reported as deficient in their work in this course are dropped automatically to Chemistry 11.

12A. Qualitative Analysis and Inorganic Chemistry.

A study of the chemistry of the metallic elements and of the theory and the methods of inorganic qualitative analysis. Open to those who have completed course 11A or courses 11 and 12. Lectures and laboratory work.

Second semester; 5 hours credit.

13. Qualitative Analysis.

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

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

15 or 16. Quantitative Analysis.

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

Either semester; 4 credit hours.
17. **Organic Chemistry.**

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

First semester; 4 credit hours.

18 and 19. **Organic Chemistry.**

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

Both semesters; 4 credit hours.

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

20. **Physiological Chemistry.**

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

Second semester; 4 credit hours.

24 and 25. **Physical Chemistry.**

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

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

26. **Electrochemistry.**

Prerequisite: Chemistry 24 and 25.

Second semester; credit to be arranged.

27 or 28. **Advanced Quantitative Analysis.**

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

Either semester; credit to be arranged.

29 and 30. Industrial Chemistry.

The chemistry of industrial and engineering materials, and the discussion of technical chemical processes. Lectures.

Both semesters; 3 hours credit.

32. Technical Analysis.

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

Second semester; credit to be arranged.

34. Foods.

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

Second semester; 4 credit hours.

35. Textiles and Dyeing.

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

Second semester; 1 credit hour.

36. History of Chemical Theories.

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

First semester; 3 credit hours.

40. Fire Assaying.

Sampling and grinding of ores; fire assay for silver, gold,
lead and copper. Chiefly laboratory work. Prerequisite: Chemistry 11, 12, and 13.
Second semester; 2 credit hours.

41. Wet Assaying.
Rapid processes, chiefly volumetric, for the analysis of minerals and ores. Chiefly laboratory work. Prerequisite: Chemistry 15 or 16.
Second semester, credit to be arranged.

43 and 44. Journal Club.
The members of the chemical staff will meet once a week with Seniors in the Department and such Juniors as are qualified, to read, present and discuss articles in the current journals. An elementary reading knowledge of German and French are requisite.
Both semesters; 1 credit hour.

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

COURSE IN CHEMISTRY
For those who desire to become professional chemists the following four-year course is offered. This course leads to the degree of Bachelor of Science in Chemistry.
Those who intend to take this course are urged to take German or French in the High School. Such students will substitute more advanced courses in the modern languages for those put down in the schedule. Those who have taken chemistry in the High School will substitute Chemistry 11A and 12A for Chemistry 11 and 12.

| FIRST YEAR |
|-------------------|-------------------|
| **First Semester** | **Credit** | **Hours** | **Second Semester** | **Credit** | **Hours** |
| English 11        | 3            |            | English 12          | 3            |
| Chemistry 11      | 4            |            | Chemistry 12        | 4            |
| Physics 10        | 4            |            | Physics 11          | 4            |
| Mathematics 11    | 2            |            | Mathematics 12      | 2            |
| Mathematics 13    | 3            |            | Mathematics 16      | 3            |
| Physical Ed. I.   | ½            |            | Physical Ed. II.    | ½            |
| **Total**         | **16½**      |            | **Total**           | **16½**      |
SECOND YEAR

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THIRD YEAR

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FOURTH YEAR

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ECONOMICS AND SOCIOLOGY

The courses in Economics and Sociology are designed to fit men and women for an intelligent consideration of public and industrial and social problems; to train them for probable leadership in industry and the affairs of the state.

It is required that students who make these subjects major work, shall study History. It is desirable that they study modern Languages, Mathematics, Biology, and Psychology.

10 and 11. Introduction to Economics.

The historical analysis of industry and property, studying English and American economic development; the processes of the production and distribution of wealth; the explanation of rent, interest, wages, and profits; recent economic changes; illustration of economic principles from current economic life.

First and second semesters; 3 credit hours. M. W. F. 8:30 a. m.
12. Money and Banking.

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

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


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

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

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


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

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

15. Trust Problem.

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

Second semester; 2 credit hours; T. T., 10:30.

17. General History of Commerce.

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

First semester; 2 credit hours.


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

   Second semester; 2 credit hours.


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

   First semester; 2 credit hours.

20. The Labor Problem.

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

   Second semester; 2 credit hours.

21 and 22. Sociology.

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

   First and second semesters; 3 credit hours; M. W. F., 9:30.


   An application of the principles of economics and sociology to the study of current questions and institutions, theories and institutions for the betterment of economic and social organization, "individualism," socialism, the development of industrial organization, corporations and labor unions; legislation affecting industry and property; philanthropy; the church and social problems; social settlements; social education; conservative philanthropy. Prerequisite: One year in History and Economics.

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

GRADUATE COURSES IN HISTORY AND ECONOMICS.


   Selected topics related to the development of the present economic structure; labor organization; corporations; co-operation.

   First and second semesters; 2 credit hours. T. Th., 11:30.


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

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

NOTE—The courses in General Psychology or their equivalents are a prerequisite to work in education.

11. 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.

First semester; 4 credit hours.


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

Second semester; 2 credit hours.


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

Second semester; 2 credit hours.

14. Educational Psychology.

The development of the American high school and of foreign development will be considered. Special attention will be given to the nature of individual differences, and to the psychology of adolescence and child development.

Second semester; 2 credit hours.
15. The High School, its Evolution, Organization, Management and Problems.

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

First semester; 3 credit hours.

16. Observation and Practice Teaching.

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

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

17. School Hygiene.

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

First semester; 2 credit hours.

18. Educational Administration.

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

First or second semester; 2 or 4 credit hours.

19 and 20. Pedagogical Seminary.

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

By special arrangement; credit and time to be arranged.


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

Credit and time to be arranged.

22. Administration of City Schools.

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

Either semester; 2 credit hours.

SUGGESTIVE SCHEDULE OF COURSES FOR PROSPECTIVE TEACHERS

FIRST YEAR'S WORK

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

<table>
<thead>
<tr>
<th>First Semester, 16½ to 18½ Hrs.</th>
<th>Second Semester, 16½ to 18½ Hrs.</th>
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<tbody>
<tr>
<td>Major Subject ....................4 or 5 Hrs.</td>
<td>Major Subject ....................4 or 5 Hrs.</td>
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<tr>
<td>Language ...............................3 Hrs.</td>
<td>Language ...............................3 Hrs.</td>
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<tr>
<td>Literature or Philosophy........3 Hrs.</td>
<td>Literature or Philosophy........3 Hrs.</td>
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<tr>
<td>Psychology* .............................3 Hrs.</td>
<td>Psychology* .............................3 Hrs.</td>
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<tr>
<td>Electives ....................................2 to 5 Hrs.</td>
<td>Electives ....................................2 to 5 Hrs.</td>
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<tr>
<td>Gymnasium ....................................½ Hr.</td>
<td>Gymnasium ....................................½ Hr.</td>
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THIRD YEAR’S WORK

First Semester, 16½ to 18½ Hrs.  Second Semester, 16½ to 18½ Hrs.
Major Subject.................5 to 9 Hrs.  Major Subject.................5 to 9 Hrs.
History of Education*..........4 Hrs.  Principles of Education*........2 Hrs.
Electives and Minors.............  Educational Psychology*..........2 Hrs.
..................................5½ to 7½ Hrs.  Electives and Minors.............
..................................5½ to 7½ Hrs.

FOURTH YEAR’S WORK

First Semester, 16½ to 18½ Hrs.  Second Semester, 16½ to 18½ Hrs.
Major Subject.................5 to 9 Hrs.  Major Subject.................5 to 9 Hrs.
School Hygiene*................2 Hrs.  Special Method ................1 Hr.
High School*....................3 Hrs.  Observation Work*............4 Hrs.**
Electives and Minors............. Electives and Minors.............
..................................4½ to 6½ Hrs.  ..................................4½ to 6½ Hrs.

*Subjects required in Department of Education for Teachers’ Certificate of Qualification to Teach.

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

ENGLISH.

Students who wish to make English and Literature their major department are required to take courses 11, 12, 19, 20, 23, 24, 28, 32: six hours from courses 25, 33-54.

Students who wish their teacher’s certificate in English must take the work outlined above for a major in English and, as part of it, courses 38, 39, 42.

Students who wish to make English their minor must take courses 11, 12, 17, 18 and six hours from courses 19-54.

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

INTRODUCTORY AND REQUIRED COURSES

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

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

First semester; no college credit.

11. Freshman English.

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

First semester; 3 credit hours.

12. Freshman English.

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

Second semester; 3 credit hours.

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


These courses are intended primarily for Freshmen, but are open to other students. The first semester is devoted largely to the famous stories of Greek, Roman and Teutonic mythology, as embodied in fine literature. The second semester considers the English Bible, as a literary work in itself, and in relation to English literature generally.

Both semesters; 1 credit hour.

15. Introduction to Literature.

Elementary work in the essay, poetry, drama and fiction. Open to all students.

First semester; 2 credit hours.


A study of selected portions of verse and prose from American and English writers. A course designed for first-year students, and open to others only by permission.

Second semester; 2 credit hours.
17, 18. Sophomore English.

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

Both semesters; 3 credit hours.

19, 20. Essentials of Literature.

This course is an introduction to the detailed survey of English literature presented by the period courses and to the study of literature in general. After a rapid review of the great periods into which the history of English literature is divided, and a consideration of its important movements, the principles of literature as an art are briefly considered. This course is required of all students who choose English as their major. Students in this course are also advised to elect courses 21, 22. Prerequisite, Courses 11, 12.

Both semesters; 1 credit hour.

21, 22. Contemporary Ideas.

These courses consider great ideas of contemporary interest—peace, social inequality, evolution, etc., as embodied in prominent works of literature, both of the past and of today. Prerequisite, Courses 11, 12.

Both semesters; 2 credit hours.

23. American Literature.

A survey of American literary history and a discussion of notable works in prose and verse.

First semester; 3 credit hours.

24. Introduction to Shakespeare.

A rapid reading of a considerable number of the plays in chronological sequence.

Second semester; 3 credit hours.

25. Shakespeare.

This course is a continuation of course 24, and is a more careful study of several additional plays.
First semester; 3 credit hours.

26, 27. Debate.

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

Both semesters; 2 credit hours.

PERIOD COURSES IN ENGLISH LITERATURE.

The following courses offer an intensive study of the literature of the periods designated. The work consists in part of lectures, but chiefly of assigned readings in the literature of the period. The principal authors are naturally considered at greater length, but the work of the second and third-rate writers is not neglected.

28. The sixteenth century: (1500-1603)
   First semester; 3 credit hours.

29. The seventeenth century: (1603-1660)
   Second semester; 3 credit hours.

30. The eighteenth century: (1660-1798)
   First semester; 3 credit hours.

31. The nineteenth century: (1798-1832)
   First semester; 3 credit hours.

32. The nineteenth century: (1832-1900)
   Second semester; 3 credit hours.

33. Present Day Poets.

   Lectures and reports; illustrations from the poetry of Swinburne, Meredith, Noyes, Masefield and other contemporary poets.
   Second semester; 2 credit hours.

34. The Modern Novel.

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

35. Epic.

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

36. The Short Story in English.

A study of a large number of representative modern English and American short stories, and a history of the development of this form in modern English and American literature. A few great short stories by continental writers are also included for purposes of comparison.
Second semester; 2 credit hours.

37. Advanced Composition.

Daily, weekly and fortnightly themes. Several nineteenth century and contemporary writers are studied from the point of view of style. Open to Juniors and Seniors.
First semester; 3 credit hours.

38. High School English.

The problems and methods of teaching composition and literature in secondary schools.
Second semester; 1 credit hour.


First semester; 2 credit hours.

ADVANCED AND GRADUATE COURSES

40. Old English.

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

41. Old English.

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

42. Chaucer.

Selections from the Canterbury Tales studied as an introduction to Middle English.
Second semester; 3 credit hours.
43. Middle English. (Continued).

Emerson’s Middle English Reader. Primarily a reading course, though attention is given to grammar and dialectology.
First semester; 3 credit hours.

44. Advanced American Literature.

A detailed study of literature in America from the earliest colonial writings to the present. Constant stress is placed upon the interpretation of American life as found in American writings. Not only the famous poets and novelists are studied, but also the colonial writers, the orators, the essayists, the famous editors, and other literary figures who have contributed to America’s analysis of itself. The library is well supplied with the works of these writers, and the student is expected to make himself thoroughly familiar with these works.
Both semesters; 3 credit hours.

45. Nature of Drama.

This course is based upon typical modern dramas. It presents the various problems of modern dramatic technic and attempts to formulate the principles of drama as an art form.
First semester; 3 credit hours.

46. History of the English Drama.

This course presents the large movements in the history of the English drama from the beginning until the present time, emphasizing the foreign influences which have been brought to bear upon it. A continuation of course 45.
Second semester; 3 credit hours.

47. Advanced Drama.

The subject of this course varies from year to year; in 1911, Pseudo-Shakespearean plays; in 1912, Comedy; in 1913, Elizabethan drama; in 1914, a chronological study of the works of Shakespeare, which will also be the subject for 1915-16.
Both semesters; 3 credit hours.


A study of the essential elements of poetry and of English verse forms; illustrations are drawn mainly from recent verse, and an opportunity for exercises in verse writing is offered those who wish it.
First semester; 3 credit hours.
49. **Wordsworth and Coleridge.**
    Second semester; 2 credit hours.

50. **Shelley, Keats, Byron.**
    First semester; 2 credit hours.

51. **Tennyson and Browning.**
    Second semester; 2 credit hours.

52. **Carlyle, Ruskin, Elliot.**
    First semester; 3 credit hours.

53, 54. **Development of English Fiction.**

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

Both semesters; 3 credit hours.

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**FINE ARTS**

Students taking Fine Arts as their major subject must complete thirty-five hours. The courses selected should be distributed to some extent through the three lines of work offered by the department; the history and appreciation of art, representation and illustration, design and handicraft, although special emphasis upon some one of the three sections is desirable.

Students wishing a minor in Fine Arts must complete at least eighteen hours, and will find it advisable to take from four to six hours additional.
COURSES IN HISTORY AND APPRECIATION


This course gives a general survey of the architecture, sculpture and painting of the ancient world.
First semester; 3 credit hours.


An analysis of the styles of architecture, with special emphasis upon the evolution of church structure from the early basilica to the developed Gothic style.
Second semester; 2 credit hours.


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

14. History of Renaissance Art. (Continuation of Course 13.)

A study and comparison of the German, French and Dutch schools of painting.
Second semester; 2 credit hours.

15. The Appreciation of Art.

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


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

COURSES IN REPRESENTATION


An introductory course in free-hand drawing and painting.
First and second semesters. Repeated second semester; 2 credit hours each.
22. **Aesthetic Principles.**

   A course planned to develop an understanding of the principles of artistic expression, and to cultivate creative activity and originality.
   Second semester; 2 credit hours.

23. **Technical Training in Representation.**

   Practical work in painting and modeling. Choice of mediums, oil, water color, or clay. Work is from still life, cast and life. 
   Prerequisite: Course 21.
   First semester; 2 credit hours.

24. **Technical Training in Representation.**

   A continuation of Course 23.
   Second semester; 2 credit hours.

25. **Technical Training in Representation.**

   Study of the portrait in charcoal, oil, and water colors.
   Prerequisite: Courses 21, 23, 24.
   First semester; 2 credit hours.

26. **Technical Training in Representation.**

   A continuation of Course 25.
   Second semester; 2 credit hours.

27. **Technical Training in Representation.**

   Study of the landscape in charcoal, oil, and water colors.
   Prerequisite: Courses 21, 23, 24.
   First semester; 2 credit hours.

28. **Technical Training in Representation.**

   A continuation of Course 27.
   Second semester; 2 credit hours.

29. **Technical Training in Illustration.**

   The object of this course is to prepare students to do practical illustration for books and magazines. Special attention will be given to pictorial composition and methods of reproduction. 
   Prerequisite: Course 21.
   Second semester; 2 credit hours.

30. **Technical Training in Illustration.**

   A continuation of Course 29.
   Second semester; 2 credit hours.

A course in the practical and technical methods of newspaper cartooning. The work will be closely associated with the Department of Journalism.
First semester; 2 credit hours.

32. Teachers' Drawing and Painting.

A course for teachers, giving practical suggestions for classroom work. Prerequisite: Course 21.
Second semester; 2 credit hours.

33. The Teaching of Art.

A course planned for supervisors in drawing, painting, and design. The work will include a general survey of the methods of presenting the subject, practical exercises, reference material, and definite plans for the organization of courses.
Open to advanced students only.
First semester; 2 credit hours.

34. Artistic Anatomy.

A study of the bones, the exterior muscles, and the proportions of the human figure as a preparation for artistic representation.
Second semester; 2 credit hours.

COURSES IN DESIGN.

41. Houseplanning.

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

42. House Furnishing and Decorating.

A continuation of Course 41.
Second semester; 2 credit hours.

43. Design.

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

A continuation of Course 43. Application in some of the simpler crafts.
Second semester; 2 credit hours.

45. Handicraft.

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

46. Handicraft.

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

GRADUATE COURSES.

51. History of Greek Sculpture.

A more advanced course than Course 11, affording an opportunity for the intensive study of Greek sculpture.
First semester; 2 credit hours.

52. History and Appreciation of Primitive Art.

A course in research and intensive study of the art of prehistoric and primitive man in order to ascertain the aesthetic emotions and principles involved.

GEOLoGY

MAJOR REQUIREMENTS

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

MINING AND ECONOMIC GEOLOGY

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

UNDERGRADUATE COURSES IN GEOLOGY

11. General Geology.

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

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

12. General Geology.

A continuation of Course 11. The study of historical geology
by means of lectures, laboratory and field work. Text: Cham-
berlain and Salisbury’s College Geology.

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


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

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

14. Historical Geology.

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

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

15. Physiography.

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

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

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

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

First or second semester; 2 credit hours.

17. Practical Geology and Mineralogy.

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

First semester; 2 credit hours; lectures, T. Th., 9:30; labora­
tory, M., 1:30-4:00.
18. **Commercial Geography.**

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

Second semester; 2 credit hours.

20. **Invertebrate Paleontology.**

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

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

**MAJOR REQUIREMENTS IN MINERALOGY AND ECONOMIC GEOLOGY**

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

**COURSES IN MINERALOGY AND ECONOMIC GEOLOGY**

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

A study of the elements of crystallography and the identification, by means of physical characters and chemical tests, of 150 common minerals. Text, Rowe’s Elements of Crystallography and Mineralogy. Prerequisite: Chemistry 11 and 12 or equivalent.

First semester; 3 credit hours; lecture, T. Th., 9:30; laboratory, T. Th., 1:30-4:00.

22. **Physical Mineralogy.**

A repetition of Course 21.

Second semester; 3 credit hours; lectures, T. Th., 9:30; laboratory, T. Th., 1:30-4:00.

23. **Advanced Mineralogy.**

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

Chiefly laboratory work. The determination of many of the principal ore-forming minerals by means of physical properties, blow-pipe and other chemical reactions. Text, Penfield and Brush, Determinative Mineralogy and Blow-Pipe Analysis. Prerequisite: Mineralogy 21.

Second semester; 2 to 4 credit hours; laboratory, T. Th., S., 1:30-4:00.

25. Practical Mineralogy.

A course designed for men intending to do field work in mineralogy, or for prospectors and mining students. Most of the important economic minerals are taken up in this course, and simple field methods of identification studied. Text, Rowe’s Practical Mineralogy Simplified.

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


Lectures, laboratory work and assigned readings. A general study of the non-metallic and metallic economic geology of the United States, and especially Montana. Such non-metals as coal, oil, gas, gypsum, clay, building stones, etc., and such metals as gold, silver, copper, platinum, zinc, lead, mercury, etc., will be studied. Excursions will be taken to nearby mines and mills. Should be preceded by Geology 13 and 14. Texts, Ries, Economic Geology of the United States; Rowe, Economic Geology of Montana. Prerequisite: Geology 11 and 12.

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

27. Petrology.

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

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


A general study of the legal aspect of mineral deposits, etc. Lectures and recitations. Text, Shamel, with collateral readings.

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

30. Petrography.

A study of the microscopical characters, in thin sections, of many rock-forming minerals. Lectures and laboratory work.
Text, Winchell’s Elements of Optical Mineralogy. Other books such as Rosenbush & Iddings Microscopical Phisiography of Rock-Making Minerals; Johanssen’s Determination of Rock-Forming Minerals, in thin sections; Groth’s The Optical Properties of Crystals (Jackson), and others will be frequently consulted. Prerequisite: Minerology 21.

Second semester; 2 to 4 hours credit.

GRADUATE COURSES IN GEOLOGY

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

31. Advanced Geology.

A more careful study of the principles of Geology. Field and laboratory work and a thorough review of past and recent geological literature.

First semester; 2 to 4 credit hours; time to be arranged.

32. History of Geology.

This course is intended for those specializing in general geology. The basis of the course will be, “Founders of Geology,” by Geikie; “History of Geology and Paleontology,” by Zittel; and “History of Geology,” by Woodward.

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

33. Advanced Economic Geology.

This course should follow Course 14, and is a careful study of the coals, oils, gas, etc., of the United States and other countries.

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

34. Genesis of Ore Deposits.

Lectures, assigned readings and mine examinations. The basis of the work will be such books as Van Hise on Metamorphism; Posepny and others on the Genesis of Ore Deposits; Kemp, Ore Deposits of the U. S. and Canada; Phillips and Louis, A Treatise on Ore Deposits; Weed (Beck’s), The Nature of Ore Deposits; and many U. S. Geological Reports such as the Butte Special Folio; Geology and Ore Deposits of the Coeur d’Alene
District, Idaho; The Leadville District; Enrichment of Sulphide Ores, by Emmons, etc.
Second semester; 2 or 4 credit hours; time to be arranged.

35. Casual Geology.

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

36. Regional Geology.

A careful and systematic study of the geology of some particular region. The mapping of the special area and the interpretation of its past geologic history.
3 to 5 hours credit.

37. Mine Examination and Reports.

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

38. Field Work in Economic and Mining Geology.

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


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

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

41. Summer Field Work in Geology.

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

42. Research Work.

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

GERMAN

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

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

UNDERGRADUATE COURSES

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

10 and 11. Elementary.

Joynes-Meisner's, Becker's German grammar, Bernhart's composition, or their equivalents; 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, etc.

Both semesters; 4 credit hours; M. W. Th., F. 9:30.


Composition, conversation and some of the following readers: Wilhelm Tell, Karl Heinrich, Das Abenteuer einer Neujahrsnacht, Maria Stuart, Minna Von Barnhelm, Hermann and Dorothea, Jungfrau v. Orleans.

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

14 and 15. Advanced.

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

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

16 and 17. Scientific German.

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

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

18 and 19. Special.

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

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

20 and 21. History of German Literature.

An advanced course. Prerequisite: Three years of German.

22. Journalistic.

Sight reading. Texts, German newspapers, reports, essays on German Magazine Articles.

2 credit hours; M. Fr., 1:30 or T. Th., 10:30.

23 and 24. Methods of Teaching German.

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

26 and 27. Survey of German Literature.

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

Both semesters; 3 credit hours.

GREEK AND LATIN

MAJOR REQUIREMENTS

Students choosing this department for their major work will be required to take at least thirty hours of the work outlined below. Four of these hours must be given to the courses in Greek and Roman life; and at least 12 hours of Latin, the rest of the required hours may be given to Latin, Greek or Modern Languages.

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

COURSES IN LATIN

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

10a. Cicero.

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

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

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

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

12. **Catullus, Horace.**

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

13. **Tacitus.**

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

14. **Horace, Juvenal.**

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

15. **Lucretius.**

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

16. **Pliny, Cicero.**

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

17. **Roman Life.**

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

18. **Pharmacy Latin.**

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

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**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, the time of all classes is to be arranged.
10. **Beginning Greek.**
   White's First Greek Book.
   First semester; 5 credit hours.

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

12. **Xenophon.**
   Four books of Anabasis completed.
   First semester; 5 credit hours.

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

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

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

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

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

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

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

The work of the department is designed, in the first place, to contribute something towards a liberal education and to a preparation for citizenship. In the second place, it is planned to prepare students for professional work in teaching, business and law.

Those who expect to teach History in the secondary schools should take Courses 12, 13, 14, 15, 20 and 21, and, if possible, 10 and 11. Those who expect to teach Civics should have, at least, Courses 16 and 17 in Political Science. Attention is also called to Course 33 for teachers.

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

COURSES IN HISTORY FOR UNDERGRADUATES


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

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

11. Rome and the West.

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

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

12. Mediaeval Europe.

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

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

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

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


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

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


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

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

20. American History to 1814.

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

First semester; 3 credit hours; M. W. F., 9:30.
Prerequisite: One year of college work.

21. The United States, 1814–1876.

The course will open with a survey of social and economic conditions at the close of the War of 1812. There will be taken up in detail such subjects as western expansion, the development of nationality, the growth of democracy, the slavery controversy, and commercial and industrial expansion. The course will close with a consideration of the War of Secession, Reconstruction, and social and political readjustment.

Second semester; 3 credit hours; M. W. F., 9:30.
Prerequisite: One year of college work.

COURSES FOR GRADUATES AND QUALIFIED UNDERGRADUATES

22. The Renaissance.

Political, economic and intellectual conditions at close of Middle Ages; the papacy; beginnings of the Renaissance; Geographical discoveries; inventions; Greek influence; a detailed study of the intellectual ideas of the Renaissance.

First semester; 2 credit hours; T. Th., 11:30.
Prerequisite: Six hours of college history.

23. The Reformation

Social and ecclesiastical conditions underlying the reformation; reform within and without the church; Luther and the reformation in Germany; religious wars; importance of the Reformation.

Second semester; 2 credit hours; T. Th., 11:30.
Prerequisite: Six hours of college history.

24. Revolution and Napoleonic Eras.

French society and state before the Revolution; estates general; reign of terror and reaction; Constitution of 1795 and Directory; Napoleon and the Empire; Napoleonic wars and the commercial struggle with the British Empire.

First semester; 3 credit hours; T. Th., 9:30.
Prerequisite: Six hours of history.
25. **Europe in the Nineteenth Century.**

A study of the political, social and economic conditions of Europe from the Congress of Vienna to the unification of Germany and Italy. The development of modern Russia and Belgium, the Crimean War, and other movements up to 1870 will be discussed.

First semester; 2 credit hours; T. Th., 9:30.
Prerequisite: Six hours of history.

26. **Contemporary Europe, Asia, and Africa.**

A study of contemporary politics and social conditions from 1870 to the present. The colonial development of the British Empire, the organization and trend of politics in Germany and Italy, the present French Republic, the colonization of Africa, the effects of the Russo-Japanese and Balkan Wars will be studied and a foundation laid for the causes of the present war.

Second semester; 2 credit hours; T. Th., 9:30.
Prerequisite: History 25.

27. **Formation of the Federal Constitution.**

The events leading up to the Constitutional Convention of 1787; the framing of the Constitution; arguments for and against its ratification.

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

28. **Contemporary History of the United States.**

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

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

30. **History of Montana.**

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

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

32. Expansion of the United States.

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

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

33. The Teaching of History.

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

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

COURSES IN POLITICAL SCIENCE


A study of the organization, functions and powers of the Federal government.

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


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

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

18. Introduction to Political Science.

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

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

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

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

34. Constitutional Law.

See announcement of School of Law.

35. Municipal Corporations.

See announcement of School of Law.

36. International Law.

Development of the Law of Nations; principle of sovereignty; the right of intervention; laws of war and peace; the position of neutrals; arbitration; the peace movement; international law and contemporary politics.

Both semesters; 2 credit hours.
Prerequisite: Junior standing and six hours of History or Political Science.

COURSES FOR GRADUATES

50. Historical Methods.

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

Both semesters; once a week.

51. Seminar in American History.

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

Both semesters; once a week.

52. Studies in Montana History.

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

Both semesters; once a week.
HOME ECONOMICS

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

COURSES OF INSTRUCTION

FIRST YEAR

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<tr>
<th>First Semester</th>
<th>Cr.</th>
<th>Second Semester</th>
<th>Cr.</th>
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<tbody>
<tr>
<td>Chemistry (general)</td>
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<td>Chemistry (general)</td>
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<tr>
<td>English</td>
<td>3</td>
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<tr>
<td>Biology</td>
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<td>Biology</td>
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<tr>
<td>Home Economics—Textiles</td>
<td>3</td>
<td>Home Economics—Textiles</td>
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<tr>
<td>*Fine Arts (Design)</td>
<td>2</td>
<td>Fine Arts (Design)</td>
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<tr>
<td>Physical Education</td>
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*Free hand drawing is prerequisite to the work in design. If it has not been studied in preparatory schools it must be studied at the University before work in design is taken up.

SECOND YEAR

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<tr>
<th>First Semester</th>
<th>Cr.</th>
<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td>Home Economics—Foods</td>
<td>4</td>
<td>Home Economics—Foods</td>
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<tr>
<td>*Chemistry (Qualitative)</td>
<td>4</td>
<td>Chemistry (Organic)</td>
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<tr>
<td>French (Elementary)</td>
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<td>French (Elementary)</td>
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<td>or German (Elementary)</td>
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<td>German (Elementary)</td>
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<tr>
<td>Physical Education</td>
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*Those who have previously studied general chemistry and whose work is satisfactory to the Chemistry Department may enter the class in Quantitative Analysis the second semester of the first year.
## Third Year

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<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>Biology (Bacteriology)</td>
<td>4</td>
<td>Biology (Physiology)</td>
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<tr>
<td>Chemistry (Food)</td>
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<tr>
<td>German or French</td>
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<td>German or French</td>
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<td>Psychology</td>
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<td>Psychology</td>
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<tr>
<td>*Applied Design</td>
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<td>*Applied Design</td>
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</tr>
<tr>
<td>Home Economics—20 (Dress)*</td>
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<td>Home Economics—21 (Dress)*</td>
<td>3</td>
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*Applied design must be taken as a prerequisite or parallel to Dress and Household Furnishing and Decorating.

**Physiological Chemistry must be taken as a prerequisite to Dietetics.

## Fourth Year

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<tr>
<th>First Semester</th>
<th>Cr.</th>
<th>Second Semester</th>
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<tr>
<td>Economics</td>
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<tr>
<td>Sociology</td>
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<td>Sociology</td>
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<tr>
<td>Home Economics—16 (House Planning)</td>
<td>2</td>
<td>Home Economics—17 (House Furnishing and Decoration)</td>
<td>2</td>
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<tr>
<td>Home Economics—13 (Management and Sanitation)</td>
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<td>Home Economics—14 (Management and Sanitation)</td>
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<tr>
<td>History of Education</td>
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<td>Home Economics—15 (Dietetics)</td>
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## Suggestive Course for Prospective Teachers

### First Year

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<th>First Semester</th>
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<tr>
<td>English</td>
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<tr>
<td>Biology</td>
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<td>Biology</td>
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<tr>
<td>Home Economics—18 (Textiles)</td>
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<td>Home Economics—19 (Textiles)</td>
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<tr>
<td>Fine Arts (Design)</td>
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### Second Year

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<tr>
<td>Chemistry (Qualitative)</td>
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<td>or German (Elementary)</td>
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<tr>
<td>Psychology</td>
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<tr>
<td>Physical Education</td>
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<td>Physical Education</td>
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<tr>
<td>Bacteriology</td>
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<td>Physiology</td>
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## THIRD YEAR

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<tbody>
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<td>History of Education .............</td>
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<td>Educational Psychology ...........</td>
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<td>Home Economics—17 ..................</td>
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<td>(House Furnishing and Decoration)</td>
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## FOURTH YEAR

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<td>Economics ................................</td>
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<td>Economics ................................</td>
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<td>or</td>
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<tr>
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<td>Teachers’ Course—22 ...............</td>
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<td>Home Economics—15 .................</td>
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<td>The House—14........................</td>
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## DESCRIPTION OF COURSES

### Foods—11 and 12.

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

Lectures and recitations combined with laboratory work.

**Prerequisite:** General Chemistry.

Both semesters; 4 credit hours each.

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

### The House—13 and 14.

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

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

Prerequisite: Economics and Bacteriology.
Both semesters; 3 credit hours each.

Dietetics—15.

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

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

Prerequisites: Foods, Physiology, Chemistry of Foods and Physiological Chemistry.
First semester; 3 credit hours.

House Planning—16.

This course includes the study of the evolution of the house; the development of the American house; the modern house. The site, outlook and surroundings of the house. The making of house plans, special attention being given to the proportions, entrances, thoroughfares, stairs, and the arrangement of the rooms. The construction of the house; foundation walls, framing walls, floors, fireplaces, windows, etc. The cost of building and the care of the house are also taken up.
First semester; 2 credit hours.

House Furnishing and Decorating—17.

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

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

Prerequisites: Design, Applied Design and Houseplanning.
Second semester; 2 credit hours.
Textiles—18.

A study of fibres; the development of textile industry; the manufacture of fabrics and the economic and social conditions which affect their value.

The laboratory work will give a general knowledge of sewing by hand and machine. Problems: Drafting of patterns; cutting and fitting; seams and finishes for undergarments; making of undergarments.

Students will provide their own material, subject to the approval of the instructor.

Prerequisite or Parallel: Fine Arts 23 and 24.
First semester; 3 credit hours.

Textiles—19.

A continuation of Course 18. Continued study of textiles, emphasizing the appreciation of fabrics and the selection of materials.

The laboratory work continues with the making of undergarments and includes, also, the making of a one-piece dress of wash material.

Prerequisite: Textiles 18.
Second semester; 3 credit hours.


Lectures relating to line, color, and ornament in dress; materials and their influence on the design of a gown; economical purchasing and other problems relating to dress.

Laboratory work includes drafting of patterns; alteration of commercial patterns; making of a wool dress.

Prerequisite: Textiles 18 and 19.


Lectures on the history of costume; the hygiene and economics of clothing; the judging of textiles from a consumer’s standpoint.

Laboratory work includes the modelling of patterns, the designing and making of a silk gown.

Prerequisite: Dress 20.

Teachers' Course—22.

Designed to meet the needs of teachers of Home Economics in high schools and grades.
Includes a comparison of courses of study in different school and cities, the planning of courses of study, the study of various types of equipment, and practice teaching.

LIBRARY SCIENCE

COURSES OF INSTRUCTION

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

General Reference.

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

SPECIAL TRAINING COURSES

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

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

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

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

**Library Economy.**

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

**Elementary Reference.**

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

**Selection of Books.**

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

**Bibliography.**

Lectures by professors from the various departments on the best collection 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.

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**MANUAL ARTS**

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

Candidates for the Teachers' Certificate must fulfill major requirements.

COURSES OF INSTRUCTION

11. **Free Hand Drawing and Painting.**

   An elementary course in the principles of free-hand drawing and the use of the common media of expression in drawing. Given by the Department of Fine Arts.
   First semester; 2 credit hours.

12 and 13. **Instrumental and Mechanical Drawing.**

   An elementary course in instrumental and mechanical drawing covering the following subjects: Use of instruments, geometrical drawing, lettering and simple working drawing introducing the theory of projections, revolutions, sections, intersections and machine sketching.
   Both semesters; 2 credit hours.

14. **Descriptive Geometry.**

   Fundamental problems on point, line and plane; sections, intersections.
   First semester; 2 credit hours.

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

   Shades and shadows, perspective, isometric projection.
   Second semester; 2 credit hours.

16. **Elementary Bench Woodwork.**

   Practice in the use of hand tools.
   First semester; 2 credit hours.

17. **Elementary Bench Woodwork.**

   A continuation of Course 16.
   Second semester; 2 credit hours.

18. **Turning and Pattern Making.**

   A course in elementary wood-turning and pattern-making.
   First semester; 2 credit hours.
   A continuation of Course 18.
   Second semester; 2 credit hours.

20. Forge Work.
   Work in handling iron and steel in the fundamental processes of forging, welding, tempering and annealing.
   Second semester; 2 credit hours.

   Bench work in chipping and filing, grinding, practice on the lathe, shaper and milling machine.
   First semester; 2 credit hours.

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

22. Handicraft.
   Work in leather, copper and brass, and pottery. Given in the Department of Fine Arts.
   First semester; 2 credit hours.

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

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

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

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

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

Advanced Degrees.

Candidates for the Master’s Degree must present as basis for graduate work an amount of elementary work equivalent to the major requirement in undergraduate work. For general requirements for the Master’s Degree see page 39.

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

COURSES OF INSTRUCTION

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

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

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

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

   Prerequisite: Course 13.
   Second semester; 2 credit hours; T. Th., 10:30.
14. **Spherical Trigonometry.**
   Prerequisite: Course 13.
   Second semester; 2 credit hours; T. Th., 11:30.

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

15b. **Descriptive Geometry.**
   Fundamental problems on point, line and plane; sections, intersections.
   Either semester; 2 credit hours; time to be arranged.

16. **Plane Analytic Geometry.**
   Elements of plane analytic geometry, including the geometry of the conic sections.
   Either semester; 3 credit hours; two sections; M. W. F., 9:30.

17. **Calculus.**
   Differential and integral calculus, with applications.
   Either semester; 3 credit hours; M. T. W. Th. F., 10:30.

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

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

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

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

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

A study of the more common types of ordinary differential equations, especially those of the first and second order, with applications to geometry, mechanics and physics.

Prerequisite: Courses 17 and 18.
First semester; 3 credit hours; M. W. F., 8:30.


The important partial differential equations of applied mathematics.

Prerequisite: Course 23.
Second semester; 3 credit hours; M. W. F., 8:30.

25. Advanced Calculus.

Selected topics in the differential and integral calculus, requiring more extensive and theoretical treatment than is given in Courses 17 and 18.

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


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

27. Theory of Equations.

Prerequisite: Courses 11, 12, 16 and 17.
First semester; 3 credit hours; M. W. F., 10:30.


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

29. Limits and Series.

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

31. Statistics.

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

32. The Mathematics of Life Insurance.

An introductory course, designed to meet the needs of students majoring in commerce.
Second semester; 3 credit hours; M. W. F., 9:30.
33. Elliptic Integrals.
   The theory of indefinite integration, leading to elliptic integrals, with attention to applications.
   First semester; 3 credit hours; M. W. F., 8:30.

   Summer term; 2 credit hours.

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

36. Culture Mathematics.
   The chief purpose of this course is to consider the role which elementary mathematics, up to and including the calculus, plays in modern life. Enough of the subject matter will be given to enable the student to understand the general methods which are used in trigonometry, analytic geometry and calculus. Considerable attention will be given to the historical development.
   Prerequisite: Entrance mathematics and some intellectual maturity.
   Second semester; 3 credit hours; M. W. F., 9:30.

COURSES IN ASTRONOMY

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

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

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

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

GRADUATE COURSES.

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

An introductory course. Prerequisite: Course 23.
3 hours throughout the year.

43. **Vector Analysis.**

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

40. **Analytic Projective Geometry**

A study of the co-ordinate systems of projective geometry, the principle of duality, general introduction to the projective theory of conic sections and quadric surfaces. Prerequisite: Courses 17, 18 and 20.
3 credit hours.

44. **Harmonic Motion.**

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

45. **The Theory of Sets of Points.**

A general introduction to the modern theory of sets. Prerequisite: Course 25 or its equivalent.
2 credit hours.

46. **Theory of Numbers.**

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

47. **Finite Groups.**

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

48. **Continuous Groups.**

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

48. **Differential Geometry.**

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

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

50. Advanced Mechanics.

Theory of the gyroscope and related problems. Prerequisite: Courses 20 and 22.
3 hours throughout the year.

51. Infinite Series.

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

PHYSICAL EDUCATION

The Department of Physical Education has charge of all athletics at the University and directs the required and elective work in physical training for men and women. For the work of this department, a well-equipped athletic field, which is described elsewhere in this bulletin, and a steam-heated, well-lighted and ventilated gymnasium are provided.

The Gymnasium.

The Gymnasium contains an examining room and separate dressing rooms, shower baths and steel lockers, for both the men’s and the women’s departments. The examining room is equipped with anthropometric scales, stadiometer, spirometer, dynamometers, calipers, wall parallels, phonendoscope, sphygmomanometer, test type, color worsteds, charts and other apparatus used in physical examinations. The large exercise hall is equipped with chest weights and charts, bars, rings, ladders, ropes, striking bag, mats, and other developing appliances, besides basketball equipment and running track. The Gymnasium also contains the offices of the Director of the Department and assistants, and a towel supply and store room. In the Director’s office is a well-selected library of useful books and magazines on physical training, hygiene, athletics, and allied subjects.
University Requirements.

The University requires that each student must have two credits in physical education listed with the total number for a degree. This work is given in the Freshman and Sophomore years. One-half a credit a semester is given for the regular course in physical training and the student is required to attend two classes a week during the semester in order to receive this credit. Students who desire to train regularly with the various Varsity athletic squads may be allowed to substitute such training for the regular course by applying to the Director of Physical Education. The expenses of the physical training course are approximately three dollars for a gymnasium suit, fifty cents for a locker, and one dollar (optional) for towels, for the collegiate year.

Aims.

The work of this department is in line with modern ideas of education which strive for well-balanced training in order to the greatest efficiency and happiness. The aim is not so much the development of muscular prodigies as the harmonious neuro-motor training of the entire body, with special attention to the development of organic vigor as the foundation of future success and pleasure in life’s work. Both intra and inter-collegiate athletic contests are encouraged and supervised by this department. The competition and strain of modern life and the loss of many former influences conducive to good health demand positive attention to this important phase of education.

Physical Examinations

All students enrolled in this department are given a thorough physical examination, including functional and organic examination of heart and lungs, weight, height, strength tests, various muscle and bone measurements, inspection for deformities, tests of hearing and vision, dental examination, family and personal health history, etc. After a careful study of each student, personal advice is given with reference to exercise, diet, bathing, sleep, etc.

Floor Talks

Frequently short “floor talks” are given to the classes in the effort to enlist the interest of the students in their own physical welfare. These informal lectures are on such subjects as
applied physiology, the importance and possibilities of physical training, its status among the Greeks and progress to the present time, the dollar value of health, the relation of physical training to sociology and psychology, first aid to the injured, personal and public hygiene, etc. A series of posters calling attention to the various aspects of bodily welfare are displayed in the gymnasium and these are changed frequently during the collegiate year.

**Parallel Reading**

A list of good populo-scientific books are suggested for reading and each student in the department is required to read one book each semester and hand in a short synopsis of same. Selection of books will be made as indicated below.

**Floor Work**

The lessons will be progressive throughout the collegiate year. A combination of Swedish and German gymnastics will form an important part of the course and musical accompaniment will be used for many of the exercises. For recreation basketball and other indoor games will be employed during the winter months. Opportunity for instruction in boxing, fencing, single sticks, and wrestling, will be provided under special instructors. As much of the work of the department as possible will be conducted out of doors.

All exercise will be of medium type and suitable to the average student, but those who are physically unable to pursue the work of the regular classes will be excused from floor work, upon presentation of a physician's recommendation on blanks furnished by this department. Such statements should be handed promptly to the Director of Physical Education at the beginning of each semester, who will assign suitable substitute work for which the usual credit will be given.

Aside from the regular schedule of classes in required work, the gymnasium will be open at certain hours to all students who desire to avail themselves of the opportunities offered for physical education. Any student is at liberty to consult the Director of the Department for advice at any time without charge.

**Courses for Men**

11. *Freshmen, First Semester—½ hour credit—Tu. and Fri., 4 p. m.*

Marching tactics, Swedish gymnastics, Elementary Indian club work, Elementary apparatus, Athletic dancing, Games.
Parallel reading, Baikie’s “How to Get Strong and Stay So.”

12. Freshmen, Second Semester—½ hour credit—Tu. and Fri., 4 P. M.
Winding movements with wands, body-building work with dumb-bells, Heavy apparatus, Athletic dancing, Basketball. Parallel reading, Gulick’s “The Efficient Life.”

13. Sophomores, First Semester—½ hour credit—M. and Th., 4 P. M.
Advanced Indian club work, Hygienic bar-bell drill, Stall bars, Advanced apparatus, Games, etc. Parallel reading, Hutchinson’s “Exercise and Health.”

14. Sophomores, Second Semester—½ hour credit—M. and Th. 4 P. M.
Advanced apparatus work, Basketball, Chest weights, Individual contests, Cross country running, etc. Parallel reading, Woodworth’s “The Care of the Body.”

Courses for Women

15. Freshmen, First Semester—½ hour credit—Tu. and Fri., 11:30 A. M.
Marching tactics and drills, Elementary Indian club exercises, Free Swedish gymnastics, Folk dancing, Gymnastic games, Practice in voluntary relaxation. Parallel reading, Carmen’s “The Making of Personality.”

16. Freshmen, Second Semester—½ hour credit—Tu. and Fri., 11:30 A. M.
Hygienic dumb-bell drill, Free gymnastics, Aesthetic dancing, Marching and running, Folk dancing, Games. Parallel reading, Call’s “Nerves and Common Sense.”

17. Sophomores, First Semester—½ hour credit—M. and Th., 11:30 A. M.
Military and Stage Marching by command, Advanced combinations with Indian clubs, Free and Apparatus Swedish gymnastics, Athletic dancing, Easy exercises on mats and vaulting horse, Relaxation and special breathing exercises, Parallel reading, Latimer’s “Girl and Woman.”

18. Sophomores, Second Semester—½ hour credit—M. and Th., 11:30 A. M.
Advanced Marching Evolutions, Fencing Drill with Wands, Winding Movements with Wands, Fancy Steps with Skipping Reeds, Easy Exercises on Stall Bars, Suspended Ladder and Parallel Bars, Gymnastic Dancing. Parallel reading, Call’s “Power Through Repose.”
SPECIAL ELECTIVE COURSES FOR JUNIORS AND SENIORS
FOR MEN

19. First Semester—½ hour credit—Time to be arranged.
   Advanced Indian Club Exercises, Varsity Gymnastic Team,
   Boxing, Wrestling, Outdoor Athletics, Special Corrective and
   Remedial Exercises.

20. Second Semester—½ hour credit—Time to be arranged.
   Continuation of Course 19, with further progression.

FOR WOMEN

21. First Semester—½ hour credit—M. and W., 2:30 P. M.
   Advanced Gymnastics and Aesthetic Dancing.

22. Second Semester—½ hour credit—M. and W., 2:30 P. M.
   Continuation of Course 21, with further progression.

PROFESSIONAL COURSES FOR MEN AND WOMEN

A full four years’ professional course leading to the degrees
of Bachelor of Science in Physical Education is being outlined
for those who expect to enter the profession of physical educa­
tion. This course is planned to give a thorough training,
both theoretical and practical, for a physical directorship
or for a position as special teacher of this subject and consists
of certain required and restricted electives. Those who are in­
terested in professional courses in physical education should
write to the Director of Physical Education for further infor­
mation and the special folder of this department. The courses
taught in 1914-15 include:

23. Anthropometry and Physical Examination, First Semester, 2 hours
    credit, Tu. and Fri., 11:30.

   This course is designed to acquaint the student with the
   instruments and technique of measurements, the significance of
   anthropometric data, graphic representation and comparison,
   methods of examination of special senses, examination by inspec­
   tion, and the application of the information gained to the giving
   of advice and the prescription of exercise. A certain amount
   of practice will be required.

   As a basis of instruction, the following texts will be used:
   Seaver’s “Anthropometry and Physical Examination,” Hast­
   ings’ “Physical Measurements for Boys and Girls,” Taylor’s
   “The Physical Examination and Training of Children,” Slade’s
"Physical Examination and Diagnostic Anatomy," Cabot's
"Physical Diagnosis," Lovett's "Lateral Curvature of the
Spine," Windle's "Proportions of the Human Body," and
Whipple's "Manual."

24. **Physiology of Exercise, Second Semester, 2 credit hours, Tu. and
Th., 9:30.**

This course will include a discussion of the local and the
general effects of certain exercises with reference to circulation,
respiration, blood pressure, fatigue, "staleness," neuro-motor
training, the vaso-motor system, nutrition, growth, etc. Special
attention will be given to the types of exercise suitable for the
various ages of children and adults and for those employed in
various occupations. Exercises of speed, endurance, strength,
skill, attention and alertness will be discussed with reference to
their physiological demands. Application of these principles
will be made to physical training and athletics. The lectures
will be based on the following literature: Dearborn's "Syllabus
—The Physiology of Exercise," Lagrange's "The Physiology of
Bodily Exercise," Notes on McCurdy's lectures in this subject,
McKenzie's "Exercise in Education and Medicine," Martin's
"Human Body—Advanced," Howell's "Physiology," Cowing's
"Blood Pressure Technique," and various magazine articles.

25. **Kinesiology, Second Semester, 2 credit hours, Tu. and Fri., 11:30.**

The effects of exercises due to mechanical principles opera­
tive in the human body will be discussed and applied. The
origins and insertions of muscles, their associated and isolated
action, the analysis of movements, the principles and methods of
progression, the influence of gravity and momentum, the effects
of certain starting postures, the body levers, good "form,"
faulty postures, effects on the internal organs, etc., will be
studied and explained. Application will be made to the pre­
scription of exercise for corrective purposes, erect posture, good
carriage, and general health. Special attention will be given
to the shoulder region, trunk and pelvis. The kinesiology of
certain athletic exercises will be pointed out.

In this study, reference will be had to Skarstrom's "Gymnastic
Kinesiology," Posse's "Special Kinesiology of Educational
Gymnastics," Demeny's "Mecanisme et Education des
Mouvements," Bowen's "The Action of Muscles," Marey's
"Animal Mechanism" and "Movement," Notes on Lectures by
Jakob Bolin, and various magazine articles.
The above courses will be followed in 1915-16 by courses in "Play and Playgrounds," "Methods and Practice of Teaching," "History of Physical Education," "The Principles of Athletic Training and Coaching," "Medical Gymnastics and Massage," and "Organization, Equipment and Administration." Aside from the theory courses, there will be practical work in athletics, gymnastics, games, dancing and individual contests.

For further information, write to the Director of Physical Education.

**Physics**

**MAJOR REQUIREMENTS**

A student making Physics his major subject will be expected to take, in addition to his thirty-five or forty hours in Physics, courses 12, 13, 17, 18 and 23 in Mathematics, courses 11 and 12 in Chemistry, and courses 11, 12, 13 and 14 in German or French. Other courses in Mathematics, Astronomy, or Chemistry may be prescribed, according to the trend of the student's specialization and the end in view.

Candidates for the Teacher's Certificate in this department must have completed acceptably courses 11, 12 and 13 and from fourteen to twenty-four additional hours. (See Certificate for Qualification to Teach.)

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.

11. **Mechanics, Molecular Physics and Heat.**

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

First semester; 4 credit hours; lectures, T. Th., 11:30; laboratory, M. W., 1:30.
12. **Electricity, Sound and Light.**

This course is a continuation of course 11, and with it constitutes a general survey of the subject. Prerequisite: Physics 11.

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

13. **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 12.

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

20. **Advanced Light.**

This is primarily a laboratory course in the advanced phases of the subject. Prerequisite: Physics 13.

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

22. **Advanced Sound.**

This is a lecture-laboratory course. The subject will be introduced with a study of Hydrodynamics. Prerequisite: Physics 13.

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

24. **Advanced Heat.**

This is primarily a laboratory course, similar to 20 above. Prerequisite: Physics 13.

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

30 and 31. **Advanced Experimental Physics.**

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

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

15. **Electrical Measurements.**

This is a lecture-laboratory course dealing with the theory and practice of electrical measurements and measuring instruments. Prerequisites: Physics 11 and 12.
Second semester; 3 hours; time to be arranged.


This course will consist of discussions of, and assigned readings and reports on, the subject matter and methods of high school physics. Some attention will be paid to satisfactory methods of demonstrating important phenomena by means of simple apparatus that can be had by any school.

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


This course consists in the study of some good textbook supplemented with laboratory and observation work.

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

17. Practical Physics.

This course is planned for non-technical students and will discuss in a descriptive, rather than a rigorously mathematical way, among others, such subjects as gasoline and oil engines, their operation and troubles, their ignition systems; dynamos and motors, their types, characteristics and troubles; telephone systems, their mechanisms, operations and troubles, etc. In addition some of the more recent applications of physics to industrial problems will be considered.

Prerequisite: High School Physics.

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

Psychology and Philosophy

COURSES IN PSYCHOLOGY

Students that wish to elect their major work in psychology should take courses 11, 12, 13, 14, 15 and 18. After taking courses 11, 12 and 13, the student may with the consent of the professor substitute other courses for 15 and 16, according as he is working toward pure philosophy or education. Courses 14 and 18 are especially designed for teachers who wish to ground themselves in the principles of psychology and mental measurement. Courses 15 and 16 are especially suitable for students of biology and sociology.

11 and 12. General Psychology.

This course runs throughout the year and forms a general introduction to all the courses in psychology and serves as a
prerequisite for the work in education. The work is given by textbook, lectures, class demonstration and assigned readings with written papers. It is open to all students that have done one year of university work.

Three credit hours; M. W. F., 9:30.

13. Experimental Psychology.

The work of this course will consist of lectures and experiments in the psychological laboratory. There will be one lecture a week and two periods of two hours each in the laboratory. The experiments will cover perception, attention, memory, affective states, fatigue, etc. Open to all students that have taken courses 1 and 2.

First semester; 3 credit hours; laboratory T. Th., 2:30-4:30.


This is designed especially for teachers. The aim is to present experimentally the various methods of determining sensory and bodily defect and of measuring mental power. The plan is to establish in connection with the department a bureau of child study which shall be open to teachers and parents for examining cases of poor work and retardation among pupils in school. All teachers are to be trained in Mental Measurements. The prerequisites are courses 11, 12 and 13.

Second semester; 3 credit hours; T. Th., 2:30-4:30.

15. Genetic Psychology.

This course is devoted to a study of mental evolution in animals and men and of the process of learning. An attempt is made to work out the various stages in the development of mind. The work will be given by lectures and selected readings with papers by the students.

First semester; 2 credit hours; T. Th., 10:30.


The work of this course will be directed towards sketching the evolution of mind. It follows naturally the course in genetic psychology and is a continuation of it. The emphasis will be laid upon the development of mind in men and so concern itself particularly with the study of children. The work will be given by lectures and readings with written theses.

Second semester; 2 hours credit; T. Th., 10:30.
17. Psychology of Religion.

This course will cover a discussion of the origin and development of religions among primitive peoples and aims to show the nature of religion among the cultured peoples of Europe and America. It will treat especially the phenomena of conversion, religious revivals, the meaning of the confessional, the fetish, ancestor worship, nature worship, etc. Its standpoint will be that of sympathy and appreciation rather than that of criticism. It will aim to avoid entirely the whole field of dogmatic religion and theology. Its culminating point will be a treatment of the place of religion in the individual life.

First semester; time to be arranged.


A study of the psychological foundations of society. The main themes are the social instincts and emotions, the principles of leadership and the various factors in the environments of races that have been influential in fixing the psychological characteristics of the same. The work will be given by lectures and readings with papers.

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

19. Physiological Psychology.

In this course the structure and functions of the nervous system are studied in relation to mental phenomena. The aim of the work is to show the foundations especially of the plasticity of the nervous system and the educability of the human being. Open to all students that have taken work in biology or the first year's work in general psychology. The work is given by lectures and demonstrations in the laboratory.

First semester; 2 credit hours; M. W., or W. F., 2:30-4:30.

20. Mental Pathology or Abnormal Psychology.

This course undertakes a study of the morbid phenomena of mental action. The work begins with a study of feeblemindedness in children and of insanity and criminality in adults and leads up to a study of hysteria, hypnotism, alternating personalities, loss of memory and other forms of common mental disorders. The work is given by lectures, readings and demonstrations in the state hospitals. Open to all students that have taken courses 11 and 12. This course is especially valuable for
teachers as it presents the principles for interpreting backward children and cases of bodily arrest and mental retardation.

Second semester; 2 credit hours; T. Th. 10:30.

21. **Psychological Seminary.**

The seminary is open to all students of advanced attainments in psychology. The work will be chosen to suit the tastes and interests of those who wish to elect the course. In general it may be said that the aim is a systematic study of special themes in psychology. Admission by special permit.

Both semesters; credit and time to be arranged.

**COURSES IN PHILOSOPHY**

23. **Introduction to Philosophy.**

A study of the great problems of thought and especially of present-day problems of philosophical inquiry. Bergron's *Creative Evolution* was studied in 1913-1914.

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

24. **Ethics.**

A study of the principles of conduct and of moral living. The course will attempt to show the development of social living, and to treat in view of their historical setting some of the more important social problems of the day such as individualism, socialism, the family and the production and distribution of goods. Dewey and Tufts' *Ethics* will be used as a textbook.

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

25 and 26. **History of Philosophy and of Ethics.**

This course will give a general survey of the development of philosophical thought and of ethical inquiry. The work will be given by lectures, assigned readings and class reports.

27. **Logic.**

A study of the laws of thought and of the principles of reasoning and argumentation. The relation of scientific methods of investigation to mathematics and logic will find consideration.

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

28. **Psychology of Thinking.**

This course will attempt to analyze the general thought processes as they appear in daily activity. The work will be
based upon such books as Dewey: How We Think, and Miller: Psychology of Thinking.

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

29. Philosophical Seminar.

The work of this course will be arranged to suit the tastes and interests of the students that apply for admission and are doing their major work in philosophy. Time and credit to be arranged with the professor in charge.

29. Philosophical Seminar.

The work of this course will be arranged to suit the tastes and interests of the students who apply for admission and are doing their major work in philosophy.

Time and credit to be arranged with the professor in charge.

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Reading and Public Speaking

11. Essentials of Public Speaking.

Correct pronunciation, development of the voice, tone production, vocal quality, flexibility, distinct articulation. The reading of short stories and poems, with special attention to emphasis and cadence as the two fundamental elements of reading and speaking. Open to all students.

First semester; 2 credit hours.


Dramatic readings and the speaking of extracts from great orations to develop freedom and ease on the platform; and to gain an understanding of Pitch, Rate and Quality as elements of expression. Prerequisite: Course 11.

Second semester; 2 credit hours.

13. Effective Reading.

This course aims to develop greater skill in expression and a keener appreciation of the beauty and power of imaginative literature. Choice stories and poems from English and American literature; scenes from modern plays. Prerequisite: Courses 11 and 12.

First semester; 2 credit hours.
14. **Interpretative Reading.**

Continuation of course 13. Character delineation; Dialect reading; Abridgement of poems, stories and plays for public reading. Public recitals.

Second semester; 2 credit hours.

15. **Public Speaking.**

Delivery of orations; history of oratory; extemporaneous speaking. Each student is required to write at least one oration and deliver it. The aim is to cultivate analytical and constructive thinking and develop a clear, forceful, easy delivery. **Prerequisite:** Courses 11 and 12.

First semester; 2 credit hours.

16. **Public Speaking.**

A continuation of course 15. **Prerequisite:** Course 15.

Second semester; 2 credit hours.

17. **Dramatic Art.**

Platform methods; Fixed rules and originality; Study of the effect of emotion upon voice, gesture, and facial expression; Methods of the non-commercialized educational stage productions; Preparation and presentation of scenes and one-act plays with criticism and character analysis; Management; Public performances. **Prerequisite Courses 11 and 12.**

First semester; 2 credit hours.

18. **Dramatic Art.**

Continuation of course 17. Each student is responsible for the presentation of one short play. **Prerequisite Course 17.**

Second semester; 2 credit hours.

**Romanic Languages**

Students majoring in French will be expected to take the following courses: 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 or 21, 22, 23. Course 24 is also required of those who wish to teach French.

In addition, students choosing French will have to take two years of one other modern language and one course in the History of Europe.

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

10 and 11. Elementary French.

Fraser and Squair's French Grammar, Aldrich and Foster's French Reader, Matzke's Primer of French Pronunciation. It is the object of this course to give special attention to accurate pronunciation, mastery of the essentials of grammar, and acquisition of vocabulary.

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


Prerequisite: Courses 10 and 11 or two units of Entrance French, grammar, composition and reading. Translation of selected texts in prose and verse.

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

14 and 15. Advanced French.

Grammar, reading and composition. Texts will be selected from the works of the principal authors of the classical period.

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


Rapid reading of standard modern novels. Reports by the members of the class.

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

To be given in 1914-15 and in alternate years thereafter.

17. Modern French Drama.

Rapid reading of standard works of modern dramatists. Reports by the members of the class.

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

To be given in 1914-15 and in alternate years thereafter.


General survey of French literary activity from 1600 to 1800. Lectures with reading of principal authors and reports by the members of the class.

Both semesters; 2 credit hours.

20. Moliere.

His life, works and influence on later French comedy. All his plays will be studied. Reports, rapid reading in class of his principal works. Lectures in French.

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

Lectures in French with reading of the works of Racine, Boileau, Pascal, La Rochefoucauld, La Bruyere.
Second semester; 2 credit hours; time to be arranged.

22 and 23. French Literature of the Nineteenth Century.

Lectures with reading of the principal authors and reports by the members of the class.
Both semesters; 2 credit hours; T. Th., 10:30.
To be given in 1914-15 and in alternate years thereafter.

24. Teacher's Course.

Lectures on method of teaching French, introduction to French pedagogical bibliography, and review of French grammar. Reports by the members of the class.
One semester; 2 credit hours; time to be arranged.

GRADUATE FRENCH

26 and 27. Old French.

An introduction to the phonology and morphology of the Old French language. Suchier, Les voyelles toniques du vieux francais, Schwan Behrens, Grammatik de altfranzoesischen, Nyrop, Grammaire historique de la langue francaise. Texts to be read are: La Chanson de Roland, Aucassin et Nicolele, and one romance of Crestien de Troyes.
Both semesters; 3 credit hours; time to be arranged.

SPANISH

10 and 11. Elementary Spanish.

Special attention is given to accurate pronunciation mastery of the essentials of grammar and reading vocabulary.
Both semesters; 3 credit hours; M. W. F., hours to be arranged.


Advanced grammar, composition and translation of selected texts in prose and verse. Ramsey's, A Textbook of Modern Spanish; Umphrey's Spanish Prose Composition.
Both semesters; 3 credit hours; time to be arranged.
Graduate Department
GRADUATE DEPARTMENT
AIMS AND METHODS

The University has established courses of graduate study to serve the needs of young men and women of college training who desire a larger and more thorough acquaintance with the scholarship and research of the world than can be obtained in current undergraduate courses. Although graduate study will naturally appeal especially to those who desire to fit themselves for the higher positions in the work of education, it is not exclusively for this class. It seeks to awaken in the minds of capable men and women an appreciation of high scholarship, research, and the advancement of learning, to the end that they may effectively aid, not only in the promulgation of academic instruction, but also in extending the boundaries of knowledge. The principal aim of graduate study is the development of the power of independent work and research. Such power is essential for success in any walk of life.

The University aims to give advanced instruction of a high character in each of its departments, but the scope, form and methods of this instruction are determined independently within the several departments. Each graduate student is expected, however, to do a wide range of private reading and study; for the graduate student usually does not obtain from lecture and laboratory courses all the knowledge and training necessary to meet the requirements for his degree.

ADMINISTRATION AND FACULTY

Almost every department of the University is prepared to offer courses of graduate instruction. The members of the several departments who offer graduate courses compose the faculty of the Graduate Department. The details of administration of the department are in charge of a Committee on Graduate Studies.

ADMISSION

For admission to the Graduate Department to work for a degree, an applicant must hold a first degree either from the University of Montana or from some other university or college of equivalent standing. Admission to particular graduate courses or departments may be secured only by those who have had the requisite undergraduate work in those courses or departments.
In order to be enrolled as a member of the Graduate Department a student must be doing graduate work. The possession of a first degree does not entitle a student to be enrolled in the Graduate Department, if the courses which he is taking are undergraduate.

Students of mature age who do not hold a first degree, but satisfy the Committee on Graduate Studies and the officers of the departments in which they wish to work of their earnestness of purpose and special fitness, may be permitted to take work in the Graduate Department without reference to candidacy for a degree. In order to secure this permission, however, a candidate must have had such preliminary preparation for the work he wishes to take up as would justify his admission to the Graduate Department as a candidate for a degree if he could meet the other requirements fully.

FEES

The tuition and fees for Graduate Students are the same as those for undergraduates in the College of Arts and Sciences.

REQUIREMENTS FOR GRADUATE DEGREES

The University is prepared to give instruction of a thorough character leading to the Degrees of Master of Arts and Master of Science. Those who wish to pursue work leading to the degrees of Doctor of Philosophy or Doctor of Science are advised for the present to go to the larger universities. The Master's Degree is conferred under the conditions noted on page 39 of this catalogue.

BIOLOGY

20. Advanced Bacteriology.

This is a continuation of general bacteriology and will take up the study of higher bacteria, the pathogenic protozoa as to their characteristics, developmental stages, pathogenesis for man and animals, and diseases caused by them. The study of the bacteriology of milk, milk products, air, soil, water, arts and industries. The bacterial diseases of plants will also be discussed. Laboratory work will consist of observations of the growth, development and effects caused by these organisms, also the analysis of milk, water, air and soil from a bacteriological
standpoint with the use of bacteriological key. Prerequisite: General Bacteriology.
Second semester; 2 credit hours, time to be arranged.


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

32. Biological Seminar.

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

33. Biological Seminar.

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

34. Advanced Study.

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

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

BOTANY

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

31. Special Morphology.

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

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

32. Cytology.

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

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

33. Research.

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

Both semesters; credit to be arranged.

CHEMISTRY


A more extended course than Course 17, for students who take Chemistry as a major.

Both semesters; 4 credit hours.
Note—Chemistry 18 and 19 form a continuous course throughout the year. Credit for Chemistry 18 will not be given until Chemistry 19 is completed.

20. Physiological Chemistry.

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

Second semester; 4 credit hours.

24 and 25. Physical Chemistry.

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

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

27 or 28. Advanced Quantitative Analysis.

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

Either semester; credit to be arranged.

29 and 30. Industrial Chemistry.

The chemistry of industrial and engineering materials, and the discussion of technical chemical processes. Lectures.

Both semesters; 3 hours credit.

32. Technical Analysis.

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

Second semester; credit to be arranged.

34. Foods.

The testing of foods for purity and quality. Lectures and laboratory work. Text: Food Inspection and Analysis, Leach.
Prerequisite: Chemistry 11, 12, 13, 15, and 17.
Second semester; 4 credit hours.

36. History of Chemical Theories.

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

Prerequisite: An elementary knowledge of inorganic and organic chemistry.
First semester; 3 credit hours.

43 and 44. Journal Club.

The members of the chemical staff will meet once a week with Seniors in the Department and such Juniors as are qualified, to read, present and discuss articles in the current journals. An elementary reading knowledge of German and French are requisite.

Both semesters; 1 credit hour.

Advanced Courses in Chemistry and Courses of Research.

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

ECONOMICS AND SOCIOLOGY


Selected topics related to the development of the present economic structure; labor organization; corporations; co-operation.
First and second semesters; 2 credit hours. T. Th., 11:30.


First and second semesters; 2 credit hours; T. Th., 2:30.
18. Educational Administration.

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

First or second semester; 2 or 4 credit hours.

19 and 20. Pedagogical Seminary.

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

By special arrangement; credit and time to be arranged.


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

Credit and time to be arranged.

22. Administration of City Schools.

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

Either semester; 2 credit hours.
ENGLISH

40. Old English.

Elementary course; grammar and reading. Bright’s Anglo-Saxon Reader.

First semester; 3 credit hours.

41. Old English.

Poetry; reading of the Beowulf with a study of the meter and of the literary characteristics of old English poetry.

Second semester; 3 credit hours.

42. Chaucer.

Selections from the Canterbury Tales studied as an introduction to Middle English.

Second semester; 3 credit hours.

43. Middle English. (Continued).

Emerson’s Middle English Reader. Primarily a reading course, though attention is given to grammar and dialectology.

First semester; 3 credit hours.

44. Advanced American Literature.

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

Both semesters; 3 credit hours.

45. Nature of Drama.

This course is based upon typical modern dramas. It presents the various problems of modern dramatic technic and attempts to formulate the principles of drama as an art form.

First semester; 3 credit hours.

46. History of the English Drama.

This course presents the large movements in the history of the English drama from the beginning until the present time,
emphasizing the foreign influences which have been brought to bear upon it. A continuation of course 45.
Second semester; 3 credit hours.

47. **Advanced Drama.**

The subject of this course varies from year to year; in 1911, Pseudo-Shakespearean plays; in 1912, Comedy; in 1913, Elizabethan drama; in 1914, a chronological study of the works of Shakespeare, which will also be the subject for 1915-16.
Both semesters; 3 credit hours.

48. **The Appreciation of Poetry.**

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

49. **Wordsworth and Coleridge.**
Second semester; 2 credit hours.

50. **Shelley, Keats, Byron.**
First semester; 2 credit hours.

51. **Tennyson and Browning.**
Second semester; 2 credit hours.

52. **Carlyle, Ruskin, Elliot.**
First semester; 3 credit hours.

53, 54. **Development of English Fiction.**

A thorough and detailed study of English fiction from Anglo-Saxon days to the present. This course traces the storytelling instinct among the English, not only in prose but in poetry, and students taking it should have some knowledge of Old and Middle English literature. The instructor gives a number of lectures, especially on social conditions in the various periods. Importance is placed upon actual knowledge of the fiction itself rather than upon biographical data, and students should be prepared to read a large amount of literature. Much of the classroom work follows the seminar plan in which papers by the students are read and discussed. Open to graduates and undergraduates as the instructor considers sufficiently prepared.
Both semesters; 3 credit hours.
FINE ARTS

51. History of Greek Sculpture.

A more advanced course than Course 11, affording an opportunity for the intensive study of Greek sculpture.

First semester; 2 credit hours.

52. History and Appreciation of Primitive Art.

A course in research and intensive study of the art of prehistoric and primitive man in order to ascertain the aesthetic emotions and principles involved.

GEOLOGY

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

31. Advanced Geology.

A more careful study of the principles of Geology. Field and laboratory work and a thorough review of past and recent geological literature.

First semester; 2 to 4 credit hours; time to be arranged.

32. History of Geology.

This course is intended for those specializing in general geology. The basis of the course will be, "Founders of Geology," by Geikie; "History of Geology and Paleontology," by Zittel; and "History of Geology," by Woodward.

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

33. Advanced Economic Geology.

This course should follow Course 14, and is a careful study of the coals, oils, gas, etc., of the United States and other countries.

First semester; 2 credit hours; time to be arranged.
34. Genesis of Ore Deposits.

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

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

35. Causal Geology.

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

2 hours credit.

36. Regional Geology.

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

3 to 5 hours credit.

37. Mine Examination and Reports.

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

Credit to be arranged.

38. Field Work in Economic and Mining Geology.

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

Credit to be arranged.


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

40. Glacial Geology.

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

41. Summer Field Work in Geology.

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

42. Research Work.

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

GERMAN

26 and 27. Survey of German Literature.

Lectures, outside readings, from the beginning to Lessing. First semester. Second from Lessing through the Nineteenth
Century. Essays, written reviews and criticisms in the German language.
Both semesters; 3 credit hours.

HISTORY AND POLITICAL SCIENCE

HISTORY

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

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

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

25. Europe in the Nineteenth Century.
A study of the political, social and economic conditions of Europe from the Congress of Vienna to the unification of Germany and Italy. The development of modern Russia and Belgium, the Crimean War, and other movements up to 1870 will be discussed.
First semester; 2 credit hours; T. Th., 9:30.
Prerequisite: Six hours of history.
26. Contemporary Europe, Asia, and Africa.

A study of contemporary politics and social conditions from 1870 to the present. The colonial development of the British Empire, the organization and trend of politics in Germany and Italy, the present French Republic, the colonization of Africa, the effects of the Russo-Japanese and Balkan Wars will be studied and a foundation laid for the causes of the present war.

Second semester; 2 credit hours; T. Th., 9:30.
Prerequisite: History 25.

27. Formation of the Federal Constitution.

The events leading up to the Constitutional Convention of 1787; the framing of the Constitution; arguments for and against its ratification.

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


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

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


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

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

32. Expansion of the United States.

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

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

33. The Teaching of History.

A course in the practical problems of teaching history in the secondary schools.
Second semester; 1 credit hour; F., 2:30.
Open only to advanced students.

POLITICAL SCIENCE


A study of the organization, functions and powers of the Federal government.
First semester; 2 credit hours; T. Th., 8:30.


Consideration will be given to the powers, obligations and limitations of the states in the Union, to the formation and admission of states, the development of state constitutions, to the organization of state and local government, and to political methods.
Second semester; 2 credit hours; T. Th., 8:30.

18. Introduction to Political Science.

An outline course dealing with political groups, theories and governments. A general survey of the subjects of government and politics.
First semester; 3 credit hours; M. W. F., 1:30.
Prerequisite: Five hours history.

19. Comparative Governments.

An historical review of the development of the more important ones. The idea of democracy will be traced through the various governing bodies. The government of the United States will be treated in its relations to that of other countries.
Second semester; 3 credit hours; M. W. F., 1:30.
Prerequisite: Political Science 18.
34. Constitutional Law.

See announcement of School of Law.

35. Municipal Corporations.

See announcement of School of Law.

36. International Law.

Development of the Law of Nations; principle of sovereignty; the right of intervention; laws of war and peace; the position of neutrals; arbitration; the peace movement; international law and contemporary politics.

Both semesters; 2 credit hours.

Prerequisite: Junior standing and six hours of History or Political Science.

COURSES FOR GRADUATES ONLY

50. Historical Methods.

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

Both semesters; once a week.

51. Seminar in American History.

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

Both semesters; once a week.

52. Studies in Montana History.

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

Both semesters; once a week.

MATHEMATICS

41. Functions of Real Variables.

An introductory course. Prerequisite: Course 23 or 25.

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

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

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

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

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

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

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

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

48. **Differential Geometry.**
   The application of the differential calculus to the geometry of twisted curves and surfaces. Prerequisite: Courses 28 and 40.
   3 hours throughout the year.
49. Projective Geometry.

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

50. Advanced Mechanics.

Theory of the gyroscope and related problems. Prerequisite: Courses 20 and 22.
3 hours throughout the year.

51. Infinite Series.

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

PSYCHOLOGY AND PHILOSOPHY


The work of this course will be directed towards sketching the evolution of mind. It follows naturally the course in genetic psychology and is a continuation of it. The emphasis will be laid upon the development of mind in men and so concern itself particularly with the study of children. The work will be given by lectures and readings with written theses.
Second semester; 2 hours credit; T. Th., 10:30.

17. Psychology of Religion.

This course will cover a discussion of the origin and development of religious among primitive peoples and aims to show the nature of religion among the cultured peoples of Europe and America. It will treat especially the phenomena of conversion, religious revivals, the meaning of the confessional, the fetish, ancestor worship, nature worship, etc. Its standpoint will be that of sympathy and appreciation rather than that of criticism. It will aim to avoid entirely the whole field of dogmatic religion and theology. Its culminating point will be a treatment of the place of religion in the individual life.
First semester; time to be arranged.

A study of the psychological foundations of society. The main themes are the social instincts and emotions, the principles of leadership and the various factors in the environments of races that have been influential in fixing the psychological characteristics of the same. The work will be given by lectures and readings with papers.

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

19. Physiological Psychology.

In this course the structure and functions of the nervous system are studied in relation to mental phenomena. The aim of the work is to show the foundations especially of the plasticity of the nervous system and the educability of the human being. Open to all students that have taken work in biology or the first year’s work in general psychology. The work is given by lectures and demonstrations in the laboratory.

First semester; 2 credit hours; M. W., or W. F., 2:30-4:30.

20. Mental Pathology or Abnormal Psychology.

This course undertakes a study of the morbid phenomena of mental action. The work begins with a study of feeblemindedness in children and of insanity and criminality in adults and leads up to a study of hysteria hypnotism, alternating personalities, loss of memory and other forms of common mental disorders. The work is given by lectures, readings and demonstrations in the state hospitals. Open to all students that have taken Courses 11 and 12. This course is especially valuable for teachers, as it presents the principles for interpreting backward children and cases of bodily arrest and mental retardation.

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


The seminary is open to all students of advanced attainments in psychology. The work will be chosen to suit the tastes and interests of those who wish to elect the course. In general it may be said that the aim is a systematic study of special themes in psychology. Admission by special permit.

Both semesters; credit and time to be arranged.

22. Psychology of Thinking.

This course will attempt to analyze the general thought processes as they appear in daily activity. The work will be based
upon such books as Dewey: How We Think, and Miller: Psychology of Thinking.

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

29. Philosophical Summary.

The work of this course will be arranged to suit the tastes and interests of the students that apply for admission and are doing their major work in philosophy. Time and credit to be arranged with the professor in charge.

29. Philosophical Seminary.

The work of this course will be arranged to suit the tastes and interests of the students who apply for admission and are doing their major work in philosophy.

Time and credit to be arranged with the professor in charge.

ROMANIC LANGUAGES

26 and 27. Old French.

An introduction to the phonology and morphology of the Old French language. Suchier, Les voyelles toniques du vieux francaise, Schwan Behrens, Grammatik des altfranzoesischen, Nyrop, Grammaire historique de la langue francaise. Texts to be read are: La Chanson de Roland, Aucassin et Nicolete, and one romance of Crestien de Troyes.

Both semesters; 3 credit hours; time to be arranged.
School of Law
FACULTY OF THE LAW SCHOOL

Edwin Boone Craighead, M. A., LL. D., D. C. L.
President of the University.

Acting Dean and Professor of Law.

Charles Melvin Neff, Ph. B., LL. B. (Columbia)
Professor of Law.

Leslie James Ayer, B. S., J. D. (Chicago)
Professor of Law.

Professor of Law.

Professor of Law.

John B. Clayberg, LL. B. (Michigan)
Non-resident Lecturer on Mining and Irrigation Law and Consulting Dean.

Hon. F. C. Webster, LL. B. (Yale)
(Ex-Judge District Court.) Lecturer on Probate Law and Procedure.

C. L. F. Kellogg, LL. B. (Wisconsin)
Lecturer on Abstracts and Examination of Titles.
THE SCHOOL OF LAW

ORGANIZATION AND EQUIPMENT

The Law School was established as a department of the University of Montana at Missoula in 1911. Prior to that time there had been no Law School in Montana.

The department offers a standard law course, covering three academic years, and gives special attention to practice court work, procedure, mining and irrigation law, and preparation for the practice of law in Montana and the Western States generally. The faculty is composed of carefully selected teachers, trained in the best law schools, who have had wide experience in actual practice and who, with one or two exceptions, devote their entire time to instruction. The Law School was admitted to membership in the Association of American Law Schools at the December meeting, 1914.

The Law School occupies quarters in the Library Building of the University, where rooms for the law library, the offices of the faculty and the classes of the department are located. The library reading room is large and conveniently arranged and is equipped with large and well-lighted reading tables.

THE LAW LIBRARY

The Law School is fortunate in having a good working library, composed in part of the private law library of the late Judge W. W. Dixon, in part of the library of the late Colonel T. C. Marshal, a recent donation by Judge W. J. Stephens, and other books purchased with funds generously donated by Mrs. Dixon and with state funds. The library thus established is known as the W. W. Dixon Memorial Library, in memory of Judge Dixon. The library of over five thousand volumes is constantly being enlarged and brought down to date. It embraces several sets of state reports, the National Reporter system, the American Digest system, as well as the leading text books, encyclopedias, collections of statutes, legal periodicals, and sets of selected cases, such as the American Decisions, American Reports, American State Reports, Lawyer's Reports Annotated (old and new series), the American Annotated Cases and
the American and English Annotated Cases, all of which sets are continued as issued; also the decisions on Public Lands by the Department of Interior. Consulting Dean Clayberg has presented a set of over two hundred volumes of English common law and chancery reports.

REQUIREMENTS FOR ADMISSION TO REGULAR AND SPECIAL STANDING

Students may register in the Department of Law either in regular or in special standing. It is expected that all students will enter at the opening of the college year, September 15. Students may by special permission enter at the beginning of the second semester. Regular students, who are candidates for the degree of Bachelor of Laws (LL.B) must present credentials showing that they have completed substantially one-half (61 credit hours) or more of the work required for the degree of B. A. or B. S. in the University of Montana, or two years work in some other college or university.

Special students may be admitted to all the privileges and courses of the Law School the same as regular students, provided they are twenty-one years of age or over, and have diplomas from accredited high schools, or have evidence of an education equivalent to a four-year high school course. In exceptional cases of distinguished excellence in the three years of law work, special students may be granted a law degree, but in all ordinary cases will be given a certificate as to the work done, in lieu of the degree awarded to regular students.

Advanced standing in Law may be granted to students who present satisfactory credentials for equivalent courses taken in standard law schools. Also, in special cases, advanced standing may be granted upon examination satisfactory to the Faculty.

GRADUATION AND DEGREES

Regular students who have satisfactorily completed courses in law, equivalent to three full years of professional study of the law, will be granted the degree of Bachelor of Laws. (LL.B.)

Undergraduate students in regular standing, candidates for the degree of Bachelor of Arts, electing Law as a major subject at the beginning of the Junior year may count not to exceed two years of the law course toward graduation and the degree of Bachelor of Arts. Those who have thus obtained the degree of Bachelor of Arts, conferred at the end of four years, may
receive the degree of Bachelor of Laws at the end of the fifth
year on the completion of the third year of the Law course.

ADMISSION TO PRACTICE IN MONTANA

Students who have successfully completed the regular law
course and received a certificate or degree for same as outlined
in this Bulletin may under the direction of the Supreme Court
of the State of Montana be admitted to practice in the courts
of Montana without further examination.

FEES AND EXPENSES

An incidental fee of $5.00 per year must be paid on the
first day of registration in each academic year by every stu-
dent.

Tuition fees in the Law School are $40 per year, or $20 per
semester. To those carrying less than ten semester credit hours
of Law courses, the tuition charge will be $5.00 per course.
Tuition fees must be paid on the official registration day or the
first day of registration in each semester. Pre-legal students
are not required to pay tuition fees until they enter the Law
courses. Regularly registered students in the Law School may
take any course in the College of Arts and Sciences without
additional cost, except the payment of laboratory fees.

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

SCHOLARSHIPS

The Law School is authorized to award a limited number
of scholarships of free tuition to deserving students who dis-
tinguish themselves in any line of law school work. Such
awards are to be made by the faculty of the Law School.

OPPORTUNITIES FOR SELF-SUPPORT

Board and lodging can often be obtained in exchange for
three or four hours of work daily. There are also opportunities
for general manual work, typewriting, stenography, clerking,
collecting bills and services of various kinds. A committee of
the Faculty and the Chamber of Commerce assists students in
securing work. A considerable number of students earn the
whole or a part of their expenses while attending the University.

REGISTRATION

The official registration day for the first semester is Sep-
tember 15, 1915; for the second semester, February 9, 1916.
Students are strongly advised to register promptly in the first semester.

**METHOD OF INSTRUCTION**

The case system is generally employed.

**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. In connection with such courses as contracts, corporations, property, trusts and wills, the students will be expected to draft the ordinary legal documents of office practice. In the course on code pleading and in the practice court the actual pleadings and papers required in the different stages of actions and special proceedings will be prepared. Training in the examination of authorities, in the making of briefs, in the production and exclusion of evidence, and in the oral argument of cases on the law points involved will also be given.

**THE PRACTICE COURT**

The law school graduate, even from the best law schools, is very apt to be much disappointed to find, on his admission to the bar, that he is almost entirely unfitted and unprepared to take up the ordinary practical work of his profession. He is ordinarily not even trained to use a law library or look up a point of law for himself, let alone taking up the trial of a lawsuit. All this is left to a post-graduate apprenticeship in a law office in order that the professors may have time to elaborate their legal theories on all possible subjects.

The Faculty of the Law School of the University of Montana while appreciating the necessity of theoretical knowledge of fundamental principles of substantive law, yet believe that it is the duty of the law school to do more than is ordinarily attempted to train the student for his every-day work and teach him how to handle himself well in court, manage the various phases of litigation, organize and conduct corporations, examine and pass on titles and execute the ordinary operations of actual practice.

The Law School attempts to perform its duty in these respects by giving marked attention to the "practice court," and also to the practical side in all the courses.
Only a comparatively few law schools make a "practice court" a regular part of the law school work. Most of them leave such work to voluntary clubs, wherein it is mostly confined to debates on law points carried on only during one year.

In the Law School of the University of Montana the practice court is put on the basis of a regular course, required during the first, second and third years. It is presided over by the regular professors, all of whom assist in the work and by practicing lawyers who are invited from time to time to sit as presiding judges.

The first year court is largely occupied with authority work, briefing, and the oral argument of questions of law, and the trial of criminal cases.

The second and third year courts devote themselves to the trial of civil actions, and the preparation of records in appeal and procedure, generally in trial and appellate courts. In order to make the work realistic many of the cases are based upon actual occurrences and the witnesses and parties are University students. Thus the questions raised at the trial relate to what was really said and done, with sufficient local color to arouse interest and enthusiasm.

The student is required to prepare the evidence, collate the facts, interview witnesses and get up a careful trial brief. The course includes the entire conduct of actual cases from start to final judgment and also the appeal and presentation to the supreme court for review. This involves the issuance of summons, the drafting and filing of pleadings, the making of motions, the impaneling of the jury, the examination and cross-examination of witnesses, the arguments to court and jury, and all the other incidents of a contested trial.

Sessions of the court are held weekly for two hours in the afternoon or evening, and between sessions the cases are being prepared and carried from stage to stage by the student-attorneys in charge under the supervision of the instructor, who gives personal guidance in the work.

CONVEYANCING

In the course on conveyancing the work consists of the examination of a series of selected abstracts of title representing a great variety of transfers, such as probate and tax sales, as well as deeds and mortgages. A copy of each abstract is furnished to the members of the class, and written opinions are rendered on
the defects and objections to title found, and the methods of curing the defects are worked out. Thorough work in this course equips the student as a practical conveyancer.

**ARGUMENTATION AND DEBATE**

A course in the theory and practice of debate is required of first year students. A good text on the art of debate is in the hands of the students and a part of the time is given up to the mastery of the theory of debate. The course also includes practical work in the writing of briefs on questions of public interest, and practice in extemporaneous argument of the leading political and economic questions of the day.

The aim is to develop readiness in speaking, to give freedom and ease on the platform, to teach careful and independent research, and to cultivate the logical processes of analysis and discrimination which underlie all law work.

**SPECIAL LAW LECTURES**

Practical talks are given from time to time by prominent lawyers and judges of the state, designed to acquaint the student with matters that they will be called upon to meet in practice.

**COURSES OF INSTRUCTION**

The course of study extends over a period of three full years, and is so arranged as to require a total of eighty-seven (87) credits. All First Year work is required. Second and Third Year students are required to take fourteen (14) hours of work each semester, including Practice Court, which is required in all three years. The main body of this curriculum is of general application and is 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:
### FIRST YEAR COURSES

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<th>Course</th>
<th>First Sem.</th>
<th>Credit Hours</th>
<th>Second Sem.</th>
<th>Credit Hours</th>
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<td>Contracts</td>
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<td>Property</td>
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<td>Criminal Law and Procedure</td>
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<td>Practice Court I</td>
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<td>Debate and Argumentation</td>
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### SECOND AND THIRD YEAR COURSES

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<th>Second Sem.</th>
<th>Credit Hours</th>
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<td>Irrigation Law</td>
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<td>Practice Court II</td>
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<td>Abstracts and Examination of Title</td>
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<td>Private Corporations</td>
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<td>Bailments, Carriers and Public Callings</td>
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<td>Insurance</td>
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<td>Constitutional Law</td>
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<td>Suretyship and Mortgages</td>
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*Note:
Credit hours represent the number of recitation hours per week, and credits are allowed accordingly, one credit being one hour per week for one semester. Courses marked || given school year 1914-15, alternating successive years with courses marked x.
DESCRIPTION OF COURSES

FIRST YEAR

Contracts. Professor Ayer.

Offer and acceptance; consideration; contracts under seal; contracts for benefit of third persons; assignment of contracts; joint obligations; statute of frauds; express and implied conditions; impossibility; illegal contracts; discharge of contracts, including agreement to discharge, novation, release, etc.

Williston's Cases on Contracts. Vols. I and II.

Property. Professor Langmaid.

Acquisition of title to personal property by Statute of Limitations, accession, confusion and judgments. The bailee and finder's rights in property, together with a consideration of the rules of Common Law liens and pledges. Introduction to the law of real property. Tenure, estates and conveyances. Fixtures and waste. Easements by grant and user. Covenants running with the land and for title. Acquisition of title to land by adverse possession. The forms of conveyances and the execution of deeds. Landlord and tenant. The endeavor will be made to present the entire subject as a living branch of the law from the point of view of the present day lawyer.


Torts. Professor Neff.

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.


Agency. Professor Leaphart.

Introductory principles; nature of the relationship; appointment; when the principal is liable to third parties where the agent has acted in case of torts, crimes, and contracts; liability of principal to agent; liability of the agent to his principal; liability of the agent to third parties; doctrine of undis-
closed principal; delegation by an agent; ratification; termination of the agency.

Wambaugh's Cases on Agency.

Criminal Law and Procedure. Professor Leaphart.

Analysis of criminal act and criminal intent; causation; conditions of criminal responsibility; justification; excuse; analysis of particular crimes with especial reference to the Penal Code of Montana; criminal procedure under the code.

Beale's Cases on Criminal Law.

Practice Court I. Professor Whitlock.

The argument of questions of law; the use of law books; the preparation of briefs upon legal questions; instruction in the method of trying criminal cases, and the actual trial of criminal cases during the second semester.

No book is used.

Debate and Argumentation. Professor Coffman.

See University Bulletin.

SECOND AND THIRD YEARS.

Pleading and Practice. Professor Neff.

Nothing is more difficult or embarrassing to the graduates of most law schools than to draw pleading and prepare for the trial of a case. Unusual attention is given by an experienced practitioner to teaching both the science and the art of successful pleading, and the function it plays in the actual case itself, both at the trial and on appeal. By exercise and actual practice in the drawing of pleadings of all kinds the student acquires a practical knowledge of how to plead logically, accurately, and scientifically. Upon all points Montana cases are frequently cited and reference made to the most interesting and instructive modern cases in other jurisdictions.

Sunderland's Code Pleading.

Equity. Professor Leaphart.

Nature of Equity Jurisdiction; specific performance; the Statute of Frauds; defenses to specific performance because of plaintiff's conduct; laches, fraud, misrepresentation, concealment and unfairness; failure to make good title; effect of mistake and hard bargains; mutuality of remedies, mutuality of performance and want of mutuality; relief for and against third
parties; bills for an account; specific reparation and prevention of torts.

*Ames’ Cases in Equity Jurisdiction. Parts I, VI.*

**Negotiable Instruments.** Professor Langmaid.

After a brief history of the Law Merchant, the subject is taken up largely in the order in which the various points are dealt with in the Negotiable Instruments Law, which is in force in Montana as well as most of the states. The effort is made to explain where the Negotiable Instruments Law is declaratory of the Common Law, where it has made changes, and in general to ascertain the meaning of the Act, in the light of the prior law and in view of the cases sustaining it. Thus the forms and interpretation of negotiable instruments, the question of consideration of negotiation, of the rights of the holder, of the liabilities of parties, of the presentment and dishonor, of acceptance and protest, and of discharge are in turn treated.

*Colson’s Huffcut on Negotiable Instruments.*

**Evidence.** Professor Whitlock.

The theory of evidence; rules governing admissibility; the hearsay rule and its exceptions; opinion evidence; the parol evidence rule, and the rules governing the introduction and interpretation of documents; the methods of producing evidence; the attendance of witnesses, their examination, cross-examination, impeachment and confirmation; evidence before trial; the respective functions of judge and jury; burden of proof and presumptions; judicial notice and judicial admissions; actual practice in introducing evidence.

*Wigmore’s Cases on Evidence (2d. Ed.)*

**Irrigation Law.** Professor Neff.

This course traces the genesis and development of the law of water rights in the west; how rights to the use of water may be acquired and retained, and generally, the law of water as applied to irrigation, mining, manufacturing, and the generation of power. Special attention will be given to the preparation of water right litigation, and instruction as to the actual trial thereof.

*Selected Cases, Legislative Enactments. Constitutional Provisions.*
Wills and Administration. Judge Webster

The law of wills generally, including the making, revocation and interpretation of wills, in the first semester. Probate procedure, in the second semester, with actual practice in probating wills and the administration of estates.

Montana Code, and Lectures.

Sales. Professor Ayer

Subject matter at law and in equity; relation of possession and payment to title; presumptions as to title; conditions; bills of lading; fraud; retention of possession; factors and factors acts; sellers’ rights as to recovery of price, liens, and stoppage in transitu; buyers’ rights, including inspection and various warranties; statute of frauds.

Williston’s Cases on Sales.

Practice Court II. Professor Ayer

Writs of summons; service and return of summons; appearance; continuance; jury; right to open and close; judgment on pleadings; dismissal, non-suit, and directed verdict; instructing the jury; argument and conduct of counsel; special interrogatories; special verdicts; arrest of judgment, new trials; trial and finding by writ. Civil cases are prepared, commenced, and tried in the more usual actions such as trespass, negligence, libel, and slander, contracts, etc.


Abstracts and Examination of Title. C. L. F. Kellogg

Title to real property in general; title by descent; title by purchase; sources of information; analysis of abstracts; inception of title; congressional and legislative grants; patents; surveys; plats and sub-divisions; formal parts of deeds, including errors, omissions and defects; conveyances; individual, official, and special agreements for conveyances; leases; mortgages; wills; liens; charges and incumbrances; lis pendens and attachment; judgment and decrees; judicial and execution sales; actions and proceedings; taxes and tax titles; descents; adverse title; all of the foregoing considered in the making of a correct abstract and also considered in the view of an examiner of title looking for defects; methods of examining title, including actual examinations of abstracts with criticisms showing objections and methods of curing same.

Selected Abstracts and Lectures.
The appellate jurisdiction of the various courts is considered, what judgments, orders and proceedings may be appealed from, parties who may appeal, time within which appeal may be taken, and the various steps by which the appeal is taken. Actual practice will be given in preparing the record proper and the bills of exceptions. Besides this, other modes of review will be studied, such as Writ of Error, Writ of Certiorari, Writ of Prohibition, Writ of Mandamus, Writ of Habeas Corpus and the Montana Writ of Supervisory Control.

Selected Cases on Appellate Practice and Roberts' Cases on Extraordinary Legal Remedies.

Conflict of Laws. Professor Langmaid

The extent of legislative power and the doctrine of the conflict of laws. Domicile and jurisdiction for taxation. The jurisdiction of courts. A consideration of the creation of rights, both of rights arising from contract and from tort. The law of capacity and other personal rights. The doctrine of conflict of laws as to rights of property, both by transfer *inter vivos* and by inheritance. The recognition and enforcement of rights; foreign executors and administrators; the nature, obligation and effect of judgments.

*Beale's Cases on Conflict of Laws (3 Vol. Ed.)*

Private Corporations. Professor Leaphart

Corporations distinguished from partnership and joint stock companies; disregarding the corporate fiction; formation of corporation; powers of a corporation; *de facto* corporations; *ultra vires* acts of corporations; rights and liabilities of directors, promoters, creditors, and shareholders; rights of minority shareholders; shares of stock; transfer; assessment; voting trusts; foreign corporations; corporate forms.

*Warren's Cases on Corporations with Corporate Forms.*

Mining Law. Professor Ayer

Lodes; placers; locators; discovery; location; tunnel sites and blind veins; conditions of retention of claims; sub-surface rights; adverse claims; patents; oil, gas, and other mining leases; tenancies in common and mining partnership; rights of access; rights of subjacent and of lateral support.

*Costigan's Cases on Mining Law.*
Damages.  
Professor Neff

Respective functions of court and jury in estimating damages; exemplary, liquidated, nominal, direct and consequential damages; avoidable consequences; counsel fees; certainty, compensation, damages for non-pecuniary injuries; value; interest; and damages in certain actions of tort and contract.

Beale's Cases on Damages. (2d Ed.)

Bailments, Carriers and Public Callings.  
Professor Langmaid

The law of bailments with reference to the rights and obligations of bailor and bailee, and the creation, maintenance and termination of the relation, omitting, however, questions of liens which are considered in the course on Property, but with special emphasis on the law pertaining to carriers as bailees; the development of the law of public callings, and the rights and obligations of the various public services, such as common carriers of passengers and of goods, innkeepers, telephone, telegraph, gas, electric, and other companies. Governmental regulation and control of the public callings.

Willis' Cases on Bailments, Carriers, and Public Callings.

Insurance.  
Professor Langmaid

Insurable interest; concealment; misrepresentation; warranties; other cases of invalidity of contract; amount of recovery; subrogation; conditions; waiver; estoppel, election and power of agents; assignees and beneficiaries.

Wambaugh's Cases on Insurance.

Constitutional Law I.  
Professor Leaphart

Adopting and amending constitutions; effect of unconstitutional laws; delegation of powers; political and civil rights of individuals; rights to persons accused of crime; an extended examination of the 14th amendment.

Constitutional Law II.  
Professor Leaphart

Retroactive laws, including laws impairing the obligation of contract; general scope of federal powers; foreign relations, Indians; aliens; regulation of commerce; jurisdiction of federal courts.

Hall's Cases on Constitutional Law.
Suretyship and Mortgages.  

Guaranty; defenses of surety; rights of surety against principal or co-surety; subrogation; reimbursement, exoneration, contribution; rights of creditors to securities held by co-surety. Elements of mortgage; title and lien theory; equitable mortgages; conveyances absolute in form; rights and duties of mortgagor and mortgagee; dower and courtesy; limitation on redemption; clogging the equity; assignment of mortgages; marshalling the assets.

*Ames’ Cases on Suretyship. Wyman’s Cases on Mortgages.*

Trusts.  

Nature and requisites of trusts and the distinction between trusts, debts and other legal relations; the language necessary to the creation of a trust; the question of consideration; the effect of the Statute of Frauds and of Wills; subject matter of a trust; the different kinds of trusts; transfer of the respective interests of trustee and of beneficiary; rights and remedies of the creditors of trustee and of beneficiary; following the trust res; resignation and removal of the trustee; the duties of the trustee as to the general execution of the trust and as to investment.

*Ames’ Cases on Trusts. (2d. Ed.)*

Bankruptcy.  

The respective jurisdictions of the United States and of the several states. Who may be a bankrupt and who may be petitioning creditors. Fraudulent conveyances, preferences, and general assignments. Property passing to the trustee. Proof of claims, exemptions and discharge.

*Williston’s Cases on Bankruptcy.*

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.

*Beale’s Cases on Municipal Corporations.*
Partnership.  

Formation of a partnership; partnership as to third persons; nature of a partnership, including firm title; powers of partners; rights and remedies of creditors; duties and liabilities of partners \textit{inter se}; dissolution of partnership; accounting and distribution; limited partnerships.

\textit{Burdick's Cases on Partnership.}

Persons.  

Parent and child; custody; support; property and earnings; emancipation; damages to parental rights; liability for torts of children. Infants; contracts; conveyances; affirmance, disaffirmance, restoration of benefits; particular contracts and obligations; necessaries; torts. Husband and Wife; rights of spouses in each other's property; incapacities of wife; antenuptial contracts; torts; separate estate in equity; statutory changes of common law; marriage and divorce.

Case Book to be selected.

Quasi-Contracts.  

Recovery upon record; recovery upon statutory, or official, or customary duty; recovery upon doctrine that one person shall not be allowed to enrich himself unjustly at the expense of another; quasi-contracts and true contracts distinguished; benefits conferred voluntarily and involuntarily; relation of quasi-contracts to equity.

\textit{Woodruff's Cases on Quasi-Contracts.}
School of Journalism
SCHOOL OF JOURNALISM
FACULTY

Edwin Boone Craighead, LL. D., C. D. L.
  President of the University.

A. L. Stone, A. B.
  Professor of Journalism.

Carl H. Getz, A. B.
  Assistant Professor of Journalism.

Frederick C. Scheuch, M. E., A. C.
  Professor of Modern Languages.

Morton John Elrod, Ph. D.
  Professor of Biology.

Joseph Harding Underwood, Ph. D., LL. D.
  Professor of History and Economics.

George Fuller Reynolds, Ph. D.
  Professor of English.

Paul Chrisler Phillips, Ph. D.
  Assistant Professor of History.

Charles Melvin Neff, LL. B.
  Professor of Law.

Thaddeus L. Bolton, Ph. D.
  Professor of Psychology.

Eloise Knowles, Ph. M.
  Assistant Professor of Fine Arts.

Carl Holliday, M. A., Litt. D.
  Professor of English.

George R. Coffman, Ph. D.
  Professor of English.

Leslie James Ayer, B. S., J. D.
  Professor of Law.

Henry Haxo, Ph. D.
  Assistant Professor of Romanic Languages.

Charles C. Staehling, Ph. B.
  Assistant Professor of Commerce and Accounting.

Harrison Anthony Trexler, Ph. D.
  Assistant Professor of Economics.

Gertrude Buckhous, B. S.
  Librarian.

W. Walter H. Mustaine, B. S.
  Director of Physical Education.

Adam George Heilman, Ph. B., M. D.
  Instructor of Biology.
THE SCHOOL OF JOURNALISM

To train reporters, not to attempt to turn out managing editors—this is the purpose of the School of Journalism of the University of Montana.

To make its work thoroughly practical is the first endeavor of the faculty of the school. Students are given training which is as closely parallel to the conditions which prevail in the newspaper office as it is possible to make it. There are no textbooks employed in this course; the place of the textbook is taken by the newspaper. The publishers of Montana have been generous in the donation of their newspapers for the files of the school and these have been supplemented by a selection of news publications representative of the different sections of the country and of the several characteristic editorial policies which make newspapers distinctive.

A WORKSHOP

This general plan of instruction makes the school’s building veritably a workshop. The reporter’s room is not unlike the news room of a newspaper office. Its arrangement approaches as closely as possible to that of a city room in a real office. The work which is done is as nearly like that of the reporter as it is possible to make it.

Following the course in reporting and the study of news values, the student is given training in editing copy. Each student takes his turn at city editorship. Each receives practical drill in copy reading and head writing. Newspaper management, advertising, general publicity work, circulation and soliciting—all of these form a part of the practical training of the students in newspaper work. Makeup and assignments are thoroughly studied. Through the generosity of the Missoula newspapers, their offices are used as laboratories at present. The student newspaper, The Kaimin, affords further practical instruction.

But through all the four years of the course which is prescribed for a degree in the School of Journalism, the study of reporting and news writing is carried on; this is regarded as the fundamental necessity for success in newspaper work. Each student is required to perform a specified amount of
laboratory work each week. Much of this work finds its way into print.

HISTORICAL

The School of Journalism, during its first half-year, had an interesting experience, which was calculated to teach its students to take advantage of whatever opportunity offers. At the outset of the year, the crowded condition of the University made necessary the resort to tents for office and classroom purposes. The commandant at Fort Missoula loaned the school the necessary tents and the start of the work was made under canvas. Later, a small room was obtained by inclosing an old bicycle shed. This served as the headquarters of the school until arrangements were made by the state authorities for the erection of a small frame building which is now the home of the School of Journalism.

This building is pleasantly located in a maple grove on one corner of the University campus. It contains two small office rooms, a reporters' room and a lecture room, besides the office of the student newspaper, The Kaimin. It is a comfortable building, though already much crowded.

Within the walls are hung with portraits of American newspaper men, past and present, and with pictures of newspaper plants and maps. Newspaper files are arranged conveniently for the use of students and visitors find here a veritable newspaper atmosphere. There are morning and evening classes. The afternoons are devoted to laboratory work. At almost any hour of the day students may be found at work here.

WORK, THE KEYNOTE

For work is the keynote of the School of Journalism. The students are made to understand, by practice and by precept, that newspaper work is not play. And the underlying principle of the system which has been adopted by the school is that the news columns of a paper constitute its most important feature. Throughout the entire course, the student is constantly drilled in news-gathering and news-writing. The aim of the school is to prepare young men and women to enter practical newspaper work as reporters, understanding what is required of them and knowing how to do that which is required. If these young people have in them the material which is essential for managerial positions, this fact will develop later. It is the purpose here to prepare for that development, but not to force it.
REQUIREMENTS FOR ADMISSION

The admission requirements to the School of Journalism are identical with those which apply to the other departments of the University. It is desirable that students enter at the opening of the college year in the fall, although beginning courses are offered in the midyear. Students may register as either regular students or as special students.

FEES AND EXPENSES

The matriculation and tuition fees charged by the University cover nearly all expenses in the School of Journalism. An incidental fee of $5.00 per year must be paid on the first day of registration in each academic year by every college student. Students in Journalism are charged a laboratory fee of $1.50 per year to cover partly the cost of subscriptions to newspapers and magazines, copy paper and other supplies furnished to the students. No text books are used in the School of Journalism.

EFFICIENCY DEPARTMENT

With the development of the School of Journalism it is proposed to add one member to the faculty, whose work will deal with cost systems, business office efficiency and organization. The services of this expert will be at the disposal of any newspaper or printing office in the state which wishes advice or suggestion along the line of efficiency improvement. Another year will make the School of Journalism four years old; there will then be four full classes of students in its enrollment. Then it is hoped definite announcement will be possible regarding this branch of the work. The plans for this feature have been carefully made and several of the best men in the country in this line are available for the position.

PUBLICITY

Beginning with the first semester, September, 1915, there will be offered a course in preparation for publicity work, which will embody the study of the methods employed by chambers of commerce and boards of trade in community advertising. This will be an elective course in the School of Journalism.

JOURNALISM LECTURES

Men prominent in newspaper and publicity work in the northwest lecture before the students in journalism during the year.
The lectures are designed primarily for the students in journalism, but they have attracted the attention and aroused the interest of other university students and visitors. Those who accepted the invitation of the School of Journalism during the past year were: Hon. J. M. Kennedy, state commissioner of publicity; W. W. Walsworth, editor of the Anaconda Standard; A. J. Breitenstein, former secretary of the Montana State Fair; L. J. Bricker, general immigration agent of the Northern Pacific Railway; W. A. Campbell, editor of the Helena Independent; E. H. Cooney, editor of the Great Falls Leader; Joseph Smith, II, editor of the Silver State; W. G. Ferguson, secretary of the Missoula Chamber of Commerce; E. H. Boos, advertising manager of the Missoula Mercantile Company.

COURSES OF INSTRUCTION

The course of study extends over a period of four college years and is so arranged as to require a total of forty (40) credit hours in journalism and eighty-eight (88) credit hours in correlated subjects. This does not include two (2) credit hours in physical education, which is required of all students during the freshman and sophomore years. Newspaper Illustrating and Cartooning, Newspaper Photography and Short Story, are the only elective courses offered by the School of Journalism at the present time. All other courses are required of students majoring in Journalism. The four-year journalism course leading to the degree of bachelor of arts, is as follows:

<table>
<thead>
<tr>
<th>First Year</th>
<th>Credit Hours Per Semester.</th>
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</thead>
<tbody>
<tr>
<td>Elements of Journalism</td>
<td>3</td>
</tr>
<tr>
<td>Freshman English</td>
<td>3</td>
</tr>
<tr>
<td>Elementary Economics</td>
<td>3</td>
</tr>
<tr>
<td>Science</td>
<td>4</td>
</tr>
<tr>
<td>Modern Language</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education</td>
<td>½</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>16 ½</strong></td>
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<table>
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<tr>
<th>Second Year</th>
<th></th>
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<tbody>
<tr>
<td>Advanced Reporting</td>
<td>3</td>
</tr>
<tr>
<td>Editing</td>
<td>2</td>
</tr>
<tr>
<td>Sophomore English</td>
<td>3</td>
</tr>
<tr>
<td>American Literature</td>
<td>3</td>
</tr>
<tr>
<td>Modern Language</td>
<td>3</td>
</tr>
<tr>
<td>United States History</td>
<td>2</td>
</tr>
<tr>
<td>Physical Education</td>
<td>½</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>16 ½</strong></td>
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Third Year.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tr>
<td>Editorial Writing</td>
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</tr>
<tr>
<td>History and Principles of Journalism</td>
<td>2</td>
</tr>
<tr>
<td>Laboratory in Journalism</td>
<td>1</td>
</tr>
<tr>
<td>Advised Elective</td>
<td>3</td>
</tr>
<tr>
<td>Political Science</td>
<td>2</td>
</tr>
<tr>
<td>Psychology</td>
<td>3</td>
</tr>
<tr>
<td>Constitutional Law</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
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</tbody>
</table>

Fourth Year.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>The Newspaper</td>
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<tr>
<td>Seminar in Journalism</td>
<td>2</td>
</tr>
<tr>
<td>Laboratory in Journalism</td>
<td>2</td>
</tr>
<tr>
<td>Political Science</td>
<td>3</td>
</tr>
<tr>
<td>Philosophy</td>
<td>2</td>
</tr>
<tr>
<td>History</td>
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</tr>
<tr>
<td>Literature</td>
<td>2</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
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**DESCRIPTION OF JOURNALISM COURSES**

**FIRST YEAR**

Journalism 10 and 11. Professors Stone and Getz.


**SECOND YEAR**


Continuation of Journallsm 10 and 11. Attention is paid to more difficult assignments. Students are given opportunity to obtain practical experience on Missoula city newspapers. Study of correspondence work, features and exchanges. Handling of state, district or sectional news. Writing of queries. Handling of "grapevine." Rewriting. Syndicate matter. Study of the feature or human interest story. Brief consideration of value of copy supplied by state and federal government departments and by publicity bureaus. Methods of conducting publicity campaigns. Three credit hours.

Journalism 14 and 15. Professor Getz.

THIRD YEAR

Journalism 16 and 17. Professor Stone.

Editorial writing. Preparation and presentation of editorial interpretation and comment. Study of the function of the editorial page. Consideration of current events. Three credit hours.

Journalism 18. Professor Getz.

History and Principles of Journalism. History of newspaper making. Studies of the careers of great American editors. Consideration of the part that the Press has played in American history. Aims of journalism. Contemporary newspaper history. Two credit hours.

Journalism 20 and 21.

Laboratory in Journalism. Practical experience in reporting and editing. One credit hour.

FOURTH YEAR

Journalism 22 and 23. Professor Stone.


Seminar in Journalism. This class will meet once each week for a two-hour session and will be in charge of the faculty in Journalism. From time to time different professors of Law, Political Science, Economics, Sociology and History will be invited to speak to the seminar upon the relation of their particular subjects to journalism. Students in the class will be required to make exhaustive studies of newspaper problems and will consider numerous questions of newspaper policy. Editors will be invited to visit the seminar to allow the student to profit by the experiences of the professional newspaperman.

Journalism 26 and 27. Professors Stone and Getz.

Laboratory in Journalism. Practical experience in reporting and editing. Two credit hours.
Journalism 28 and 29. Professor Getz.


Journalism 30 and 31. Professor Knowles.

Newspaper Illustrating and Cartooning. In connection with the College of Fine Arts, the School of Journalism offers elective courses in newspaper illustrating and cartooning. The work in illustrating gives thorough training in drawing from the human figure and in composition with a view to pictorial illustration. The course in cartooning will take up the essential study of drawing and the preparation of copy for newspaper illustrations; it will include also a study of current news and its interpretation, the purpose being to prepare the artist for practical work in the newspaper office.

Journalism 33. Professor Elrod.

Newspaper Photography. Practical work in Photography for newspaper illustrating is offered as an elective subject to students in Journalism. This course will include the use of the camera, the development of negatives and the printing of photographs with a view to emphasizing the qualities necessary for newspaper work. There will be lectures upon the selection of subjects and co-operation with the reporter, in connection with the laboratory work.

CORRESPONDENCE COURSES

1. News Writing.
   Designed to prepare the student for reporting and correspondence, by instruction in the construction of a news story, the assembling of facts for its foundation and the most effective form of expression of these facts. Text books will be required, probably two. Three credit hours.

2. The Short Story.
   This course gives the student practical instruction in the producing and marketing of the modern short story and helps him to appreciate the short story as a distinct form of literature.
A study is made of the evolution of the Short Story and of the various types of short stories. The student will be required to submit written work from week to week and will be given the benefit of careful criticisms of all manuscripts sent to the instructor. The student will be asked to purchase a text book and will be assigned to read representative short stories. Two credit hours.

3. The Photoplay.

This course is similar in character to the one above. A practical study of the technique of the motion picture scenario will be made. Emphasis will be placed upon the marketing of the photoplay manuscript. The student will be asked to purchase a manual. No credit. (Fee, $6.00.)
School of Forestry
SCHOOL OF FORESTRY

FACULTY

EDWIN BOONE CRAIGHEAD, M. A., LL. D., D. C. L.
President of the University.

DORR SKEELS, LOGGING ENGINEER
Dean and Professor of Forestry and Lumbering.

JAMES HENRY BONNER, B. S.
Professor of Forest Engineering.

WILLARD M. DRAKE, A. B., M. S. F.
Professor of Forestry.

MORTON JOHN ELROD, Ph. D.
Professor of Biology.

JESSE PERRY ROWE, Ph. D.
Professor of Geology.

JOSEPH EDWARD KIRKWOOD, A. M., Ph. D.
Professor of Botany.

GEORGE FULLMER REYNOLDS, Ph. D.,
Professor of English.

NELS J. LENNES, Ph. D.
Professor of Mathematics.

* Professor of Forest Utilization.

ROBERT NEAL THOMPSON, B. S.
Assistant Professor of Physics.

* Assistant Professor of Forest Engineering

EUGENE F. A. CAREY, B. S.,
Assistant Professor of Mathematics.

R. V. EVANS, M. A.
Instructor in Botany and Silviculture

L. R. DARROW,
Instructor in Shops

WILLIS E. RAY,
Instructor in Forge Shop

WILLIAM W. H. MUSTAINE, B. S.
Director of Physical Education.

*To be appointed.

SPECIAL LECTURERS

F. A. SILCOX, M. F.
District 1, United States Forest Service.
District Forester

ELERS KOCH, B. S., M. F.
Specialist in Forest Protection.

Forest Supervisor

Lecturer in Forest Administration.
C. B. FLEMMING, B. S., B. S. A., - - - Grazing Expert
Specialist in Grazing.

J. F. PRESTON, A. B., - - - Assistant District Forester
Lecturer in Fire Protection.

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

C. H. ADAMS, E. M., - - - Assistant District Forester
Lecturer in Grazing.

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

P. R. HICKS, B. S., - - - Engineer in Forest Products
Lecturer in Wood Uses, Wood Preservation, Timber Testing
and Forest Products.

R. B. ADAMS, - - - Superintendent of Telephone Construction
Lecturer in Forest Improvements.

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

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

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

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

H. H. FARQUHAR, - - - Forest Examiner
Lecturer in Forest Planting and Extension.

S. S. MALVEN, A. B., - - - Forest Examiner
Lecturer in Forest Protection and Insect Control.

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

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

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

HON. J. M. KENNEDY, - - - State Commissioner of Agriculture and Publicity.
Lecturer in Industrial and Community Development.

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

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

W. J. SWINDLEHURST, - State Commissioner of Industry and Labor
Lecturer in Relations of Labor and Industry.
The Opportunity in Forestry.

By an act of the Thirteenth Legislative Assembly (1913) a State School of Forestry has been established at Missoula, as a department of the University of Montana. This enables the University to offer a four years' course of study in Forestry in which the professional training of men for the management and utilization of western forests may be carried on in a western environment and with the forests of the west for class rooms and laboratory.

The courses, as now prescribed, follow largely the recommendations and directions of prominent lumbermen and the administrative officers of the national forests located in the west, and are essentially planned to give men a practical training in the actual field work of forest management and in logging and lumbering and other means of forest utilization.

This action of the Legislature of Montana recognizes the need of western schools for western men. The West has its own forest types and its peculiar forest problems; the most efficient man in western forestry, other things being equal, is the man familiar with western conditions by experience and training. The development of the lumber industry in Montana and in other parts of the Pacific Northwest, the boundless timber resources of the west, and the location of the National Forests almost entirely in the west, all point to the conclusion that the West is to be, in the not distant future, the scene of the principal education in forestry as well as of the practice in forestry of the nation.

The need of proper training for this work becomes ever more apparent. Never before have the lumbermen of the West so strongly urged and demanded combination of professional training, practical ability, and familiarity with woods work for the handling of their difficult operations; and again, never before were the private, state, and national forests of the West so greatly in need of professional foresters with both practical ability and knowledge of the woods as well as technical training.

The location of the School of Forestry in the University of Montana is ideal for its purpose. Missoula is in the heart of the great Inland Empire timber region. The largest white pine forest in the world extends westward almost from the gateway of
the campus. To the north and south stretch the great mountain forests of Montana and Idaho. The headquarters of District One of the United States Forest Service, governing the administration of more than twenty National Forests, are located here. The supervisors' offices and headquarters of three of these National Forests are also in Missoula, and some twenty other National Forests are closely located around this center.

Thus the practical operations of the management and administration of the National Forests are available for study the year round; the valuable assistance of the expert foresters, engineers and specialists of the Forest Service is freely given in lectures, instruction, field demonstration and in the direction of training and planning of courses of study.

In the region closely surrounding the school are many large logging and lumber manufacturing operations. Some of the largest lumbering operations in the Northwest are within a few hours' travel by rail, and several of these may be reached in an hour by interurban trolley line or automobile.

At this meeting place of the plains, foothills, and mountains are merged nearly all the important commercial forests types of the West, affording a region replete with the interesting problems of Western forest management. The great variety of topographical conditions offers every problem in those difficult means of mountain logging which are taxing the ingenuity of the western lumberman; bringing forth that rapid improvement in method, and evolution in logging and manufacturing equipment and transportation facilities, which has created the need for logging engineers and established the profession of forest engineering.

The special opportunities for the study of forestry at the State University consist not only in the splendid endowments of nature and the unique location of the School of Forestry in a region of intensive forestry practice, but also in the practical nature of the courses of study which are offered, and in the high professional standing of the faculty and their many years' record of successful practice in private, state and national forest work. A large part of the instruction is given in the shops, mills, field, and forest. This practice is followed not only through short field trips during the school year, but also a portion of one semester of each year is spent in camp, and the student is required to spend six weeks of the vacation period
at the end of the Junior year in a summer school carried on in the camps and mills of nearby lumbering operations.

The student is expected to spend his vacations, so far as possible, in practical work in the forest and woods operations. Profitable remunerative employment at this work is made available to all students who have shown earnestness and diligence in the school.

Plan and Scope of the School of Forestry.

The School of Forestry in the University of Montana is founded to meet a great and growing demand on the part of lumber companies, large timber holding corporations and the national and state governments for logging engineers, forest engineers, and men of professional training in the practical administration of western forests. The school is maintained in the University to give a professional training to its graduates along those lines which most fit them to meet this need in a region where lumbering, the care, protection and use of forest, the wood-using industries, and industries dependent upon or greatly influenced by the forests are most important in the industrial welfare of the State and community. It is proposed that after the completion of four years’ training along these lines, its graduates will be prepared to undertake work in all the branches of forest administration, both in the State and National Forests, and in private forests and corporate timber holdings, and in all branches of logging and lumbering operations.

There is particularly felt a great need by lumber companies for men trained in logging engineering and in more economical and efficient methods of forest utilization. This need is so strongly felt by the lumbermen of the Northwest that they have called upon the colleges and universities of the Northwestern States to train men for the profession of logging engineering, and so far as possible the college is organized and equipped to respond to this demand.

The administration of western forests and especially of the National Forests and State Forests, is seriously handicapped by the lack of men of professional training in the practical work of forest administration, management, care and protection and utilization.

The headquarters of District One of the United States Forest Service are located in Missoula, as are also the offices of three Forest Supervisors.
The Lolo National Forest, the Bitter Root National Forest and the Missoula National Forest are closely adjacent to Missoula and the headquarters of some twenty other National Forests are reached in a day’s travel from the University.

The School of Forestry aims to keep closely in touch with the administrative offices of the National Forests, and in the training of its graduates to respond as closely and fully as possible to the requirements for properly trained men in the National Forest work.

In addition to the regular faculty of the School of Forestry in the University, the course of instruction is strongly supplemented by lectures given on the practical phases of the work, and the direction of training which should be pursued by prominent lumbermen, timber owners, the district forester and assistant district foresters, engineers, specialists, and forest supervisors of the United States Forest Service and by the state officials.

Courses in Logging Engineering, Forest Engineering, the natural sciences, and care, protection, and management of forests are given prominence in order to give that practical training which is necessary to meet the need for men of professional training in the forests and lumbering operations of the western region of the United States.

Special Courses

Special courses of one year and two years are offered in Forestry and Forest Engineering. These courses are designed to meet the practical needs of forest rangers, practicing foresters, superintendents of parks and estates, teachers in natural sciences and forestry, and of lumbermen and loggers and other persons related to woods operations.

Careful personal consideration of the individual needs and requirements of students in special courses will be given and courses of studies will be arranged so far as possible to conform to the needs of the student and to the time available for the work.

Opportunity will be given such students to correct deficiencies in English, Mathematics, or other studies of preliminary training, and, subject to the rules and requirements established for the other departments, schools or colleges of the University, unlimited access will be given to all the libraries, laboratories, museums, shops and classrooms of the University.
SHORT COURSE FOR FOREST RANGERS

A short course for Forest Rangers is offered during the first part of the second semester of each year. This course is provided in co-operation with the officials of the Forest Service and is open to men in the Service and to others who may wish to apply. This course covers about fourteen weeks, beginning about the 1st of January and closing in April. Instruction is given by members of the University Faculty, with special lectures by officers of the Service.

REQUIREMENTS FOR ADMISSION

The completion of a four years’ preparatory or high school course is the standard for regular entrance to the School of Forestry in the University, as in the other regular courses of the University.

Students in high schools and preparatory schools who plan to enter the School of Forestry should preferably include Elementary Biology, Botany and Zoology, English and Mathematics in their training. Students intending to elect the course leading to the Degree of Forest Engineer should include English, Physics, Chemistry and four years of Mathematics in their preparation. Candidates for either the Degree of Bachelor of Science in Forestry or Forest Engineering will be required to make up any deficiency in their preparatory training in English or Mathematics.

Any person over 19 years of age, of good character, and who gives sufficient evidence of his ability to pursue the studies will be given entrance to one and two year special courses in Forestry or Forest Engineering, or to the Short Course given in the second semester of each year for Forest Rangers.

CHARACTER OF THE REGULAR COURSES

Forestry

The School of Forestry proposes in the courses leading to the Degree of Bachelor of Science in Forestry, to train its students to meet the requirements of practical administrative work in the National and State forests, and in private timber holdings. Its aim will be to graduate students schooled in a western environment and so trained by practical work in western forests that they shall be able to undertake with understanding and ability the care, protection, and management of the forests of the Western United States and the administration of their uses.
Specialization is given to the natural sciences, Zoology, Geology, the higher branches of Botany, and Dendrology or the botany of trees, since a knowledge of these sciences is necessary to an understanding of the conditions and influences which affect the life history, reproduction, growth and development of trees and forests.

Courses in Forestry

FRESHMAN YEAR

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>No. of Credits</th>
<th>First Semester</th>
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</thead>
<tbody>
<tr>
<td>General Forestry</td>
<td>F 11</td>
<td>2</td>
</tr>
<tr>
<td>Geology</td>
<td>F 51</td>
<td>3</td>
</tr>
<tr>
<td>Surveying</td>
<td>F 41a</td>
<td>2</td>
</tr>
<tr>
<td>Drawing</td>
<td>F 41b</td>
<td>2</td>
</tr>
<tr>
<td>Trigonometry</td>
<td>F 71</td>
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<tr>
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<tr>
<td>Botany, General</td>
<td>B 11</td>
<td>3</td>
</tr>
<tr>
<td>Shop Work, Wood</td>
<td>F 41c</td>
<td>1</td>
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<td>Physical Culture</td>
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Second Semester

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<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
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<tr>
<td>Geology</td>
<td>F 52</td>
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<tr>
<td>Surveying</td>
<td>F 42a</td>
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<tr>
<td>Drawing</td>
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<tr>
<td>College Algebra</td>
<td>F 72</td>
<td>3</td>
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<tr>
<td>English</td>
<td></td>
<td>3</td>
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<tr>
<td>Botany, General</td>
<td>B 12</td>
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<tr>
<td>Shop Work, Forge</td>
<td>F 43c</td>
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<tr>
<td>Physical Culture</td>
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<tr>
<td>Spring Camp, Surveying and</td>
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<tr>
<td>Forestry</td>
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SOPHOMORE YEAR

First Semester

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Lumbering</td>
<td>F 31</td>
<td>2</td>
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<tr>
<td>Forest Measurements</td>
<td>F 13</td>
<td>2</td>
</tr>
<tr>
<td>Topographic Surveying</td>
<td>F 43a</td>
<td>2</td>
</tr>
<tr>
<td>Topographic Mapping</td>
<td>F 43b</td>
<td>2</td>
</tr>
<tr>
<td>Biology</td>
<td>B 27</td>
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<tr>
<td>Physics</td>
<td>F 10</td>
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<td>Botany, Plant Histology</td>
<td>B 15</td>
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<tr>
<td>English or German</td>
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Second Semester

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<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Lumbering</td>
<td>F 32</td>
<td>2</td>
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<tr>
<td>Forest Measurements</td>
<td>F 14</td>
<td>2</td>
</tr>
<tr>
<td>Topographic Surveying</td>
<td>F 44a</td>
<td>2</td>
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<tr>
<td>Topographic Mapping</td>
<td>F 44b</td>
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<tr>
<td>Biology</td>
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<td>Botany, Plant Physiology</td>
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<tr>
<td>Spring Camp, Forest Measure-</td>
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<tr>
<td>ments and Lumbering</td>
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Courses in Forestry

JUNIOR YEAR

First Semester

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<tbody>
<tr>
<td>Lumbering, Logging</td>
<td>F 33</td>
<td>3</td>
</tr>
<tr>
<td>Fire Protection</td>
<td>F 15</td>
<td>3</td>
</tr>
<tr>
<td>Forest Reconnaissance</td>
<td>F 45a</td>
<td>2</td>
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<tr>
<td>Forest Mapping</td>
<td>F 45b</td>
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<tr>
<td>Botany, Dendrology</td>
<td>B 21a</td>
<td>3</td>
</tr>
<tr>
<td>Silviculture</td>
<td>F 21</td>
<td>2</td>
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<tr>
<td>Forest Policy</td>
<td>F 83</td>
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Second Semester

<table>
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<tr>
<th>Course</th>
<th>No. of Credits</th>
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</thead>
<tbody>
<tr>
<td>Lumbering, Mills and</td>
<td>F 34</td>
<td>3</td>
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<tr>
<td>Markets</td>
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<tr>
<td>Fire Protection</td>
<td>F 16</td>
<td>3</td>
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<tr>
<td>Highways and Bridges</td>
<td>F 46a</td>
<td>2</td>
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<tr>
<td>Improvement Construction</td>
<td>F 46b</td>
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<tr>
<td>Botany, Dendrology</td>
<td>B 21b</td>
<td>3</td>
</tr>
<tr>
<td>Silviculture</td>
<td>F 22</td>
<td>2</td>
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<tr>
<td>Forest Policy</td>
<td>F 84</td>
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</table>
**Electives—**

- Biology ........................................ 3
- Physics ........................................ 3
- Geology, Physiography ...................... 3
- Chemistry ...................................... 3
- English or German......................... 3
- Mathematics .................................. 3

**Electives—**

- Biology ........................................ 3
- Physics ........................................ 3
- Geology, Physiography ...................... 3
- Chemistry ...................................... 3
- English or German......................... 3
- Mathematics .................................. 3

**SENIOR YEAR**

**First Semester.**

<table>
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<tr>
<td>Forest Management.............</td>
<td>F 25 3</td>
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<td>Forest Administration.........</td>
<td>F 17 3</td>
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<tr>
<td>Improvement Construction.....</td>
<td>F 47b 2</td>
</tr>
<tr>
<td>Silviculture</td>
<td>F 23 3</td>
</tr>
<tr>
<td>Botany, Forest Pathology B</td>
<td>F 25 3</td>
</tr>
<tr>
<td>Forest Appraisals.............</td>
<td>F 55 2</td>
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<tr>
<td>Electives—</td>
<td>F 35 3</td>
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</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>No. of Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electives—</td>
<td></td>
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</tbody>
</table>
| Silvics, Review............... 3
| Forest Geography............... 3
| Physics.......................... 3
| Forest Policy.................. 3
| Wood Technology.............. 3
| Logging Engineering........... F 35 3 |

<table>
<thead>
<tr>
<th>Course</th>
<th>No. of Credits</th>
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</thead>
<tbody>
<tr>
<td>Electives—</td>
<td></td>
</tr>
</tbody>
</table>
| Silvics, Review............... 3
| Systematic Botany............... 3
| Review........................... 3
| Physics.......................... 3
| Forest Policy.................. 3
| Wood Technology.............. 3
| Logging Engineering........... F 36 3 |

**Second Semester.**

**Note.**

*Credits: One hundred and fifty credits required for graduation and degree of Bachelor of Science in Forestry. One credit represents from eighteen to twenty-four hours of class work, or from thirty-six to fifty-four hours of laboratory, shop or field work.

**Forest Engineering.**

It is the purpose of the courses leading to the degree of Forest Engineer, to prepare students for work in practical woods operations, and especially in Logging and Forest Engineering, both for service in the lumbering industry, and in the administration of public and private forests. The school will aim to develop in its students ability in the planning and carrying on of logging and lumbering operations with especial attention to cost factors, and efficiencies of methods, and a comprehensive understanding of the uses of woods and forest products, and particularly of lumber, its manufacture, grading and marketing. Familiarity with woods operations will be given by practical work in the logging camps, sawmills, and private, state and national forests in the region surrounding the University.

Students will be trained in the art of surveying and mapping forest areas for the laying out of logging operations. They will be given practice in the building of trails, highways and railroads, the construction of bridges and culverts, the planning
and building of logging camps and sawmills, and in other problems dealing with the economical transportation of forest products from the stump to the sales yard. They will be trained in a working knowledge of motive powers, donkey engines, steam and electric skidders, aerial tramways, overhead skidders, loaders and jammers, and other equipment used in power logging; and to proficiency in the location, design and construction of improvements for the use and administration of the forest.

Students in this course will give special attention to Mathematics and Mechanics to lay that broad foundation necessary to a basic training in Engineering Sciences, and to undertake with understanding, work in the construction branches of Forest and Logging Engineering; planning, designing and cost estimating.

Since Congress has provided for the expenditure of certain percentages of the money received from timber sales for improvements on the forests, such as the building of highways and bridges, there has been a demand for men especially trained in this work. For those who are planning on entering this branch, special instruction will be given in the location and building of modern highways and the latest types of bridges, the study of the strength of materials, drainage, specifications and estimates, bridge analysis, masonry and concrete.

**EQUIPMENT**

This department has an equipment of compasses, both Forest Service standard and Geologists, locating and mountain transits, solar attachments, plane tables, traverse boards, levels—wye, dumpy, hand and Abney; tapes, chains, rods and all other appliances used in surveying.

The instruction in scaling and logging is given principally in the open, on the log deck, where the University has collected specimens of logs cut from all the native timbers. These logs have been so selected as to be typical samples of both sound and defective timber, being cut longitudinally and hinged so that they may be opened and examined both for interior defects and to check scale.

The mapping and drafting courses are conducted in a large, well lighted room that occupies the entire second floor of the Forestry building. The room is equipped with individual drawing tables, drawing boards, protractors and other drawing appliances. The wall space has been prepared for exhibition pur-
poses, and collections of drawings are constantly displayed, as well as models of bridges and highways.

For practice in Shop work, the University has set aside four large, well lighted rooms on the ground floor of Science Hall. The power is supplied from the power station in the basement. The wood shop contains a number of lathes, benches, and power machinery necessary for wood working. The machine and forge rooms contain the latest models of lathes, drill press, shaper, forges, etc., together with benches for exercises in filing and chipping. Adjoining the forge shop is the foundry, which is also to be used as the testing laboratory. This laboratory is provided with a rattler and other devices for testing paving materials; there is also a cement testing machine together with the molds, samples of cement, and concrete and varieties of sand. It is expected that in the near future a timber testing machine will be installed, having a capacity of 600,000 pounds, arranged to take large and bulky pieces in tension, compression, and flexure.

Courses in Forest Engineering.

### FRESHMAN YEAR

#### First Semester.

<table>
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<tbody>
<tr>
<td>General Forestry</td>
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<tr>
<td>Geology</td>
<td>F 51</td>
</tr>
<tr>
<td>Surveying</td>
<td>F 41a</td>
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<tr>
<td>Drawing</td>
<td>F 41b</td>
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<tr>
<td>Trigonometry</td>
<td>F 71</td>
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<tr>
<td>English</td>
<td></td>
</tr>
<tr>
<td>Botany, General</td>
<td>B 13</td>
</tr>
<tr>
<td>Shop Work, Wood</td>
<td>F 41c</td>
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<tr>
<td>Physical Culture</td>
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</tbody>
</table>

#### Second Semester.

<table>
<thead>
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<td>General Forestry</td>
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<td>Drawing</td>
<td>F 42b</td>
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<tr>
<td>College Algebra</td>
<td>F 72</td>
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<tr>
<td>English</td>
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<td>Botany, General</td>
<td>B 14</td>
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<tr>
<td>Shop Work, Wood</td>
<td>F 42c</td>
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<td>Physical Culture</td>
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<tr>
<td>Spring Camp, Surveying and Forestry</td>
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### SOPHOMORE YEAR

#### First Semester.

<table>
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<tr>
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<tbody>
<tr>
<td>Lumbering</td>
<td>F 31</td>
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<tr>
<td>Log Scaling</td>
<td>F 43a</td>
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<tr>
<td>Topographic Surveying</td>
<td>F 43b</td>
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<tr>
<td>Analytic Geometry</td>
<td>F 73</td>
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<tr>
<td>Physics</td>
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<tr>
<td>Plant Histology and Physiology</td>
<td>B 17</td>
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<tr>
<td>Shop Work, Forge</td>
<td>F 43c</td>
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#### Second Semester.

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<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Lumbering</td>
<td>F 32</td>
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<tr>
<td>Cruising</td>
<td>F 44a</td>
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<tr>
<td>Railroad Surveying</td>
<td>F 44b</td>
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<tr>
<td>Advanced Trigonometry</td>
<td>F 74</td>
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<tr>
<td>Physics</td>
<td>F 11</td>
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<tr>
<td>Dendrology</td>
<td>F 44c</td>
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<tr>
<td>Shop Work, Machine</td>
<td>B 18</td>
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<tr>
<td>Spring Camp, Scaling, Cruising</td>
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<td>and Lumbering</td>
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### COURSES IN FOREST ENGINEERING

#### JUNIOR YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tr>
<td><strong>No. of Credits</strong></td>
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<tr>
<td>Lumbering, Logging...FE 33</td>
<td>3</td>
</tr>
<tr>
<td>Fire Protection...F 15</td>
<td>3</td>
</tr>
<tr>
<td>Forest Reconnaissance...F 45a</td>
<td>2</td>
</tr>
<tr>
<td>Forest Mapping...F 45b</td>
<td>2</td>
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<tr>
<td>Differential Calculus...F 75</td>
<td>3</td>
</tr>
<tr>
<td>Applied Mechanics...F 77</td>
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</tr>
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</table>

#### Electives—
- Chemistry ................. 4
- Forest Management .... 3
- Silviculture ............... 2
- Geology, Mineralogy... 3
- Hydraulics ..............

#### SENIOR YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tr>
<td><strong>No. of Credits</strong></td>
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<tr>
<td>Logging Engineering...F 35</td>
<td>3</td>
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<tr>
<td>Forest Administration...F 17</td>
<td>3</td>
</tr>
<tr>
<td>Forest Engineering...F 47a</td>
<td>2</td>
</tr>
<tr>
<td>Improvement Construction...F 47b</td>
<td>2</td>
</tr>
<tr>
<td>Motive Powers...F 67</td>
<td>3</td>
</tr>
<tr>
<td>Forest Appraisals...F 55</td>
<td>2</td>
</tr>
</tbody>
</table>

#### Electives—
- Mechanics of Materials... 2
- Concrete Construction... 2
- Thermodynamics ........ 2
- Telephone Engineering... 2
- Electrical Laboratory... 2
- Geology, Petrology.... 2
- Analytic Mechanics...FE 77 | 2 | Highway Materials, Lab... | |
| 2 | Contracts and Specifications... | |
| 2 | Thesis... | |
| 2 | Dynamics and Motors... | |
| 2 | Electrical Laboratory... | |
| 2 | Practical Geology... | |
| 2 | Differential Equations FE 78 | 3 |

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**Note.**

Credits: One hundred and forty-four credit hours required for graduation with degree of Bachelor of Science in Forest Engineering. One credit hour is equivalent to from eighteen to twenty-four hours of actual class attendance, or from thirty-six to fifty-four hours of laboratory, shop, or field work.
General Applied Forestry (Management)

F 11. Introduction to Forestry. Dean Skeels


First semester, Freshman year, 2 credit hours.

F 12. Forest Economics, History of Forestry. Professor Drake

Forest history, a review of the development of Forestry in continental Europe; reference: Fernow’s History of Forestry. Forest Economics, a study of forest problems from an economic standpoint, value and benefits of forests, abuse of forest resources, forest requirements of the nation, relation to other industries, forest resources of the nation, economic results of forestry practice; references: Fernow’s Forest Economics.

Second semester, Freshman year, 2 credit hours.

F 13. Forest Measurements. Professor Drake

Determination of the volume of logs and other parts of felled trees. This course will relate particularly to the accurate methods of determination of volume for use in scientific work, and as the basis for forest management. An explanation will be given, however, of commercial measurements and their proportions, ratios and relations to more accurate measurements will be shown. Units of measurement, application to felled trees. Methods of stem analyses. Instruction in log scaling will be given in courses in lumbering and in spring camp. Two hours lecture and two hours field and laboratory work each week.

First semester, Sophomore year, 2 credit hours.

F 14. Forest Measurements. Professor Drake

A continuation of the work of the preceding semester. Stem analysis. Determination of volume and increment of trees and stands. Determination of volume, methods of measurements of standing trees and stands; use of averages, construction and use
of volume tables. Determination of increment; diameter, height, volume; quantity and value increment. Construction of growth tables in diameter, volume, etc. Detailed analysis of character of forest increment. Determination of increments and growth of stands. Commercial estimate of standing timber. Log grades and classes. Proportions, ratios and relations of commercial estimates of stands to accurate measurements. Instruction in timber estimating will be given in spring camp. Two hours lecture, and two hours field and laboratory work each week.

Second semester, Sophomore year, 2 credit hours.

**FE 13. Log Scaling.**


Sophomore year, first semester, 2 credit hours.

**FE 14. Cruising.**

Commercial measurements of standing timber, methods of timber surveys and forest inventories, methods of practical cruising, defects of trees affecting log scale, determination of cull factors, relation of log size classes, quality and defects to lumber grades and mill over-run, log grades, cruiser’s report.

Sophomore year, first semester, 2 credit hours.

**F. 15. Fire Protection.**

An analysis of fire protection factors, causes, hazards, and risks. Organization for fire prevention, fire detection, and fire control. Analysis of principles and methods of fire protection. Financial and economic aspects of fire protection. Elements of fire prevention, educational work, law enforcement, studies of sources and causes, elements of fire danger. Elements of fire detection, organization of forces, factors of efficiency, methods, patrols, look-outs, forest improvements for fire detection. Cooperative agencies. Elements of fire-fighting, organization, personnel, supervision, co-relation with other forces, factors of efficiency. Measure of controllability, rating the risk, fire-fighting methods, Field practice, on nearby forests.

First Semester, Junior year, 3 credit hours.

A continuation of the work of the preceding semester.

It is the intention to completely develop the systematic organization of protective forces for fire prevention, fire detection, and fire control, and to keep pace with the rapid development in systematic fire protection by the forest service, private agencies, co-operative organizations and state organizations in the northwest.

Second semester, Junior year, 3 credit hours.

F 17. Forest Administration. Dean Skeels

This course is designed to give the forester a knowledge of the importance of the National Forests to the welfare of the nation, and a fine conception of the Forest officer as a public service official, and to train foresters in the organization of the business of the forest. Special attention is given to efficiency of management and plans for reduction of wastes and losses, of time, labor, and money.

Forest Service organization, personnel, divisions of authority, duties; forest organization, departmental and divisional organizations. Forest works. Permanent improvements, classes of improvements, organization for improvements, divisions of work. Administration of land laws, claims and alienation, methods of procedure, organization, division of duties. Timber sales, methods, general policy, methods of procedure, divisions of work, organization of work. Forest planting, general policy, divisions of work, methods of work, organization. Grazing, regulations, general policy, methods of handling, divisions of work, methods of procedure, organization. Special uses, general policy, kinds of uses, methods of procedure, divisions of work, organization. Other duties and functions of the forest officer.

First semester, Senior year, 3 credit hours.

F 18. Forest Administration. Dean Skeels

A continuation of the work of the preceding semester.

Second semester, Senior year, 3 credit hours.

F 25. Forest Management. Professor Drake

Forest organization, regulating the yield, working plans, principles of the business organization of the forest, regulation of the yield for sustained management, objects of working plans, collection of data, co-ordination of data; normal forests, in-
crement of trees and stands, determining the rotation, determination of felling budgets. Final formulation of working plans.

First semester, Senior year, 3 credit hours.


Professor Drake

Forest finance, forest valuation, forest statistics.

Forest valuation. Definitions of value, elements of forest value, capital and interest, theory of expectation of values, nature of forest capital, interest rates on forest capital, formulae of interest calculation, methods of determining values.

Statics. Financial effects of management as related to forest valuation; methods of measuring profits of forestry. Financial effects as related to choice of species, regeneration and silviculture systems, rotation thinning practices and improvement cuttings. References: Chapman’s Forest Valuation.

Second semester, Senior year, 3 credit hours.

F 55. Forest Appraisal.

Dean Skeels

A study of present commercial forest values. Uses of land and forest. Land values. Uses of the land. Land classifications. Timber values, uses of forest cover. Forest classifications.


First and second semesters, Senior year, 2 credit hours.

F 83. Forest Policy.

Dean Skeels

It is the purpose of this course to give an advanced review of forest economics, particularly as respecting the relations of the nation to forest policies of the United States. The subject will be handled as recommended in the report of the Committee of the Conference of Forest Schools.

Responsibility of the public. Functions of the government, state, county, municipalities, and communities.

policies. Other functions of the federal government. Educa­tional work, investigative work, development of forestry science, promotion of forestry practice. Federal co-operation with states, associations and private agencies.

Forest policies of the state. Specific policies in the differ­ent commonwealths. An analysis and criticism of specific policies.

Study and analysis of the problem of public regulation of privately owned forests.

First semester, Junior year, 1 credit hour.

F 84. Forest Policy

A continuation of the work of the preceding semester.

Second semester, Junior year, 1 credit hour.

Lumbering.

Removal, Marketing and Utilization of the Forest Crop.

F. 31. Lumbering.

Timber physics, wood technology, qualities and defects of wood; timber products, wood uses.

The commercial properties and qualities of wood. Study of suitability of wood to various uses. Utilization of wood in the wood-using industries. Substitutes for wood; extension of wood uses; timber testing; timber treatment. Utilization of by-prod­ucts. Experiments to extend the usefulness and widen the mar­ket for western forest products.

First semester; Sophomore year; 2 credit hours.

F 32. Lumbering.

Forest products; a continuation of the work of the preced­ing semester. Study of lumber; kinds and uses of lumber; quality and grades of lumber. Marketing methods; freight rates and market prices, distributing and selling methods; history of the lumbering industry.

Second semester; Sophomore year; 2 credit hours.

F 33. Lumbering.

The lumber industry. A continuation of the work of the preceding semester.

Logging. Study of methods of logging. Factors affecting use, cost and efficiency of methods. Falling, cutting, and swamp­ing. Horse and power skidding, steam skidders, steam and elec-

First semester; Junior year; 3 credit hours.

F 34. Lumbering. Dean Skeels

The lumber industry. A continuation of the work of the preceding semester.


Second semester; Junior year; 3 credit hours.

FE 33. Lumbering, Logging. Dean Skeels

A study of the methods of logging and of factors affecting use, cost and efficiency of methods. Analysis of operations from stump to pond. Practical work in nearby logging operations. The scope of this course will be the same as that covered in F-33 Lumbering.

First semester; Junior year; 3 credit hours.

FE 34. Lumbering, Logging. Dean Skeels

contract systems, bonus systems, piecework systems. Camp sanitation. Welfare work, reading rooms, bathrooms, recreation facilities, social improvements, Y. M. C. A., etc., field work in western logging operations.

Second semester; Junior year; three credit hours.

**F 35. Logging Engineering.**

Dean Skeels

The science and art of adapting timber resources of the forest to the use of man.

The direction of training will be in the application of engineering principles to the operations of logging. The course will begin with a brief resume of descriptive lumbering or a consideration of the general methods of logging practiced in the principal lumbering regions. Special attention will be given to organization and management of operations and to factors of efficiency and sources of loss and waste, and to the analysis of operative cost factors.

Working plans for logging, preparation and use of topographical maps, stand maps, type maps, working circles, transportation routes, location of improvements. Layout of operations, camps, roads and landings. Falling and bucking, swamping and skidding. Yarding, bunching, handlogging, trailing. Draying, trucking, sledding, carting, etc. Chuting, timber slides, and trail chutes, ground slides, flumes. Yards, skidways, landings, storage ponds. Log driving, breaking landings, jam and rear, sorting and booming, cleaning the rear. Loading, cross hauls, jammers, log loaders. Main lines of transportation, sleigh hauls, road tractors, logging railroads, flumes, chute trailing with power, ground tramways, overhead tramways and other forms of aerial conveyors. Log handling at the mill. Unloading, rollways, ponds, log storage, log slips.

First semester; Senior year; 3 credit hours.

**F 36. Logging Engineering.**

Dean Skeels

Logging equipment. Tools and small equipment; factors of efficiency in equipment; styles and patterns; saws, axes, cant-hooks, pevies, chains, etc.; skidding equipment, tongs, skidding grabs, chokers, trail dogs, chains, hooks, rings, dogs and grabs. Other tools and small equipment, etc. Relation of form, style, pattern, quality, etc., to efficiency.

Power equipment. The steam engine; mechanical details, principles of steam engines, care and maintenance. Application of power. Steam loaders, steam skidders, donkey engines, over-
head skidders, power chute trailing, slack cable and tight cable systems, tramways and special conveyors, etc. Application of electrical power, mechanical details, principles of electricity, care and maintenance, application of power—use in logging operations—advantages and disadvantages.

Cost factors of logging—natural conditions as factors in cost estimates. Sources of loss and waste. Savings of time, labor, expense, supplies, and equipment, timber material. Factors of logging expense, labor, supplies and equipment, maintenance and repairs, depreciation, interest on investment. Salvage of investment and wrecking value, residual value. Cost keeping systems. Logging finance.

Efficiency of methods, factors determining choice of methods; labor vs. machinery, comparison of labor costs with up-keep, maintenance and depreciation costs of machinery. Means for comparing methods, checks on time, supplies, labor units, motion timing, output, time elements.

Especial application of efficiency factors and methods for organization and management, elimination of losses and wastes, increases of quality of output, etc.

Second semester; Senior year; 3 credit hours.

Elect. Logging, Review of Logging Methods. Dean Skeels

This is an elective course offered in the first semester of the Senior year to students who are specializing in Logging Engineering. It is intended to offer a comprehensive review of the entire subject of logging methods, bringing the student's knowledge up to date in latest improvements in logging methods in the northwestern United States.

First semester, Senior year, 3 credit hours.

Elect. Logging, Review of Logging Problems. Dean Skeels

It is intended to offer in this course a comprehensive detailed review of the layout of logging operations, and a consideration of the difficulties and problems offered in the planning and carrying out of log transportation methods. Detailed analyses will be made of current logging operations in the nearby forests of Montana and northern Idaho, and a large part of the work will be done in the field.

Second semester, Senior year, 3 credit hours.

F. Logging Engineering, Improvement Construction.

(See Forest Engineering and Improvement Construction.)
Outline Description of Courses, Surveying, Mapping and Forest Engineering

F 41a. Surveying. (Freshmen, First Semester) Professor Bonner

Instruction covers the care, use, and adjustments of instruments used in making forest surveys; standardizing tapes and chains; determination of true meridian from Polaris; magnetic variation; United States public land survey system; methods of retracing old lines and sub-dividing sections; differential levels; profile levels; staking out and giving grades for ditches and drains; traverse board surveying, etc. One hour lecture and three hours field practice per week, first semester. Reference book used: Cary’s “Manual for Northern Woodsmen.”

F 41b. Drawing. (Freshmen, First Semester) Professor Bonner

Elementary map making and lettering; conventional signs for maps as used by United States Forest Service; practice in plating profiles and drawing plans for Forest Improvements, bridges, etc. Six hours practice per week in drafting room, supplemented by lectures by specialists from United States Forest Service. No text books used, but each student furnished with blue print sample maps of forest areas showing conventional signs.

F 41c. Shop Work. (Freshmen, First Semester) Instructor Darrow

Exercises on bench in making joints and splices; practice in camp carpentry; exercises in wood turning on wood lathe. Three hours shop practice per week.

F 42a. Surveying. (Freshmen, Second Semester) Professor Bonner

Continuation of work of preceding semester; surveying irregular tracts of land by (a) compass and chain, (b) transit and tape; stadia surveying; determination of meridian by Solar observations; triangulation; staking out mountain roads and trails; running meander lines; running traverse lines by (a) deflection angles, (b) azimuths, (c) true bearings; laying out townsites and establishing permanent monuments for same; establishing grade for flumes; exercises in surveying in neighboring forests; surveying burned over areas by various methods. One hour
lecture and three hours field practice, eight weeks; six hours field practice nine weeks.

**F 42a. Surveying, Spring Camp. (Freshmen, second semester; ten days,) Professor Bonner**

Model surveying camp to be established for a ten day period in a neighboring forest. The purpose of the camp is to give the student practice in the solution of practical problems similar to those he will meet early in his career in forestry work, and is in line with the policy of the school to combine theory and practice in all its branches of technical instruction. The work includes retracing land lines of the United States public lands survey, surveys for purpose of estimating timber; the marking of lines in the forest; establishing corners, etc. Instruction will also be given in the transportation of instruments and supplies in the field, camp equipment, packing horses, and camp cookery. This camp trip will be a required part of the work of the students taking Surveying 42a, as outlined above, before a grade is given.

**F 42b. Drawing. (Freshmen, second semester) Professor Bonner**

Compiling of maps from notes taken in field by the surveying class computing areas by planimeter and latitudes and departures; practice with "Rust's" lettering scale; map titles; soil classification maps; reproduction methods, (a) blue printing, (b) black line printing, photography, photo-lithographing and drawings for reproduction. Six hours practice per week in drafting room.

**F 42c. Shop Work. (Freshmen, second semester) Instructor Darrow**

The construction of joints, timber splices, cross joints, mortise and tenon, dove tail; practice in framing roof and bridge. Three hours shop practice per week.

**F 42c. Shop Work. (Freshmen, second semester) Instructor Ray**

Practice in iron working, exercises in welding, upsetting, and horse-shoeing, tool making and tempering; foundry and machine shop practice, exercises in filing and chipping; work on drill press, shaper and lathe. Three hours shop practice per week.

**F 43a. Topographical Surveying. (Sophomores, first semester) Professor Bonner**

Forest Reconnaissance, Abney method; horizontal and vertical control; aneroid and pacing method; trigonometric levelling;
transit and stadia method; plane table surveying; topographic surveys as applied to the laying out of logging operations; field sketching; topographic surveys by photography; soil surveys. Six hours field practice per week, or one hour lecture and three hours field practice when necessary. Text book: Tracy’s “Plane Surveying.”

**F 43b. Topographic Mapping.** (Sophomores, first semester) Professor Bonner

Practice in the reduction and platting of contour maps from field notes; errors of closure and balancing surveys; plainimeter and double meridian distance methods of figuring areas of June 11th homesteads and reservoir sites; hydrographic survey maps and charts. Six hours practice in the drafting room per week, supplemented with lectures by Forest Service experts on topographic works.

**F 43c. Shop Work. Forging.** (Sophomores, first semester) Instructor Ray

Exercises in iron working; drawing, upsetting and bending, cutting, welding; steel forging and tool making, hardening, tempering and case hardening; horse shoeing. Three hours shop practice per week.

**F 44a. Railroad Surveying.** (Sophomores, second semester) Professor Bonner

In this course, instruction is given in that branch of railroad engineering as applied to logging railroads. Instruction covers reconnaissance, preliminary surveys and location; the laying out of logging railroads with hand level and tape, with transit and level; the theory of simple, compound, reverse and transition curves; the spiral; cross-sectioning and taking topography; establishing grades with respect to economy in construction and operation; overhaul; borrow pits; staking out trestles and culverts; vertical curves, etc. Lectures and three hours field practice, eight weeks; six hours field practice nine weeks. Reference book, Searles “Field Engineering.”

**F 44a. Railroad Surveying—Spring Camp.** (Sophomores, second semester, ten days) Professor Bonner

The students in the railroad surveying class will be required to make the preliminary survey, and location of a short section of logging railroad, from a camp in a nearby forest; they will establish grade, set slope stakes and stakes for borrow pits, get out a sample monthly estimate, classifying materials, etc.,
as though they were on actual construction. Evening lectures
on construction methods, camps, sanitation, supplies, etc.

**F 44b. Railroad Drafting.** (Sophomores, second semester)  
Professor Bonner

The platting of maps from notes taken in the field by the Railroad Surveying Class; profiles and cross-sections; establishing grade on profiles; "paper location"; figuring volumes by prismoidal formula; excavation and embankment estimates; cost estimates; ballasting; laying ties and steel; costs of hauling per ton mile. Six hours work in the drafting room, supplemented by lectures when necessary. Reference, Searles "Field Engineering."

**F 44c. Shop Work—Machine.**  
Instructor Ray

Chipping and filing; exercises on cast and wrought iron; turning on engine lathe to various diameters; taper turning; cutting threads; exercises on shaper. In last part of year some work in tool making will be given, such as making taps, reamers, and milling cutters. Three hours shop practice per week.

**F 45a. Forest Reconnaissance.** (Juniors, first semester)  
Professor Bonner

Horizontal and vertical control by transit and stadia; by plane table; Abney method; standard reconnaissance methods as used by United States Forest Service; field sketching; strip surveys; rectangular system; traverse system. Reference book, "Instruction for Making Reconnaissance Surveys." Six hours field practice per week and lectures by Forest Service specialists.

2 credit hours.

**F 45b. Forest Mapping.** (Juniors, first semester)  
Professor Bonner

Atlas maps; fire control and special use maps; polyconic projections; type and stand maps; platting of maps from field sketches of reconnaissance surveying class. Six hours work in drafting room per week.

2 credit hours.

**F 46a. Highways and Bridges.** (Juniors, second semester)  
Professor Bonner

Details of the design and construction of highways and bridges as constructed for forest improvement; analysis of resistance to traction; location, grades and drainage of new
roads; relocation and improvement of existing roads; construction and maintenance of earth, gravel and macadam roads; types of forest bridges; emergency bridges; theory of trusses; suspension bridges; foundations; practice in staking out bridges and securing data for design. One hour lecture and three hours field practice per week, supplemented by field trips to highway construction camps, and inspection and tests of neighboring forest bridges. References, Harger & Bonneys "Highway Engineers' Handbook." United States Forest Service. "'Trail and Highway Manual," and Ketcham’s "Design of Highway Bridges," Wadell's "DePontibus."

2 credit hours.

F 46a. Highways and Bridges, Spring Camp. (Juniors second semester) Professor Bonner

Students will be required to make an inspection trip to some highway or bridge construction camp, and to make a complete cost report on same, and to list in detail, if highway camp: cost of clearing per acre; cost of moving earth and rock per yard, both by hand and by any other methods that may be used; cost of building small bridges and culverts, cost of running commissary; progress profile and efficiency reports.

F 46b. Improvement Construction. (Juniors, second semester) Professor Bonner

A course consisting of the office work and drafting connected with the design, location and building of highways and bridges, to supplement that course. Road plans and profiles; cross-sections and estimates; specifications; materials of construction; law of contracts; elements of graphic statics and strength of materials. Six hours work in drafting room per week. References, same as for Highways and Bridges.

2 credit hours.

F 47a. Forest Engineering. (Seniors, first semester) Dean Skeels, and Professor Bonner

Forest engineering, logging improvements. Location, design and construction of logging improvements—structural materials, round timbers, framed timbers, railroad ties. Location surveys, factors determining location. Location methods, for flumes, chutes, railroads, roads, trails, special conveyors, etc.

Design and construction—chutes, flumes, roads and bridges, piling, stream improvements; railroads, road beds, pile driving, surfacing, ties, laying steel; factors determining choice, weight
and strength of railroad materials; bridges, location, design, construction, etc.

2 credit hours.

F 47b. Improvement Construction. (Seniors, first semester)  
Dean Skeels, and Professor Bonner

Improvements for forest administration. The systematic planning for forest improvements, sources of supply, centers of administration, settlements, concentration of administrative business, areas of forest uses, requirements for protection. Planning the ranger station; location with reference to administration, protection, forest users. Arrangement and location of station improvements.

Planning improvements for communication. Telephone systems, stations, emergency stations, test sets. Location of lines, line construction, clearing, pole lines, tree lines, wire, insulation, wiring and wire stringing, instrument, test sets, connections, grounding.

Planning district improvements for transportation. Relation to sources of supply, administrative centers, accessibility to forest users. Transportation improvements, for administration, protection, forest uses. Roads and trails. Standard roads, secondary roads, standard trails, branch trails, emergency trails, trails for patrol and lookouts.


Development of administrative sites; laying out of building sites, and grounds; drainage, sanitation, water supply, arrangement and location of building, shrubbery, garden, meadows, and pastures. Land clearing; objects, methods, slash- ing, slash burning, clearing, stumping, blasting whole trees. Development of forage facilities; meadows and pastures, winter forage, winter range, winter pasture, development and improvement of natural meadows, feeding stations, hay sheds, feeding racks, water fertilities.
Minor improvements for fire protection; lookout stations, trails and communications, patrol trails and communications, fire lines, other improvements. Tool caches, purpose, location, design and construction.

Water supply; domestic, irrigation, stock, waterholes, tanks, reservoirs, ditches, flumes, pipe lines, pressure, water power. Water pressure and water power for forest fire fighting.

Signs, notices, and warnings; for protection, administration, forest users; guide signs, location, design, construction; notices and warnings, phraseology, location, designs, construction; principles and use of fire warnings.

2 credit hours.

F 48a. Forest Engineering. (Seniors, second semester) Professor Bonner

Forest Engineering for administrative purposes. Hydrostatics; hydraulics, steam gauging; relation of run off to (a) drainage area; (b) rainfall; field studies of effects of timbered and non-timbered drainage areas on stream flow; natural and artificial reservoirs. One hour lecture and average of three hours field trips and original investigation per week. References, Merriman’s “Treatise on Hydraulics” State Engineers’ Biennial Report on the Flow of Streams in Montana.

Water Power Engineering; design of construction of timber, rock filled crib, masonry and concrete dams; power plants, turbines; Pelton wheels; governors, efficiency tests of water motors; regulations and requirements governing power plants on National Forests; inspection of hydro-electric plants and reports on same. Lectures, field trips, inspection trips and drafting room work, during last half of term. Students will be required to make surveys, reports, and complete applications for preliminary and final Forest Service water power permit for a site for a hydro-electric plant or reservoir, with detail design of dam, conduits, etc., on a neighboring National Forest.

2 credit hours.

F 48b. Improvement Construction. (Seniors, second semester) Professor Bonner

A continuation of the work of the preceding semester. Two lectures per week portion of term; field work at University lookout station on Mount Sentinel in co-operation with Lo Lo National Forest, Missoula National Forest, and Bitterroot National Forest. Lectures and practice in field telephone construc-
tion, by district telephone engineer, United States Forest Service.

2 credit hours.

**FE 77. Applied Mechanics.** (Juniors, first semester) Professor Bonner

A course of lectures and drafting room exercises covering the fundamental principles of equilibrium; composition and resolution of forces; the equilibrium polygon; graphical determination of stresses in roof trusses and frame structures; bending moments and shears in beams; moment of inertia, etc., drafting room work, equivalent of two credit hours per week.

**FE 78. Graphic Statics.** (Juniors, second semester) Professor Bonner

The purpose of this course is to teach the fundamental principles underlying the design of bridge trusses as used in forest improvement; dead load; concentrated live load systems; cantilever bridges, etc.; action resulting from wind and snow loads; lateral systems and portal bracing. Drafting room work and discussions, equivalent to two credit hours.

**F 67. Motive Powers.** (Seniors, first semester)

A study of internally fired and externally fired boilers; engines, condensing, non-condensing, reciprocating and rotary; a study of valve action; electric motors and dynamos; indicator diagrams; power transmission, belts, pulleys and gears. Three hours lectures and recitations per week.

**F 68. Motive Powers.** (Seniors, second semester)

A study of transportation; traction engines and caterpil- lers; frictional and gravity resistance; curve resistance; pole roads; wooden railroads; sled traction engines; steel roads; logging cars and locomotives. Three hours lectures and recitations per week.

**Electives, Forest Engineering**

**Descriptive Geometry.** (Sophomores, first semester) Professor Bonner

A two hour course for one semester.

A drawing course consisting of instruction and problems relating to points, straight lines, and planes; their projections and intersections; intersections and developments; it is intended to develop in the student a clear concept of magnitudes in space. Six hours practice in the drawing room per week.
Shades, Shadows, and Perspective.  
Professor Bonner

A two hour course for one semester.
A continuation of the foregoing course; a study of shades and shadows with relation to architectural features; practice in isometric drawing and orthographic projections and the making of perspectives from orthographic projections. Six hours practice in the drawing room per week.

(SUGGESTIONS FOR ELECTIVES FOR JUNIORS AND SENIORS.)

Hydraulics. (A two hour course for one semester)

The fundamentals of hydro-mechanics; flow of water through pipes and orifices; hydraulic pressure; flow of water in open channels; flow over weirs; flow in sewers and other conduits; testing and rating meters; pumps and pumping. Two one hour lectures per week, the student being required to work a number of practical problems dealing with the water at rest and in motion. Text book: "Merriman’s Treatise on Hydraulics."

Mechanics of Materials. (A two hour course, one semester.)

A mathematical course dealing with the resistance and elasticity of materials of engineering construction; the theory of simple and cantilever beams; shearing and flexure; a study of the manufacture and properties of timber, iron, steel, etc, with special attention to determination of safe working stresses. Two one hour class periods per week, the student being required to work a number of problems and to design parts of engineering structures. Text: Merriman’s "Strength of Materials."

Water Supply and Irrigation Engineering.

A study of the sources of water supply; elements affecting quantity, and quality; rainfall and evaporation; ground water and runoff; estimates for water supply; estimates for power; water purification and conservation; diversion, conveyance and application of water for irrigation; storage; design of dams for reservoirs. This course is designed to train men for a branch of forestry work, in which there is a great future. The supply of water has heretofore been so abundant on land either in or adjacent to the forest that little attention has been paid to this line, but the recent settling up of all the land classified as agricultural within the National Forests will require the conservation of the water supply and the impounding of same in storage reservoirs for use during the dry months; this work
will probably be taken up by the Forest Service in the near future, and men trained in this line will be in demand.

A two hour course for one semester, consisting of two lecture periods and two field periods, during which the student will make studies of the flow of streams under varying conditions; examine irrigation work; measure the flow of large streams, etc. References: Newell's "Irrigation"; Wilson's "Treatise on Irrigation," and Merriman's "Hydraulics"; Schuyler's "Reservoirs for Irrigation and Water Power."

**Thermodynamics.** (Two hour course, one semester)

The study of steam internal combustion engines; the temperature entrophy method is used in explaining heat transfers, and, in general, graphic methods are used in preference to analytical ones where they can be made to serve the purpose just as well; instruction in indicator practice and the interpretation and working up of indicator diagrams from steam and gas engines; the proney brake test for determining horsepower and friction loss in engines, etc. A course consisting of two one-hour lectures per week for portion of term, and tests in steam laboratory during balance.

**Contracts and Specifications.** (2 hour course, one semester)

Lectures and recitations upon engineering specifications and the elements of the laws of contracts, and dealing with relations of engineer and contractor. Considerable time to be devoted to exercises in writing specifications on engineering projects. These specifications to be read to the class and the students are required to offer criticisms and suggestions on each set. Two class periods per week. Reference, Johnson's "Engineering Contracts and Specifications."

**Concrete Construction.** (2 hour course, one semester)

Theories underlying the design and construction of reinforced beams, columns, slabs and arches; mixing and placing plain and re-inforced concrete; design of retaining walls; piers, abutments, shallow and deep foundations; placing concrete under water; girder and slab bridges; concrete arch bridges. A two hour course, consisting of lectures and design work in drafting room.

**Highway Materials, Laboratory.** (2 hour course, one semester)

The study and testing of various materials used in road and pavement construction; cement testing; timber testing;
strength of concrete beams and slabs; rattler test of paving brick, etc. The purpose of the course is to allow the student by actual experience to become familiar with the physical properties, relative merits and methods of testing the various materials, and to supplement the theory as taught in “Mechanics of Materials.” Student will be required, also to make models of various forms of road construction. Two three-hour periods in the testing laboratory per week.

**Telephone Engineering.** (A two hour course for one semester.)

History and development of telephone types; design of parts; sub-station equipment; magneto and common battery switchboards; overhead and underground circuits; intercommunicating systems; tree lines; portable systems; emergency lines. Two lectures per week.

**Electrical Laboratory.** (A two hour course for one semester.)

The construction and operation of both direct and alternating current machines; tests for efficiency, regulation and heating. In this course it is intended to cover the application of electricity to the operation of saw mill machinery. Six hours testing work in laboratory per week.

**Dynamics and Motors.** (A two hour course for one semester.)

A course consisting of recitations and tests in electrical laboratory upon the measurement of current; operation of direct and alternating current dynamos and motors; high tension transmission lines; induction motors; single phase commutator motors; testing, synchronizing, etc. Recitations and laboratory work to equivalent of two credit hours.

**Electrical Laboratory.** (A two hour course for one semester)

Transformers and transmission lines; design. A special course of applied electricity, supplemented by inspection trips to plants, to familiarize the student with the operation of engines, pumps, generators, motors, switchboard appliances and power house construction. Six hours per week spent in laboratory, designing room and on trips of inspection.

**Thesis.** (A two hour course for last semester of senior year.)

The student electing this course is required to prepare a thesis on some branch of Forest engineering. It must be the record of original investigation, or an original design of some engineering structure or project. The student shall file a
written announcement or outline of his proposed thesis not later than January 30th, 1916, and upon the approval thereof by the Dean of the School of Forestry, he shall devote not less than six hours per week to reading, taking field trips, or otherwise collecting data, the entire work to be completed and submitted for approval not later than the 15th day of May, 1916. He shall, during the progress of the work, submit a report on the first Monday in each calendar month, commencing April first, explaining the progress he is making.

Botany and Silviculture.

Professor Kirkwood  

Study of structure of typical seed plants, and functions of various organs. Outlines of classification of the main groups of the vegetable kingdom. Field work.  
First semester, Freshman year.  
3 credit hours.

B12. Botany, General  
Professor Kirkwood  

A continuation of the course (B11) of the preceding semester.  
Second semester, Freshman year.  
3 credit hours.

B13. Botany, General  
Professor Kirkwood  

A study of the structure and functions of typical seed plants with emphasis on the anatomy of woody plants.  
First semester, Freshman year.  
3 credit hours.

Professor Kirkwood  

Classification of the more important plant groups. Field work.  
Second semester, Freshman year.  
3 credit hours.

B15. Plant Histology.  
Professor Kirkwood  

Functions of the various classes of plant tissues and their structure from the physiological standpoint. Training in micro-technique.  
First semester, Sophomore year.  
3 credit hours.
B16. **Plant Physiology.**

Experimental study of plant functions, growth, nutrition, absorption, etc., largely from the quantitative standpoint.

Second semester, Sophomore year.

3 credit hours.

B17. **Histology and Physiology.**

A shorter course in the functions and structure of the different plant organs, condensing the work provided in courses B15 and B16.

First semester, Sophomore year.

3 credit hours.

B18. **Dendrology.**

A shorter course in dendrology dealing especially with the structural features of trees from the standpoint of classification and geographical distribution. Field work.

Second semester, Sophomore year.

3 credit hours.

B21a **Dendrology.**

A study of the classification and properties of various woods and the geographical distribution of the important forest trees of the United States and Canada. Field work.

First semester, Junior year.

3 credit hours.

B21b. **Dendrology.**

A continuation of work of the preceding semester in Course B21a. Field work.

Second semester, Junior year.

3 credit hours.

B25. **Forest Pathology.**

Study of the organisms that cause the destruction or deterioration of forest trees and structural timbers and of the conditions of environment which contribute to these effects. Remedial measures.

First semester, Senior year.

3 credit hours.

B26. **Forest Ecology.**

Study of the effect of factors of soil, topography and climate, upon the distribution and development of forest plants.
The species considered individually in the stand. The inter-
relations of species in mixed stands, etc. Field work.
Second semester, Senior year.
3 credit hours.

**Forest Geography, Elective.**

A general study of Forest distribution and of the various
influential factors; climate, geology, and specific character-
istics.
First semester, Senior year.
3 credit hours.

**Wood Technology, Elective.**

An advanced study of structure and properties of struc-
tural timbers.
First semester, Senior year.
3 credit hours.

**Wood Technology, Elective.**

Continuation of preceding course.
Second semester, Senior year.
3 credit hours.

**Systematic Botany, Review. Elective.**

Study of the classification of the flowering plants, es-
pecially those of the forest and range. Field work.
Second semester, Senior year.
3 credit hours.

**F21. Silviculture.**

Definitions, place in forestry. Factors determining site
quality. Effect of climate, location, and soil, on the develop-
ment of trees and forest. Influence of the forest upon the
site, climate and waterflow. Assessment of site quality. De-
velopment and growth of trees in volume, form and value.
First semester, Junior year.
2 credit hours.

**F22. Silviculture.**

Forest Distribution. Forest types; their influence and
characteristics. Methods of reproducing trees and stands. Fac-
tors influencing reproduction. Afforestation versus refor-
estation. Effect of man upon the forest. Necessity for remedial
measures. Formation and reproduction of the forest. Choice
of species. Seed: characteristics, properties, etc. Natural
seeding. Collection of seeds; storage; testing, etc. Method of direct seeding. Nurseries, nursery practices. Methods of planting. Costs of afforestation and reforestation. Sprouts; method of cutting, time, species, etc. Cuttings; methods of obtaining, time, species, etc. Field work.

Second semester, Junior year.
2 credit hours.

F23. Silviculture. 
Professor Drake

Forms of forests. Systems of silvicultural treatment used in Europe; their application to American conditions. Relation of Grazing, public use, timber sales, and timber utilization to the different silvicultural systems. Protection against damage from man, live stock, birds, rodents, and climatic damage.

First semester, Senior year.
3 credit hours.

Professor Drake


Second semester, Senior year.
3 credit hours.

F—Silvics, Elective. 
Professor Drake

Characteristics of individual species and trees in the stand. Measurement and expression of the silvicultural characteristic of individual species. Effects of characteristics of species upon the stand and of the stand upon the characteristics of the species. Studies of important species of the Northwest. Field work.

First semester, Senior year.
3 credit hours.

F—Silvics. Elective. 
Professor Drake

Forest types. Factors which determine forest types. Influence of individual species on the type and of the type on the individual species. Study of common forest types of the West-
ern United States, and a discussion of their management. Field work.

Second semester, Senior year.
3 credit hours.

Mathematics

F71. Trigonometry.
Plane Trigonometry and Logarithms; prerequisite to other courses in mathematics. Prerequisite; Plane Geometry and one unit of Algebra.
First semester, Freshman year.
3 credit hours.

F72. College Algebra.
Prerequisite; 1½ units entrance Algebra.
Second semester, Freshman year.
3 credit hours.

F73. Analytic Geometry.
Elements of Plane Analytic Geometry, including Geometry of conic sections. Prerequisite: Courses 71, and 72.
First semester, Sophomore year.
3 credit hours.

F74. Advanced Trigonometry.
Dealing with practical problems in plane and spherical trigonometry as applied to engineering and surveying; determining of meridians, latitude, longitude, etc. Prerequisite: Course F 71.
Second semester, Sophomore year.
3 credit hours.

F75. Differential Calculus.
The principles of differential calculus, developed and applied to the functions of one and several variables. Prerequisite: Course 73.
First semester, Junior year.
3 credit hours.

F76. Integral Calculus.
Continuation of Course F75, with applications of principles to practical problems.
Second semester, Sophomore year.
3 credit hours.
FE77. Analytic Mechanics.

The mechanics of engineering statics, and a study of the laws governing bodies at rest and in motion; engineering problems. Prerequisite: Courses 75, and 76.
First semester, Senior year.
3 credit hours.

FE78. Differential Equations.

A study of the types of differential equations, especially those of the first and second order with applications to mechanics. Prerequisite: Courses 75 and 76.
Second semester, Senior year.
3 credit hours.

Geology.

F 51. Geology, Elementary. Professor Rowe

A course arranged primarily for students of the Forest School, and devoted to the study of dynamic and structural geology.
First semester, Freshman year.
3 credit hours.

F 52. Geology, Rocks and Soils. Professor Rowe

The composition of the principal rocks which contribute to the formation of soils in different forest regions of the United States. The general composition of soils, their physical and chemical properties as related to vegetation.
Second semester, Freshman year.
3 credit hours.

Elect. Geology. Professor Rowe

A careful study of the chief physiographic features of the earth, their origin, history, etc.
First and second semesters, Junior year.
3 credit hours.

Elect. Geology, Mineralogy. Professor Rowe

The determination and study of minerals; as to their origin, locality, uses, etc. A study of the elements of crystallography, and the identification by means of physical characters and chemistry tests of common minerals.
First semester, Junior year.
3 credit hours.
Elect. Economic Geology

Lectures and laboratory work and assigned readings. A general study of the non-metallic and metallic economic geology of the United States. Supplemented by field trips.
Second semester, Junior year.
3 credit hours.

Elect. Geology, Petrology.

A careful study of rock as to composition, physical properties, locality, decomposition products, origin and uses. Text, Pierson’s “Rock and Rock Minerals.”
First semester, Senior year.
3 credit hours.

Elect. Geology, Practical Geology.

A study of geologic structures such as folds, faults, veins, dikes, etc. Application to mining problems and vein formations. Laboratory work will include a study of the common rock and many ore minerals.
Second semester, Senior year.
3 credit hours.

Biology.

B 27. Elementary Biology.

A study of structure and the outlines of classification of animal life.
First semester, Sophomore year.
3 credit hours.

B 28. Entomology. (Biology 28)

A study of the insects infesting the forest, identification, treatment of infested areas, etc.
Second semester, Sophomore year.
3 credit hours.

Elect. Zoology. Vertebrates. (Biology 29)

A study of the fauna of the forests, with particular attention to fish, game and predatory animals.
First and second semesters, Junior year.
3 credit hours.
English

11. Freshman English.

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

First semester, Freshman year.
3 credit hours.

12. Freshman English.

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

Second semester, Freshman year.
3 credit hours.

Sophomore English or German to be arranged (See University Register).

Physics.

P 10. Physics, General. Professor Thompson

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 Ia.

First semester, Sophomore year.
3 credit hours.

P 11. Physics, General. Professor Thompson

Electricity, Sound, and Light. This course is a continuation of P10, and with it constitutes a general survey of the subject. It is required of all students in Engineering. Prerequisite: Physics 10.

Second semester, Sophomore year.
3 credit hours.


This course is planned for non-technical students and will discuss in a descriptive, rather than a rigorously mathematical way, among others, such subjects as gasoline and oil engines, their operation and troubles, their ignition systems; dynamos and motors, their types, characteristics and troubles; telephone systems, their mechanisms, operations and troubles, etc. In
addition some of the more recent application of physics to industrial problems will be considered.

First and second semesters, Junior year.

3 credit hours.

Other courses in advanced Physics of equal credit value may with the approval of the Faculty of the Forest School and the Department of Physics, be substituted for the above elective.

PLAN AND SCOPE OF THE RANGER SCHOOL

The first session of the Ranger School in the University was held in the late winter and early spring of 1910. So thoroughly convinced was the Forest Service at that time of the advantages offered by this school that it undertook to defray the expenses and pay for the time of the Rangers who were assigned to the school. It is a tribute to the ambitions of the men of that first class and to the interest which they took in their work that when it was found that this system could not be maintained by the Government, more than half of the class elected to continue on at the school defraying their own expenses and losing their salaries during that time.

Since that time, many men have attended the various sessions of the Ranger School and all of them are ready to testify to the excellence of the training which they received and to the material help which it has been to them in their work. As a direct result of their training for better work, a large majority of the graduates from the Ranger School have advanced into positions of higher rank and increased responsibilities, and several have been encouraged to enter into business for themselves as logging contractors and lumbermen.

Advantage has been taken of every succeeding year to improve and widen the scope of the school, until this year there are offered nine courses of regular study and nine elective courses besides which arrangements are made so that students may elect other work in the regular departments of the Forest School where Freshmen, Sophomore and Junior classes are at present in attendance.

With increasing numbers of students, it has also been found necessary to divide the work into two grades where special attention may be given and special opportunities offered to advanced students and where men who are securing more elementary train-
ing will not retard the progress of students who come to the school for advanced training.

It has also been found possible to greatly extend the courses so that where from eight to twelve weeks of school were offered in past years, we are now able to offer fourteen weeks of thorough training. For the benefit of the men who are not able to remain so long in school or who must return to their work before the end of the course, all of the courses of study are divided into three phases, so that students may completely finish up one part of the work at the end of six weeks, another part at the end of ten weeks, or finally complete the entire course in any study at the end of fourteen weeks. This will enable the student to leave the school in six weeks, ten weeks, or fourteen weeks, with his work well rounded out in at least one phase of each subject.

As a further innovation, the school is now able to offer unequalled opportunities for specialization. This is largely because of the new Forest School which opened in the University last September. The work of this school is divided into the two departments of Forestry and Forest Engineering and three classes are already enrolled in Freshmen, Sophomore and Junior years. The regular work of the two departments of the Forest School will be carried on currently with that of the Ranger School. Thus the man who desires to specialize in one branch of work may select a subject in the regular course of the Ranger School and more advanced work in that subject from the elective courses offered for the Ranger School and he may supplement these with the courses of study being given along the same lines of work in the regular classes of the two departments of the Forest School.

Exceptional opportunities will be given for specialization in surveying and mapping and methods of Government land survey, scaling and cruising, forest appraisals, lumbering and logging engineering.

Government officers are in attendance this year in the school from the Indian service, the Forest service, and the Bureau of Public Lands Surveys, and from the States of Arizona, California, Oregon, Washington, Idaho, Utah, Colorado and Montana.
The Ranger School and the Forest Service

It will be evident, particularly to the Forest Ranger, that what a Ranger School should be depends upon what a Forest Ranger should be and that to properly carry on the work of a Ranger School, it is necessary that the faculty of the school should know first of all what a Forest Ranger should be, what his duties are, and what training he needs to enable him to most efficiently perform his work.

The Forest Ranger can be spared from his work only a little time for further education and it is necessary that a school for Rangers should divest itself of superfluities and concentrate training in the principles and practices of Forest Ranger work.

The curriculum of the school has been arranged only after extensive consultation with Forester Graves and other officials of the Forester’s office, several of the District Foresters, and, particularly, with the District Officers and leading Supervisors and Forest Rangers of District One. Criticisms of a preliminary plan for the school were freely sought and changes and modifications were made to meet the ideas of progressive Forest Service officials.

Every subject in the schedule of courses has been carefully chosen for its importance to the National Forest Ranger and every endeavor is made to make the work as practical as possible and to apply every case of theory and principle to the actual practice of the Ranger.

The faculty of the Ranger School will be made up of three Forest Supervisors (or former Supervisors who are of the regular faculty of the Forest School); a Civil Engineer of high technical training, more than ordinary practical ability and an intimate acquaintance with Forest Service work; a Botanist and Silviculturist of thorough training and extensive experience with western forest problems, and a foremost specialist in range stock management and grazing investigations and administrations. In addition to these, the regular faculty of the University are freely called upon for training in the studies of their department.

In addition to the regular faculty of the Ranger School and of the other departments of the University, the courses of instruction are strongly supplemented by lectures given on the practical phases of the work and the direction of training which should be pursued by prominent lumbermen, timber owners, the District Foresters and Assistant District Foresters, and the engineers,
specialists and several of the Forest Supervisors of the United States Forest Service and by State officials.

It is the definite aim of the School for Forest Rangers to keep closely in touch with the administrative offices of the National Forests and with National Forest problems and in the training of its graduates to respond as closely and fully as possible to the requirements for properly trained Rangers in the Forest Service.

Opportunities for Specialization

In addition to the work of training Rangers for the particular needs of the Forest Service, it is the aim of the Forest School in the University to offer during the period of the School for Forest Rangers especial opportunities for specialization in any of the branches of work taught in the Forest School.

Exceptional opportunities are offered for specialization and short course training in Surveying and Mapping and methods of Government land surveys, Scaling and Cruising, Forest Appraisals, Lumbering and Logging Engineering.

During the preceding six sessions of the short course for Forest Rangers in the University, many requests have been received for this kind of training from men who did not so much want to prepare themselves for the work of a Forest Ranger as to improve their practical training and prepare themselves for better work in the lumbering industry or in their own work as logging contractors; and from men who desired to prepare themselves as candidates for Civil Service examinations in other departments of Government work.

For such students, much care has been taken to provide during this session of the Ranger School for thorough courses of special training along the lines indicated. The special student will find some of the special training which he desires in the regular and elective courses of the Ranger School, some in the regular classes of the Forestry and Forest Engineering departments of the Forest School and some in the other departments of the University. Personal attention will be given by all the members of the faculty to the needs of such students and special courses of study will be arranged to meet individual needs and requirements.

The following schedules for different lines of specialization are offered merely as suggestions and will be modified as found necessary to adapt them to the needs of special students:
Surveying and Government Engineering Work—surveying and mapping (4 hours), advanced topographical mapping and topographical surveying (3 hours), Sophomore surveying and mapping (3 hours), railroad surveying and mapping (3 hours), geometry (3 hours), trigonometry and use of logarithms (3 hours). (Three hours field work equal one credit hour).

Scaling and cruising—lumbering (3 hours), scaling and cruising (3 hours), forest appraisals (3 hours), Sophomore lumbering (3 hours), Freshmen forest mensuration (3 hours), mathematics (3 hours).

Lumbering and Logging Engineering—lumbering (2 hours), scaling and cruising (3 hours), forest improvements (3 hours), logging engineering (3 hours), Junior logging (2 hours), Senior logging engineering (2 hours), mathematics (3 hours).

Requirements for Admission.

The entrance requirements to the School for Forest Rangers are intended to rigidly exclude all except Forest Rangers, Forest Guards, and other men who can furnish certificates of physical ability, good character, and either a high school training or considerable experience in woods work with a common school education.

Forest Rangers are admitted without any inquiry into further qualifications.

Forest Guards are admitted upon a statement from a Forest Supervisor, or other official of equal rank in the Forest Service, that the applicant is suitable for public service work and has ability to carry the work of the Ranger School.

Other applicants must present references from reputable sources as to their physical ability, and such good character as would make them suitable for public service work and must have either a high school training or considerable experience in woods work together with a common school education.

Scholarship and Conduct

The school will require 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 in the Ranger School who shows persistent unwillingness or inability to comply with reasonable standards of scholarship.

While no rules or regulations are prescribed to regulate the
conduct of students, they are expected to conform to the usual standards of society and law-abiding citizenship and to live up to the same standard of good conduct and integrity that is required of Forest Officers in the Forest.

Certificate of Graduation

Upon the successful completion of twenty credit hours of work in the regularly prescribed courses of the Ranger School, including such elective courses as are approved by the faculty of the school, the University confers a certificate of graduation.

For the successful completion of twenty-five credit hours of work in the regularly prescribed courses of the Ranger School and including at least two of the advanced elective courses offered in the Ranger School, a special honor diploma is conferred.

Upon the successful completion of twenty hours of work of specialization in surveying, scaling and cruising, forest appraisals, or lumbering and logging engineering, a special diploma is given certifying to the student’s proficiency in his special subject.

Expenses

The expenses of the course are very small. No tuition is charged. Laboratory fees of from $4 to $6 are required to cover general expenses, breakage, cost of materials used, stationery and supplies furnished the student, and the like. A careful account of the expenditures from this fee is kept and the balance on hand at the end of the school term is returned to the student. Ordinarily the expenses of the Forest Ranger for room and board and washing range from $20.00 to $25.00 per month.

Schedule of Courses for Forest Rangers

I. Surveying and Mapping.  
Four Credit Hours

Covers the theory and practice of compass and chain surveying, including practice in plating maps from data taken in the field, together with necessary computation for calculating areas, etc. Transit work. Five hours in field and two and one-half hours in drawing room.

II. Scaling and Cruising.  
Three Credit Hours

Covers the origin and theory of scale rules, defects in logs affecting quantity and quality of lumber, methods of making deductions for defects, practice in log scaling. Defects of trees
affecting log scale, measurements of standing timber for board measure contents, practice in all methods of cruising. Two hours in class room and three hours in field and mills.

III. Fire Protection

Three Credit Hours

An analysis of fire causes, fire hazards, and fire factors. Organization for fire prevention, fire detection, and fire control. Complete detailed analysis of principles and methods of fire control.

IV. Forest Improvements.

Three Credit Hours

Planning for the improvement of the Ranger District, organization of improvement work. Plans, designs, cost estimates and methods of construction, buildings, telephone lines, trails and roads, bridges, fences, cabins, frame buildings, land clearing, forage facilities, water supplies, water power, signs, notices and warnings. Two hours in class room and three hours in field.

V. Forest Administration

Two Credit Hours

This course is designed to give the Forest Ranger a knowledge of the importance of the National Forest to the welfare of the Nation and a fine conception of the Ranger as a public service official and to train him thoroughly in the organization of the business of the Ranger District. Special attention is given to efficiency of management and planning for reduction of time, labor and money wastes and losses. Two hours in class room and field demonstrations.

VI. Lumbering.

Two Credit Hours

A study of the useful qualities and properties of wood and the methods for their utilization in the lumbering industry with particular attention to methods of logging and cost factors. This course ends with an elementary consideration of logging engineering, the construction of improvements for logging, and the use of power equipment. One hour in class room and three hours in the field and nearby logging and manufacturing operations.

VII. Botany and Silviculture.

Three Credit Hours

A course of study dealing with the botanical classification of trees, the phenomena of tree growth, and forest distribution. The relation of forests to factors of soil and climate and influences on the growth, form, and distribution of trees. A careful consideration of the silvicultural systems which may be practiced in the Ranger District and which are considered in the preparation of
marking rules. Studies in forest planting. Two hours in the class room and three hours in the laboratory, forest and forest nursery.

VIII. Grazing. Three Credit Hours

The work in this course divides into two periods and is further supplemented by third and fourth periods of study which are offered as an elective course at the option of the student. The first period of the work required in the regular course deals with grazing botany and is a course in botanical taxonomy with particular reference to the grasses and their field identification, two lectures and two laboratory periods per week for the first five-week term, one lecture and one laboratory period per week for the remaining nine weeks. The second period of the work required in the regular course deals with range management and the theory and practice of handling livestock upon the National Forest ranges; to include the life cycle of the range plants, grazing surveys, and the practical application of the recent development in handling stock upon the National Forests. Eighteen lectures are given in this second period. The Ranger particularly interested in Grazing should supplement this course by the elective courses in breeds and breeding and diseases of livestock. These courses are specially arranged to be largely completed in the first periods of the Ranger School so that Rangers from grazing Forests may make early return to the Forests, if necessary.

IX. Seminar of General Forestry. One Credit Hour

This is a get-together meeting or Ranger Meeting to be held once each week for the discussion of problems of Ranger District administration. The meetings will be conducted similarly to Ranger Meetings on the Forests with the advantage of bringing together men who have worked under widely varying conditions and who have encountered and solved greatly different problems. This work is required of all Forest Officers who attend the Ranger School. Other students of the Ranger School may elect the work if they desire.

Schedule of Elective Courses for Forest Rangers

The elective courses offered are designed to meet the needs of men who already have considerable training in the regular courses or have reached such proficiency in the regular work that they feel the need for higher and more advanced training. The
elective courses offered also present an opportunity for more thorough elementary training for Forest Officers who realize a deficiency in such subjects of common education as English, Mathematics or Elementary Sciences.

Through the elective courses, opportunity is also given to students to specialize strongly in certain lines of work. Ordinarily, students should not carry more than twenty-two hours of work, although men of exceptional ability may carry as high as twenty-five hours. Usually elective subjects will be chosen to the exclusion of less desirable subjects offered in the regular schedule of courses. If a sufficient number of students desire an elective course of study which is not included in the following schedule, a course will, whenever possible, be arranged to meet their needs. In this way, all the other departments of the University are made available to the students in the Ranger School.

I. English. Three Credit Hours

Drill in spelling, punctuation, grammar and simple sentence structure. Elementary exposition with oral themes, weekly written themes and assigned readings. Individual conferences at frequent intervals.

II. Mathematics. Three Credit Hours

An elementary course which may be taken without previous training. Instruction in the mathematical operation of simple surveying, mensuration, etc.

III. Mathematics. Three Credit Hours

A more advanced course. Trigonometry in relation to surveying and other requirements of a Forester's work.

IV. Advanced Topographical Mapping and Topographical Surveys Three Credit Hours.

A course to train men for the work of topographic surveying in the Forest Service and other Government surveying projects. The use of instruments, preparation of contour maps, local problems.

V. Logging Engineering. Three Credit Hours

The application of the principles of Civil Engineering and particularly of structural engineering to logging operations. Cost factors, comparative efficiencies of method, factors of loss and waste. Organization and management. Location, design and construction of logging improvements, chutes, flumes, stream im-
provements, logging railroad, and the like. Application of power equipment, studies of motive power used in logging operation.

VI. Geology. Three Credit Hours

The study of dynamic and structural geology. Elementary study of the composition of the principal rocks which contribute to the formation of soils in different forest regions of the western United States. The general composition of soils, their physical and chemical properties as related to vegetation.

VII. Insect Control. Three Credit Hours

A study of the insects infesting the forests, identification, recognition, treatment of infested areas, etc.

VIII. Tree Diseases. Three Credit Hours

An elementary study of Forest Pathology. A discussion of the diseases of trees, their recognition and treatment. Consideration also of organisms effecting the destruction of manufactured lumber and structural timbers, etc. Methods of preservation of wood.

IX. Forest Appraisals. Three Credit Hours


X. Grazing, Breeds and Breeding, Diseases. Two Credit Hours

A study of range stock husbandry. This elective course supplements the regular work offered in grazing in the Ranger School. A descriptive study of the various breeds of livestock adaptable to the ranges of the Northwest. The practical application of Mendel's theory. Two lectures per week for first five weeks. One lecture per week for second five weeks. Diseases of livestock, common, contagious and infectious diseases, internal parasites, derangements due to improper handling and poisons, and their effects. Seven lectures last five weeks.
Xl. Physics. Three Credit Hours

Beginning physics. Elementary principles of electricity and steam engines. Application to telephones, telegraphy, motive powers.
School of Pharmacy
SCHOOL OF PHARMACY

FACULTY

Edwin Boone Craighead, M. A., LL. D., D. C. L.
President of the University.

Charles E. Mollet, Ph. C. (University of Kansas)
Director of the School and Professor of Pharmacy.

W. M. Aber, A. B. (Yale)
Professor of Latin and Greek.

Frederick C. Scheuch, M. E., A. C. (Purdue University)
Professor of Modern Languages.

M. J. Elrod, Ph. D. (Illinois Wesleyan University)
Professor of Biology and Physiology.

Joseph Edward Kirkwood, Ph. D. (Columbia University)
Professor of Botany.

George Fullmer Reynolds, Ph. D. (University of Chicago)
Professor of English and Rhetoric.

Richard Henry Jesse, Jr., Ph. D. (Harvard University)
Professor of Chemistry.

Robert Neal Thompson, B. S., (University of Nashville)
Assistant Professor of Physics.

William George Bateman, A. M. (Stanford University)
Professor of Chemistry.

Leslie James Ayer, B. S., J. D. (University of Chicago)
Professor of Law.

A. George Heilman, Ph. B. (Franklin-Marshall) M. D. (University of Pennsylvania)
Instructor in Bacteriology and Physiology.

Carl Holliday, B. S., M. A. (University of Tennessee)
Professor of English.

George R. Coffman, Ph. D. (University of Chicago)
Professor of English.

Henry Haxo, Ph. D. (University of Chicago)
Assistant Professor of Romanic Languages.

A. W. L. Bray, B. S., A. B. (Cambridge University)
Instructor in Biology.

Charles P. Valentine, Ph. C. (Montana State College of Agriculture and Mechanical Arts)
Instructor in Pharmacy.

James Denton Dunlop,
Registrar.
SCHOOL OF PHARMACY

ORGANIZATION

The School of Pharmacy was established by the State Board of Education September, 1907, as a department of the Montana State College of Agriculture and Mechanic Arts at Bozeman; from where it was transferred to the University of Montana at Missoula, July 17, 1913.

The work of this School includes instruction in the Departments of Pharmacy, Chemistry, Biology, Physics, English, Modern Languages, Latin and Law. It is the only Pharmacy School in the state.

PURPOSE

To afford opportunities for students within the state to obtain a thorough technical education which will equip them for a life of efficient service in the profession of pharmacy. This will result beneficially for the people of the state, and to the profession of medicine, in which pharmacy occupies a necessary, separate and distinct field, which comprises the collection, preservation, standardization and dispensing of preventative and remedial agents.

OPPORTUNITIES

Splendid opportunities exist in this state for men and women who are well trained in the principles of the science and art of pharmacy and their practical application. The public through the passage of national and state pure-drugs and anti-narcotic drugs acts, is placing particular strain and emphasis upon pharmacy, which is increasing its requirements for practice by requiring a better preliminary and professional education; which fact is most clearly shown by the passing of state laws or by the adoption of rules or recommendations by state pharmacy boards, in the following states: New York, Pennsylvania, Wisconsin, Ohio, Louisiana, Michigan, Oregon, North Dakota, Washington and Montana.

Pharmacy must keep pace with kindred professions in this way in order to meet its responsibilities and maintain for itself the public confidence and respect that it merits.
All of the graduates of this School are occupying responsible positions, and there has been a greater demand for clerks than the school has been able to meet.

STANDING OF THE SCHOOL

The Montana Pharmaceutical Association reviewed the work of the school in 1909 and recommended it to the people of the state and to those wishing a good pharmacy education. The State Pharmacy Board, in April, 1910, officially recognized the school, registering as pharmacists its graduates without examination upon payment of the regular fee and presentation of the evidence of having had all the professional qualifications of age, practical experience, etc. This board consists of three members, appointed by the governor. It meets in April and October of each year and examines applicants who wish to practice pharmacy in this state. At the meeting, October, 1913, the board adopted the following recommendations for the qualification of applicants wishing to take the examinations for registered and assistant pharmacists, in addition to the regular requirements of age, experience, etc.; that applicants in 1914 furnish evidence of having completed at least two years of high school work or its equivalent; in 1915, three years of high school work or its equivalent; in 1916, four years of high school work or its equivalent, and thereafter a two-year course in a recognized pharmacy school.

The Educational Department of the State of New York, at the meeting held November 20, 1913, formally recognized the school and gave it full registration as meeting all requirements under the regents' revised rules.

ENTRANCE REQUIREMENTS

Students planning to enter pharmacy should include physics in subjects offered for matriculation. Those who do not present one unit of high school physics and register in the three or four year course must elect Physics A and B.

Applicants for the four-year course in pharmacy must be at least sixteen years old and present fifteen units for admission.

Applicants for the three-year course must be at least seventeen years old and present fifteen units for admission.

Applicants for the two-year course must be at least eighteen years old and present the following requirements for admission: 1915, three years of high school work or its educational equiva-
lent, and in 1916, four years of high school work or its educational equivalent.

Drug store experience is not required for entrance nor for graduation, but the past has shown that students who have spent one or two years in a drug store find it much easier to master the work and in certain cases drug store experience may count toward the last year of entrance requirements of the two-year course.

**COURSES AND DEGREES OFFERED**

1. A two-year course, comprising four semesters of eighteen weeks each, which leads to the degree of Graduate in Pharmacy (Ph. G.) and prepares the foundation for the practice of the drug business. This course meets the requirements of the New York Educational Department and the prerequisite educational requirements of state pharmacy boards.

2. A three-year course, comprising six semesters of eighteen weeks each, leading to the degree of Pharmaceutical Chemist. (Ph. C.) Candidates for this degree must elect one year of German, French or Spanish.

3. A four-year course of eight semesters of eighteen weeks each, leading to the degree of Bachelor of Science in Pharmacy, (B. S.) which includes the prescribed work of the three-year course and one year of elective work, which in all must total not less than 122 credits.

The three and four-year courses give greater breadth of training and prepare for the more strictly professional positions.

**OUTLINE OF STUDIES**

**Two Year Course**

**First Year**

**FIRST SEMESTER**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
<th>Lecture and Recitation Hours</th>
<th>Hours in Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Botany (Bot. 11)</td>
<td>3</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>General Chemistry (Chem. 11)</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Pharmacy Latin</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Introductory Pharmacy (Phar. 11)</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Pharmaceutical Arithmetic (Phar. 12)</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Physical Education</td>
<td>½</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Per Week: 15 ½ hours per week; 160 hours per semester.

Total hours, per semester, 400.
## SECOND SEMESTER

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
<th>Lecture Hours</th>
<th>Recitation Hours</th>
<th>Laboratory Hours</th>
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</thead>
<tbody>
<tr>
<td>General Botany (Bot. 12)</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>General Chemistry (Chem. 12)</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Physiology (Biol. 23)</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Manufacturing Pharmacy (Phar. 13)</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Pharmacognosy (Phar. 14)</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Physical Education</td>
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</tr>
</tbody>
</table>

Per Week ........................................... 18 1/2
Per Semester ........................................ 192 288

Total hours, per semester, 480.
Total hours, per year, 880.

## SECOND YEAR

### First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
<th>Lecture Hours</th>
<th>Recitation Hours</th>
<th>Laboratory Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Histology and Microscopical Technique (Bot. 12)</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td></td>
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<tr>
<td>Qualitative Analysis (Chem. 13)</td>
<td>3</td>
<td>1</td>
<td>6</td>
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<tr>
<td>Organic Chemistry (Chem. 17)</td>
<td>3</td>
<td>2</td>
<td>3</td>
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<tr>
<td>Bacteriology (Biol. 19)</td>
<td>2</td>
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<tr>
<td>Pharmacopeial Salts (Phar. 15)</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Prescription Reading and Dispensing (Phar. 17)</td>
<td>3</td>
<td>2</td>
<td>3</td>
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<tr>
<td>Pharmaceutical Jurisprudence</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Physical Education</td>
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</table>

Per Week ........................................... 18 1/2
Per Semester ........................................ 192 288

Total hours, per semester........................................ 480

### SECOND SEMESTER

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
<th>Lecture Hours</th>
<th>Recitation Hours</th>
<th>Laboratory Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative Analysis (Chem. 13)</td>
<td>3</td>
<td>1</td>
<td>6</td>
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<tr>
<td>Physiological Chemistry (Chem. 19)</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td></td>
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<tr>
<td>Pharmacopeial Salts (Phar. 16)</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Powdered Vegetable Drugs (Phar. 18)</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Materia Medica, Therapeutics and Toxicology (Phar. 19)</td>
<td>4</td>
<td>4</td>
<td>0</td>
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<tr>
<td>Drug Analysis (Phar. 20)</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td></td>
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<tr>
<td>Pharmaceutical Jurisprudence</td>
<td>1</td>
<td>1</td>
<td>0</td>
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<tr>
<td>Physical Education</td>
<td>1/2</td>
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</tbody>
</table>

Per Week ........................................... 18 1/2
Per Semester ........................................ 177 288

Total hours, per semester........................................ 465
Total hours, per year ........................................ 945

Totals for the two years, Credits, 71. Lecture, Recitation, and Laboratory Hours, 1825.

Weeks of registration and examination not included in these calculations.
THREE YEAR COURSE

First Year

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester— Credit Hours</th>
<th>Second Semester— Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English (Eng. 11)</td>
<td>3</td>
<td>English (Eng. 12)</td>
</tr>
<tr>
<td>General Botany (Bot. 11)</td>
<td>3</td>
<td>General Botany (Bot. 12)</td>
</tr>
<tr>
<td>General Chemistry (Chem. 11)</td>
<td>4</td>
<td>General Chemistry (Chem. 12)</td>
</tr>
<tr>
<td>Pharmacy Latin</td>
<td>2</td>
<td>Pharmacognosy (Phar. 14)</td>
</tr>
<tr>
<td>Pharmaceutical Arithmetic (Phar. 2)</td>
<td>2</td>
<td>Elective</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td>Physical Education</td>
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<tr>
<td>Physical Education</td>
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17½

Second Year

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester— Credit Hours</th>
<th>Second Semester— Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Histology and Microscopical Technique (Bot. 13)</td>
<td>3</td>
<td>Quantitative Analysis</td>
</tr>
<tr>
<td>Qualitative Analysis (Chem. 12)</td>
<td>3</td>
<td>Manufacturing Pharmacy</td>
</tr>
<tr>
<td>Introductory Pharmacy (Phar. 11)</td>
<td>4</td>
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<tr>
<td>Elective</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Physical Education</td>
<td>½</td>
<td>Physiology (Biol. 23)</td>
</tr>
</tbody>
</table>

17½

Third Year

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester— Credit Hours</th>
<th>Second Semester— Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic Chemistry (Chem. 14)</td>
<td>3</td>
<td>Physiological Chemistry</td>
</tr>
<tr>
<td>Bacteriology (Biol. 19)</td>
<td>5</td>
<td>Pharmacopoeial Salts</td>
</tr>
<tr>
<td>Pharmacopoeial Salts (Phar. 15)</td>
<td>3</td>
<td>Powdered Vegetable Drugs</td>
</tr>
<tr>
<td>Prescription Reading and Dispensing (Phar. 17)</td>
<td>3</td>
<td>Materia Medica, Therapeutics and Toxicology (Phar. 19)</td>
</tr>
<tr>
<td>Pharmaceutical Jurisprudence</td>
<td>1</td>
<td>Drug Analysis (Phar. 20)</td>
</tr>
<tr>
<td>Commercial Pharmacy (Phar. 22)</td>
<td>2</td>
<td>Pharmaceutical Jurisprudence</td>
</tr>
</tbody>
</table>

18

PHARMACY

The Pharmacy Department is located on the first floor in Science hall. The rooms are well lighted and are equipped with lecture desks, tables, laboratory desks, electric lights, gas, water, distilled water, hydrogen sulphide, hoods, and air and water baths. The building is heated by steam and ventilated by a direct system.
The lecture rooms contain specimens of the official drugs and chemicals for student use, displays of alkaloids, biological products and pharmaceutical preparations; and the lecture desks are supplied with the necessary apparatus for demonstrating all the common processes.

The laboratories are supplied with the following apparatus: Pill, tablet and suppository machines, drug mills, accurate sieves, hydrometers, specific gravity apparatus, centrifuge, blast lamps, tincture presses, nitrometers, counter, dispensing and analytical balances, microscopes and accessories for powdered drug and urinalysis work and a balopticon for use in pharmacognosy and prescription practice.

The stock room is supplied with official and non-official drugs, chemicals, fixed and volatile oils, reagents, and large and small apparatus which are furnished to students upon requisition.

The following pharmacy magazines and journals are found in the department and are for student use: American Journal of Pharmacy, Apotheker Zeitung, New Idea, North Western Druggist, Western Druggist, Modern Pharmacist, Bulletin of Pharmacy, Druggists' Circular, Merek's Report, Meyer Brothers' Druggist, Pharmaceutical Era, Journal of the American Pharmaceutical Association, Journals of the National Association of Retail Druggists, and sets of bound volumes of the majority of these journals dating back a number of years, as well as other literature valuable to pharmacy students.

The department is amply supplied with the latest standard text and reference works.

Donations of a pharmaceutical character are always gratefully received and those who are about to destroy old books, especially pharmacopoeias, dispensatories and formularies, back volumes of pharmacy journals, pictures, papers or articles relating to early Montana pharmacy or pharmacists are reminded that the department can preserve and make use of such material. New, old or unique apparatus, odd or extraordinary samples of drugs, pharmaceutical chemicals and preparations are solicited for display.

DESCRIPTION OF WORK IN PHARMACY

11. Introductory Pharmacy.

This course consists of a study of the authoritative guides; the theory in the use of the common apparatus and processes
used in pharmacy; together with practical laboratory training in the use of this apparatus and these processes. Lectures and recitations, 3; laboratory, 1. I, 4.

12. **Pharmaceutical Arithmetic.**

Two hours per week devoted to the study of the principles of pharmaceutical arithmetic and to practical problems involving weights and measures, relationship of systems, specific gravity and specific volume, reducing and enlarging formulas, percentage solutions, concentration and dilution, alligation and thermometric scales. Recitations. I, 2.

13. **Manufacturing Pharmacy.**

A continuation of Course 11 and must be preceded by it; consisting of a thorough scientific study of the galenical preparations in the United States Pharmacopoeia and National Formulary. These are carefully considered with regard to classification, nomenclature, mode of preparation, preservation and percentage composition. The course includes laboratory training in the manufacture of many of these preparations, especially the typical representatives of each class of galencials, viz.: waters, liquors, decoctions, infusions, syrups, mucilages, honeys, glycerites, elixirs, spirits, tinctures, wines, vinegars, fluidextracts, extracts, oleoresins, resins, collodions, emulsions, mixtures, pills, powders, granular effervescent salts, cerates, ointments, liniments, oleats, plasters and suppositories. Lectures and recitations, 3; laboratories, 2. II, 5.

14. **Pharmacognosy.**

A study of the natural history and important features of crude drugs; the means of identification and selection; constituents and official names and synonyms. The official organic drugs and some of the commonly used non-official ones will be studied in the following order: (a) Plant drugs-roots, rhizomes, tubers, bulbs, corms, herbs, barks, twigs, woods, leaves, flowers, fruits, seeds, gums, resins, balsams, etc.; (b) Animal drugs. The student has access to the typical specimens in the materia medica laboratory. Lectures, recitations, and laboratory exercises. II, 3.

15 and 16. **Pharmacopoeial Salts.**

The official organic and inorganic salts, acids and the official alkaloids, alkaloidal salts and glucosides are studied with especial reference to nomenclature, source, manufacture, phys-
ical and chemical properties. Lectures and recitations. I, 3 and II, 2.

17. Prescription Reading and Dispensing.

A technical study of all phases of the prescription, practical exercises at sight reading and in the art of extemporaneous compounding. I, 4.

18. Powdered Vegetable Drugs.

This is a continuation of Course (14) in Pharmacognosy and follows the Botany courses, 10, 11 and 12, and consists of a study of the most important roots, barks, woods, flowers, seeds, etc.; in powdered form; from which slides and drawings are made. The student will use the various schemes for identifying unknown specimens and will be required to verify his results by the aid of the compound microscope. The characters of powdered drugs, their substitutes and adulterants, the causes which modify their characteristics and methods of avoiding deterioration will receive special attention. II, 2.

19. Materia Medica; Therapeutics and Toxicology.

Lectures and recitations from the viewpoint of the pharmacist upon the official and common materials used in medicine. Special attention is also given to methods of detection, antidotes and posology of the commonly used toxic remedies. II, 4.


This is chiefly a practical laboratory course in the analysis and standardization of the official inorganic medicines, chemicals, organic drugs and preparations, according to the methods of the United States Pharmacopoeia. Recitations, 1; laboratory, 2. II, 3. I, 3.


This course includes a study and discussion of the plan, arrangement and development of the modern pharmacy. Such subjects as Business Economics, System and Store Service, Buying and Selling Goods, Advertising and Window Displays, Sidelines and Business Building. The course is arranged to develop the student upon the business side of the profession. Treatise on Commercial Pharmacy, O'Connor. The Modern Pharmacist, Bruder. Reference, Drug Journals. I, 2; II, 2.
22. Stomach and Urine Analysis.

Two credits per week devoted to the study and estimation of the normal and pathological constituents of urine and the analysis of stomach content. Microscopic examinations will be made of urinary deposits. Text, The Urine, Stomach and Poisons, etc., Holland. Reference Examination of Urine, Saxe. II, 2.

The above subjects are listed in proper sequence and those precede are prerequisite for those which follow, according to the schedule of the two-year course.

**LAW**

**Pharmaceutical Jurisprudence.**

One lecture per week covering the subjects of contracts, commercial paper and banking, agency, partnership, property, insurance. Statutory regulations for the practice of pharmacy. I and II, 2 credits.

**LATIN**

**Pharmaceutical Latin.**

Department of Commerce
and Accounting
THE FACULTY

Edwin Boone Craighead, LL. D. (University of Missouri)
D. C. L. (University of the South)
President.

Charles C. Staehling, Ph. B. (University of Chicago)
Assistant Professor of Commerce and Accounting.

Frederick C. Scheuch, M. E., A. C. (Purdue University)
Professor of Modern Languages.

Jesse Perry Rowe, Ph. D. (University of Nebraska)
Professor of Geology.

Joseph Harding Underwood, Ph. D., LL. D. (Columbia University)
Professor of History and Economics.

George Fullmer Reynolds, Ph. D. (University of Chicago)
Professor of English and Rhetoric.

William Webb Kemp, Ph. D. (Columbia University)
Professor of Education.

Thaddeus L. Bolton, Ph. D. (Clark University)
Professor of Psychology.

Eugene F. A. Carey, B. S. (University of California)
Assistant Professor of Mathematics.

Paul Chrisler Phillips, Ph. D. (University of Illinois)
Assistant Professor of History.

W. Walter H. Mustaine, B. S. (Centre College of Kentucky)
Director of Physical Education.

Alice W. MacLeod, B. S. (Oregon Agricultural College), B. O. (Cumnock School of Oratory)
Instructor in Public Speaking.

N. J. Lennes, Ph. D. (University of Chicago)
Professor of Mathematics.

H. A. Trexler, Ph. D. (Johns Hopkins University)
Assistant Professor of Political Economy.

Carl Holliday, M. A., (University of Tennessee), LITT. D. (Campbell)
Assistant Professor of English.

George R. Coffman, Ph. D. (University of Chicago)
Assistant Professor of English.

Leslie J. Ayer, B. S., J. D. (University of Chicago)
Professor of Law.

Professor of Law.

Professor of Law.

Henry Haxo, Ph. D. (University of Chicago)
Assistant Professor of Romanic Languages.

Arthur W. O'Rourke, B. A. (University of Montana)
Assistant in Commerce and Accounting.
DEPARTMENT OF COMMERCE AND ACCOUNTING

The Department of Commerce and Accounting was established in the University of Montana in response to a great and growing demand for preparation and thorough training for general and specific business careers. The University believes that it ought to serve the community with the greatest possible efficiency and is ready to take the necessary steps to keep in the front ranks of progressive movements.

The work of the department is founded on the principle that through a thorough study of business methods and the underlying principles of industry and economic progress, a student may acquire not only a decidedly practical knowledge, through which he can make himself economically productive, but gain a habit of thought, a mental development that will enable him to think logically and accurately on problems that confront him in his life's career.

ENTRANCE REQUIREMENTS

In general the admission requirements for work in the Department of Commerce and Accounting are the same as for any other department. It is suggested, however, that entering students include in their preparation four years of English and Mathematics and at least two years of Science, History and Modern Language, and have a good foundation of Commercial Arithmetic and Bookkeeping.

In case students offer for admission subjects equivalent to the beginning subjects in the outline of required work for the first and second years, especially in Accounting and Modern Languages, they will continue such work with the course next in order, provided such students are able to do so advantageously. Adjustments and substitutions may be made only with the consent of the head of the department.

FEES AND DEPOSITS

In addition to the annual matriculation and incidental fees required of all students upon registration, students in typewriting are required to pay a laboratory fee of fifty cents for the
year. This fee is intended to cover the expenses of supplies for and repairs on typewriters.

**LIBRARY**

Students in the Department of Commerce and Accounting are fortunate in having at their disposal excellent library facilities for reference work. Standard works covering the general field and the best authoritative productions by specialists on various particular phases of Commerce and Accounting are among the volumes to which students have free access. The magazines of business and the accounting journals represented, offer the best in the field of current literature on general and special commercial subjects.

It is recognized that excellent library facilities are indispensible to the progress of the department and every effort will be made to develop this phase of the equipment, and to offer the student every advantage possible for efficient work.

**VOCATIONAL GUIDANCE**

The Bureau of Vocational Guidance, conducted by the department of Commerce and Accounting, exists for the sole benefit of the students who wish to take advantage of its assistance. The purpose of this organization is to assist students in the study of their personal characteristics, natural abilities, interests and special aptitudes in order to properly determine their particular qualifications and fitness, and to guide them in the selection of the career for which they are best adapted. The bureau also offers assistance in planning courses and in the selection of the subjects offering the most valuable preparation for the chosen vocation.

In addition to this, the Bureau of Vocational Guidance assists in securing for worthy candidates positions for which they are properly fitted. It keeps in touch with the commercial world, its progress and future tendencies and has on file information concerning the available openings and data pertaining to conditions and remunerations, and qualifications necessary to properly fill such positions. The aim of the bureau is to promote efficiency and to render to the University and the community the most practical service possible.

**COURSE OF STUDY**

The course of study as outlined compares favorably with that of other universities of national reputation, and is planned
with the idea of giving the student the most thorough training in principle and theory, and, in addition, the necessary practical work to emphasize and apply these principles effectively.

The course extends through a period of four years and like other departments in the University, requires a minimum of 122 credit hours for graduation.

**PLAN OF ORGANIZATION**

The subjects, as outlined, are designed to prepare for one of several particular fields of work, thus allowing a student considerable range of choice, not only in selecting a career, but in the selection of particular subjects that seem especially applicable to the phase of commercial activity that he has chosen.

It is regarded as absolutely essential that a broad foundation be laid before the work of specialization is begun. For this reason the first two years of the course are mainly required. Suggested courses from the departments of English, Law, French, German or Spanish, Mathematics, Political Science, History, Economics, Geography, Physics, or Chemistry and others, correlated with various commercial subjects, form the basis of this foundational work. During the last two years the special line of work for which the student seems most adapted is carefully pursued. These groups are Accountancy, Public Service, Secretarial Work, General Business or Commercial Teaching. In the last named field certain courses in Psychology and Education are required, upon completion of which the University certificate to teach is granted. The degree of B. S. in Economics is given upon graduation.

**GROUP ARRANGEMENT OF ELECTIVES**

The arrangement of subjects in the groups named above is made on the basis of the special adaptability and bearing of subjects upon particular phases of commercial life. While this is not absolute, and can, when conditions demand, be adjusted to serve the special purpose of the individual student, it is suggested that the electives be chosen wisely and carefully, and with particular emphasis upon the value of the subject in its relation to the career for which it is intended to prepare. These selections should be made with the advice of the head of the department. Subjects may be chosen from any group to make up the total number of credits necessary for graduation.
COURSE PLANS

It is recommended that third-year students make an effort to decide as definitely as possible the career they wish to follow, and then, with the assistance of the adviser, prepare an outline containing the subjects that apply particularly to that phase of work. This outline should be followed carefully; for by so doing, irregularities may be reduced to a minimum and the work pursued to the best advantage.

ACCOUNTANCY

Accountancy as a profession offers many and varied opportunities. Experts are more in demand today than ever before, and this is true particularly of public accounting. The increased number and the rapid growth of large commercial organizations are enlarging the field for the accountant, auditor and business manager and offering inducement for the clerks and bookkeepers to fit themselves for promotion. In the first year of the course in accounting the student receives a thorough preparation in fundamental principles which are applied and made real by the practical work required in addition. Later, accounting principles are applied to various lines of business, special fields and problems. This advanced work is designed to prepare the student for the examination for a certificate as Certified Public Accountant and to enter the professional field.

GENERAL BUSINESS

The courses in commerce are outlined to be of practical value, to those who plan a general business career. A thorough preparation is given in economic principles of production, transportation, manufacturing and distribution of products and the various problems that accompany these processes. Efficiency and elimination of waste are carefully emphasized. The marketing problem, with its salesmanship and advertising phases, the methods of making collections and the application of credit systems are made a very important part of the course. The subjects in this course are selected from the various groups according to their particular adaptability and value.

PUBLIC SERVICE

Every properly trained business man ought to be familiar with the general functions of government and the relations of government to business activities. The department of Commerce
and Accounting endeavors to train people not only to take an interest in politics and government affairs, but to prepare for active service in city, state and federal governmental work. There is a great demand for properly trained men in this growing field and the opportunities offered are excellent.

SECRETARIAL DUTIES

Secretaryship as a profession is being developed very rapidly in this country as a response to a great demand from large corporation managers and executives, for men with the proper training in business organization, methods and business practice. There is a dearth of good private secretaries and the opportunities in this field are practically unlimited. People in these positions come in direct contact with the very heart of the business and in personal touch with the directors and managers. This phase of our work is being particularly emphasized for it is a step in advance into a new field of opportunity, especially for the progressive type of student.

COMMERCIAL TEACHING

There is a great demand for properly trained people as instructors of commercial subjects. The commercial department is a very prominent part of the curriculum of nearly every high school and college, and the demand for teachers of this work far exceeds the supply. It is practically a new field and the opportunities for advancement are extremely encouraging. The University offers excellent facilities for preparation in this work, not only with reference to subject matter, but the professional training available in the Department of Education and Psychology.
## OUTLINE OF COURSES

### REQUIRED WORK

#### FIRST YEAR

<table>
<thead>
<tr>
<th>FIRST SEMESTER</th>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>Economics</td>
<td>26</td>
<td>Economics</td>
<td>10</td>
</tr>
<tr>
<td>Com. and Ind. Geography</td>
<td>26</td>
<td>Com. and Ind. Geography</td>
<td>2</td>
</tr>
<tr>
<td>Accounting</td>
<td>26</td>
<td>Accounting</td>
<td>11</td>
</tr>
<tr>
<td>English</td>
<td>26</td>
<td>English</td>
<td>11</td>
</tr>
<tr>
<td>History</td>
<td>26</td>
<td>History</td>
<td>14</td>
</tr>
<tr>
<td>German, French, Spanish</td>
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<td>German, French, Spanish</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education</td>
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<table>
<thead>
<tr>
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<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
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<td>Economics</td>
<td>11</td>
</tr>
<tr>
<td>Com. and Ind. Geography</td>
<td>27</td>
<td>Com. and Ind. Geography</td>
<td>2</td>
</tr>
<tr>
<td>Accounting</td>
<td>27</td>
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<td>12</td>
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<tr>
<td>English</td>
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</tr>
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</tr>
<tr>
<td>Physical Education</td>
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#### SECOND YEAR

<table>
<thead>
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<th>Course No.</th>
<th>Course Title</th>
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<tbody>
<tr>
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<td>Money and Banking</td>
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<tr>
<td>29</td>
<td>Accounting</td>
<td>13</td>
</tr>
<tr>
<td>30</td>
<td>English</td>
<td>13</td>
</tr>
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<td>31</td>
<td>German, French, Spanish</td>
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<tr>
<td>32</td>
<td>History</td>
<td>20</td>
</tr>
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<td>33</td>
<td>Public Speaking</td>
<td>2</td>
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<tr>
<td>34</td>
<td>Commercial Law</td>
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<tr>
<td>35</td>
<td>Physical Education</td>
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#### THIRD AND FOURTH YEAR GROUP ELECTIVES

<table>
<thead>
<tr>
<th>Dept. and Course No.</th>
<th>Subject</th>
<th>Semesters</th>
<th>Credit</th>
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### ACCOUNTING

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>36</td>
<td>Bank Accounting</td>
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<tr>
<td>37</td>
<td>Cost Accounting</td>
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<tr>
<td>38</td>
<td>Auditing</td>
<td>2</td>
</tr>
<tr>
<td>39</td>
<td>Practical Accounting Systems</td>
<td>2</td>
</tr>
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<td>40</td>
<td>Municipal Accounting</td>
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<td>41</td>
<td>Public Utilities Accounting</td>
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### PUBLIC SERVICE

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<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>42</td>
<td>Social and Economic Problems</td>
<td>2</td>
</tr>
<tr>
<td>43</td>
<td>Diplomatic and Consular Service</td>
<td>3</td>
</tr>
<tr>
<td>44</td>
<td>Comparative Governments</td>
<td>3</td>
</tr>
<tr>
<td>45</td>
<td>Municipal Corporations</td>
<td>1</td>
</tr>
<tr>
<td>46</td>
<td>History of Commerce</td>
<td>1</td>
</tr>
<tr>
<td>47</td>
<td>American Government</td>
<td>1</td>
</tr>
<tr>
<td>48</td>
<td>Public Finance</td>
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</tr>
<tr>
<td>49</td>
<td>State and Local Government</td>
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<td>50</td>
<td>Transportation</td>
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### SECRETARIAL DUTIES

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<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>51</td>
<td>Office Organizations &amp; Man</td>
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<tr>
<td>52</td>
<td>Advertising and Business Cor.</td>
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<tr>
<td>53</td>
<td>Statistics</td>
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<tr>
<td>54</td>
<td>General Psychology</td>
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<td>55</td>
<td>Social Psychology</td>
<td>1</td>
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<td>56</td>
<td>Corporations</td>
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<td>57</td>
<td>Sociology</td>
<td>2</td>
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<tr>
<td>58</td>
<td>American Business Methods</td>
<td>1</td>
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<td>59</td>
<td>Corporation Finance</td>
<td>2</td>
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<tr>
<td>60</td>
<td>Stenography</td>
<td>2</td>
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<tr>
<td>61</td>
<td>Typewriting</td>
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GENERAL BUSINESS.

<table>
<thead>
<tr>
<th>Course</th>
<th>General Business Courses</th>
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<tbody>
<tr>
<td>C. and A.</td>
<td>Investments</td>
</tr>
<tr>
<td></td>
<td>Contracts</td>
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<tr>
<td>Law</td>
<td>Labor Problems</td>
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<tr>
<td>Econ.</td>
<td>Trust Problem</td>
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<tr>
<td>C. and A.</td>
<td>Salesmanship</td>
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<td>Insurance</td>
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<td>Math.</td>
<td>Mathematics of Insurance</td>
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<td>Law</td>
<td>Bailments and Carriers</td>
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<td></td>
<td>Negotiable Instruments</td>
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<tr>
<td>C. and A.</td>
<td>Credits and Collections</td>
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COMMERCIAL TEACHING.

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<th>Course</th>
<th>Commercial Courses</th>
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<tr>
<td>C. and A.</td>
<td>Theory and Methods in Com. Work</td>
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<tr>
<td>Psych.</td>
<td>Psychology</td>
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<tr>
<td>Ed.</td>
<td>History of Education</td>
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<td>Ed.</td>
<td>Principles of Education</td>
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<td>Ed.</td>
<td>Educational Psychology</td>
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<td>Ed.</td>
<td>School Hygiene</td>
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<tr>
<td>Ed.</td>
<td>High School</td>
</tr>
<tr>
<td>Ed.</td>
<td>Observation Work</td>
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DESCRIPTION OF COURSES

ACCOUNTING

11. Elementary Accounting.

This course involves the theory of debits and credits, posting, preparation of trial balances, financial statements, closing the ledger, special books of original entry, the bank account, cash proof, commercial papers, the bill book, opening and closing of double entry books. Practical sets of transactions representing a proprietary business, and later a retail partnership are used to illustrate the principles brought out in this course. Students are required to record these transactions in blank books accompanying the text.

One semester. Time to be arranged. Three credit hours.

12. Wholesale Partnership Accounting.

A knowledge of bookkeeping is presupposed in this course. It covers the methods of procedure in taking in a partner, articles of co-partnership, adjustment of interest between the partners, the dissolution of partnership, use of auxiliary ledgers, special column cash book and journal, suspense account, and controlling accounts. The student is required to record practical transactions in a set of books and handle the business paper involved.

One semester. Time to be arranged. Three credit hours.
13. Corporation Accounting.

This course involves the study of the organization and management of corporations; special accounts and books used in corporation accounting; classification and methods of issuing, transferring and cancelling stock; opening corporation books; classification and interpretation of accounts; significance of various items represented in the statement; dividends; reserve fund; depreciation and surplus; voucher system. In addition to a regular set of business transactions which the student is required to enter in blank books, reference and papers on special topics are assigned.

One semester. Time to be arranged. Three credit hours.


This course presupposes a knowledge of bookkeeping and involves a study of the organization and management of banks, emphasizing the national bank particularly. Methods of accounting forms and books used in various departments of the national bank are carefully considered. Banking customs and various details in the routine of the banking business, bringing out the interdependence and the close relation existing between the departments, are emphasized. A set of transactions representing the actual business of a national bank, involving the duties, forms and records of the various clerks in the organization, is entered in blanks especially prepared for the purpose. These are then properly closed and a financial statement rendered.

One semester. Time to be arranged. Three credit hours.

15. Cost Accounting.

This course takes up that phase of accountancy concerned in the determination and recording of the actual cost of manufacturing article or product. Emphasis is placed upon the elements and principles concerned in the cost of material; labor and factory expense; the classification of accounts under cost system; the cost formula; advantages of the cost system; distribution of indirect expenses, wage systems; cost methods of manufacturing accounts; manufacturing statements; forms. A set of business transactions covering the work of a manufacturing concern for a period of time is used to illustrate the principles set forth, and the special problems are given to emphasize certain important elements.

Both semesters. Time to be arranged. Three credit hours.
16. Auditing.

This course deals with the qualifications, duties and responsibilities of a public auditor and the proper method of procedure in conducting an audit. The various details involved are carefully considered. The methods of detecting errors and the remedial steps toward removing the possibilities of fraud are discussed. The writing of reports and statements of financial condition is emphasized.

Both semesters. Time to be arranged. Three credit hours.

17 and 18. Practical Accounting Systems.

This is a study of the systems used in various business organizations and the principles underlying them. The essential points in the details involved in planning, preparing and installing a system are carefully studied. Lectures and investigations are supplemented by practical problems, which are intended to develop originality and discrimination, and lend an opportunity to apply the principles.

Both semesters. Time to be arranged. Three credit hours.

19 & 20. C. P. A. Course.

This course covers the general field of accounting, placing special attention upon the requirements for C. P. A. examination. Practical accounting problems from various lines of business are taken up and papers on special topics are assigned. Open to students who have had Accounting 11, 12, 13, 15 and 16.

Both semesters. Time to be arranged. Three credit hours.


This course deals with the forms, methods and systems of keeping the records in various departments of municipal organizations. In the course of lectures and class discussions, accounting forms of various cities and public institutions are used as models. Consideration is also given to city budget making.

One semester. Time to be arranged. Three credit hours.

22. Public Utilities Accounting.

This course aims to cover methods of accounting in various public service organizations such as railroads, electric light and power companies. Reports of various organizations are analyzed with reference to sources of income, expense, capital, revenue, statistics, liabilities, securities and the method of accounting
connected with each. Accounting 11, 12 and 13 are required for this course.

One semester. Time to be arranged. Three credit hours.

**COMMERCE**

23. **Office Organization and Management.**

This is a study of the principles underlying the organization and management of office forces and touches upon the following subjects: The physical offices, equipment, heating, lighting and ventilation; office employees, their selection, training and salaries; office appliances, mechanical aids in office work, relation between manager and employees, salary plans, enthusiasm, human touch, welfare work; office records and systems, correspondence filing, order systems, credits, collections, advertising, and sales, purchasing and handling supplies. Sociology and Psychology should precede this course. In addition to lectures, students are required to write papers on assigned topics.

One semester. Time to be arranged. Two credit hours.

24. **Transportation.**

This course takes up a brief survey of the development of transportation as to routes, source of commodities, and facilities. Development of railroad traffic, relation of water to rail transportation, and methods of handling freight. Later a study of tariffs, classification of shipments and special rates, and the basis of determining the rate system. Relation of government to transportation. Interstate Commerce Commission; Freight Rate Commission.

One semester. Time to be arranged. Two credit hours.

25. **Business Organization.**

Financial institutions, savings banks, trust companies, building associations, insurance, etc.; corporations, organization and problems, as capitalization, bonding, reserves, monopoly; stock exchanges, brokerage, speculation; legislation and reform; investments.

First semester; 2 credit hours.

26. **Salesmanship.**

This course presents the theory and principles underlying the problems of salesmanship. Methods of analyzing territory, market and goods; selling argument, methods of presentation, planning canvasses, meeting prospects; objections and organiza-
tion of selling force together with other details are covered. This study is supplemented by practical work on the part of the students.

One semester. Time to be arranged. Two credit hours.

27. Investments.

This is a study of the general laws, nature and methods of investment with reference to various forms of values. The influence of speculation on investment is considered and the various securities, such as railway and other corporation stocks, bonds, mortgages on real estate, public service securities, and municipal bonds are compared and studied from the investment point of view.

Both semesters. Time to be arranged. Two credit hours.

28. Insurance.

In this course the general principles of insurance are first studied. Later the application of these principles is taken up with reference to the various phases of insurance, life, fire, casualty, accident, marine, fidelity, liability, etc., and the conditions connected with them. The nature of the policies of various companies, and the basis of estimating the premiums are considered.

One semester. Time to be arranged. Two credit hours.

29. Diplomatic & Consular Service.

This study is introduced by a brief history of Consuls and Consular Service in the United States and the countries of Europe. The organization of the United States Consular Service, consular appointments, preparation for consular duties both here and at the post, diplomatic functions of officers, consular reports, relation of consular officers to judicial and commercial affairs are carefully treated. In general it touches upon the qualifications, duties and opportunities in consular work.

One semester. Time to be arranged. Three credit hours.


This is a study of the most modern and efficient methods of record now in use in the representative business enterprises of our country. It treats of the following subjects: the credit man’s department, and the various ways of making collections; the corporation secretary and his duties in every phase of corporate routine; the filing department, and the methods of index-
ing, filing, and tracing; the manufacturer’s department, and the
cost methods for the various lines of manufacturing enterprises,
payroll systems, depreciation and shop orders; the purchasing
department, voucher system, the purchasing agent’s order sys­
tem; the sales department, manufacturer’s orders, order filing
systems, mail orders, card systems; the stores department, per­
petual inventories, business enterprises; retail and general
stores, departmentalization of general stores. This work is intro­
duced by a study of the use and efficiency of business papers
and the various legal documents that apply to business affairs.

One semester. Time to be arranged. Two credit hours.

31. Advertising and Business Correspondence.

This course presents the fundamental principles of adver­
tising, its place and relation to the business, methods and medi­
ums of display. Some individual work in advertising problems
is expected in connection with the class discussions. About half
the semester’s work is devoted to the subject of business corre­
spondence, the purpose of which is to drill students in the
proper use of effective expression applied to business affairs.
Special attention is placed upon the various forms of business
correspondence with reference to composition and purpose.

One semester. Time to be arranged. Two hours credit.

32. Credits and Collections.

This is a practical study of the factors involved in the
granting of credit and the methods of obtaining satisfactory
information from various sources. Methods of collections are
carefully considered. Credit organizations are studied and
analyzed and the routine of the credit and collection depart­
ments of certain lines of business are investigated.

One semester. Time to be arranged. Two credit hours.

33. Corporation Finance.

The principal elements under consideration in this course
are: form, legal status and organization of the corporation; how
and where to incorporate; stock and sources of corporate funds;
promoting the new enterprise; consolidations; securities; Wall
Street market; investment of funds; surplus and its manipula­
tion; receiverships; reorganization. Some of the larger corpora­
tions will be studied as typical examples of principles brought
out in the course.

Two semesters. Time to be arranged. Two credit hours.
34. Elementary Stenography.

The purpose of the course is to master the principles of Gregg shorthand. A careful study is made of consonants, vowels, and their combinations, phrasing, word signs, compound words, abbreviations, prefixes, affixes and the development of vocabulary. Special emphasis is placed upon accuracy and legibility. Sufficient work in dictation is given to put into practice all the principles involved in the course.

One semester. Time to be arranged. Three credit hours.

35. Advanced Stenography.

This course takes up a review of advanced phrasing and some of the abbreviation principles as an introduction. Dictation from various lines of business is given for the purpose of developing a large working vocabulary, drill in writing unfamiliar words, accuracy of outline, application of principles and speed. Considerable time is devoted to the reading of shorthand for the purpose of developing accurate and rapid interpretation.

One semester. Time to be arranged. Three hours credit.

36. Court Reporting.

This is an advanced course in stenography and presupposes a thorough knowledge of the principles of shorthand and considerable skill in taking dictation. In this course, advanced phrasing and combinations and vocabulary peculiar to such legal work as jury charges and testimony are emphasized. Considerable attention is paid to the transcript from the point of view of form and accuracy. As far as practicable, members of the class take the testimony given in the Practice Court in the Law School for experience.

One semester. Time to be arranged. Three credit hours.

37. Elementary Typewriting.

The chief object of this course is to master the keyboard thoroughly and to develop uniformity of touch and accuracy. The absolute necessity of careful mental direction in the development of proper co-ordinations and correct habits is emphasized and constructive suggestions are regularly given.

One semester. Time to be arranged. Two credit hours.

38. Advanced Typewriting.

In this course the transcription of shorthand notes, proper use of the mechanical devices on the machine, carbon copies, stencil work, tabulation, legal forms and other miscellaneous
activities connected with stenographic work are emphasized. From time to time suggestions as to the proper care of the machine and the adjustment of the working mechanism are given.

One semester. Time to be arranged. Two credit hours.


This course is intended for those who are preparing for the teaching of commercial subjects. It involves a study of the psychology, methods of presentation and problems peculiar to the subject of shorthand, typewriting and penmanship. The details involved in the organization, course of study and equipment of commercial departments are discussed carefully. In addition to the lectures and class discussions, papers on assigned topics are required. General Psychology and Educational Psychology are prerequisites for this course.

One semester. Time to be arranged. Two credit hours.

CERTIFIED PUBLIC ACCOUNTANCY

Chapter 39 of the Session Laws of 1909 provided for the regulation of the practice of public accounting in Montana. The State University administers this law and issues certificates of competency to any person who:

1. Is a citizen of the United States or who has in good faith and in the manner required by law declared his intention of so becoming;

2. Is of the age of 21 years;

3. Is of good moral character;

4. Is a graduate of an accredited High School or has had an equivalent education;

5. Has had three years' practical experience in accounting acquired in practice on his own account, or in the office of a public accountant, or in a responsible accounting position in the employ of a business corporation, firm or individual;

6. Has successfully passed certain written and oral examinations prescribed by the law, or

7. Is exempt under the section of the law applicable to persons having certificates of other states or countries, or under the temporary provision for the exemption of experienced accountants already practicing in the State; and

8. Has paid in advance the fee of twenty-five dollars, as prescribed by the law.

The above mentioned examinations are held at least once each year in December, or semi-annually in June and December, and at least thirty days' notice of the time and place of holding is given by advertisement in three representative daily newspapers of the state. Candidates for the examinations may obtain circulars of information and application blanks from the University or from any member of the Board of Examiners.
The application blank must be filled out in the candidate's own handwriting and signed and sworn to by the candidate in the presence of someone authorized under the laws of Montana to administer an oath, and, together with a bank draft or money order for twenty-five ($25.00) dollars, payable to "University of Montana," be mailed to the University at Missoula.

If the University approves the application the candidate will receive a card of admission to the examination, and if he succeeds in passing the examination he will in due course receive a certificate.

If the University does not approve the application, the candidate will be duly notified of that fact and the fee will be returned.

In no event will the fee of twenty-five ($25.00) dollars be returned to the applicant after his application has been approved, but any candidate failing to pass the examination is entitled to take any one subsequent examination without payment of a second fee.

To insure consideration, applications should be in the hands of the University at least two weeks before the date set for the examination.

The provisions of the law are carried out by:

(a) A University Committee on Accountancy—consisting of Professors A. N. Whitlock and C. C. Staebling and Registrar J. D. Dunlop.

(b) A Board of Examiners—consisting of three certified public accountants of the State of Montana, appointed by the President of the University. The members of the present board are J. C. Phillips, W. D. Mangam, and Donald Arthur (Secretary), of Butte.

The law provides for the revocation of certificates for unprofessional conduct or other sufficient cause and for the punishment of any person falsely representing himself as being a Certified Public Accountant or as holding such a certificate.

QUALIFICATIONS FOR EXAMINATIONS

The following qualifications should insure the successful passing of the examinations:

1. A good mathematical foundation.
2. A comprehensive knowledge of bookkeeping.
3. A knowledge of the fundamental principles of commercial law and the rules of evidence.
4. A knowledge to business organization and management.
5. Ability to speak and to write the English language clearly and concisely.
6. Familiarity with the theory and practice of analytical accounting.
7. Familiarity with the theory and practice of constructive accounting.
8. A knowledge of the subjects of commercial arithmetic, commercial geography, industrial history, business ethics and the elements of constitutional law.
9. The personal qualifications of integrity, business acumen and logical reasoning.

APPLICATIONS UNDER THE WAIVER CLAUSE

The law (Section 4) exempts from examination the following applicants:

First, those who hold certificates as "Certified Public Accountant" in another state extending like privilege to this state; provided, that in the opinion of the Board of Examiners the requirements for such certificates are equivalent to the requirements in this state.

Second, those holding similar certificates of another country, the requirements for which are equivalent to those in this state; provided, that the applicant is either a citizen or has declared his intention to become such.
Third, persons of at least twenty-five years of age, whose qualifications were equal to those prescribed for applicants for examination, who were known to the Board of Examiners as competent and skilled accountants; provided, they applied for certificates within one hundred and eighty days after the passage of the act.

Applicants under any of these provisions may obtain blanks from the University or the Board of Examiners and must pay the fee of twenty-five dollars as prescribed. These applications will be acted upon in the same manner as those for examination.
School of Music
<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
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<tbody>
<tr>
<td>DE LOSS SMITH</td>
<td>Head of the School and Professor of Voice</td>
</tr>
<tr>
<td>CECIL BURLEIGH</td>
<td>Professor of Violin</td>
</tr>
<tr>
<td>JOSEPHINE SWENSON</td>
<td>Assistant Professor of Piano</td>
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</table>
SCHOOL OF MUSIC

PURPOSE

The fundamental purpose of those in charge has been to make the School of Music complete and thorough in every respect and to advance the pupils rapidly, yet carefully. The student of music is taught how to study, how to memorize, and how to attain a thorough understanding and appreciation of the world of music. The Department has obtained instructors who by their association with affairs musical, both in teaching and in public performance, have secured and are securing high success. The University believes that for those desiring a thorough familiarity and mastery of music, either instrumental or vocal, the department now offers the best advantages to be found in the Northwest.

DEPARTMENT OF VOICE

Fixed adherence to a given list of studies is not required. The needs of the individual student are considered and the studies varied accordingly. Two credits per semester is allowed for each course.

Course I.

Correct breathing as the foundation for all singing; true intonation and pure tone; correct pronunciation and phrasing exercises for the equalization of the registers; scales, major and minor, elementary vocalises by Gilchrist, Concone and Vaceai; easy songs by American, English and German composers for the early development of strictly classic taste.

Course II.

Continuation of work of course I; broadening and developing tone; intervals; scales, diatonic and chromatic; arpeggios; advanced vocalises by Concone, Lutgen, Lamperti, etc., English ballads, Italian, French and German songs.

Course III.

Scales, arpeggios, turns and trills; difficult studies by Marchesi, Abt, Garcia and Concone; arias by old masters; oratorios.
Course IV.

The work of this course is devoted to developing and perfecting the voice in singing oratorio roles, scenes from operas, various songs and arias in preparation for individual recitals and ensemble.

PUBLIC SCHOOL MUSIC

Sight Singing.

The class meets twice each week. In it is offered some preliminary work in harmony, ear training, tone thinking and notation in their particular relation to singing. The "movable Do" is used. This work is required of vocal students. This course is recommended as a preliminary to beginners in voice.

A complete course in musical history, theory and harmony will be given. Two credits per semester.

DEPARTMENT OF PIANO

It has not been deemed advisable to select a set of studies to be used arbitrarily, but rather to select a course to suit the needs of the individual pupil.

Course I.

Theory of technique, simple exercises; little studies by Gurliitt, Czerny and Loeschorn; elementary pieces by Clementi, Mozart, Gurliitt and others.

Course II.

Czerny’s School of Velocity; Studies by Duvernoy, Heller, Loeschorn; Sonatinas of Clementi and Kuhlau; Pieces by Reinecke, Gurliitt, Heller and Schumann.

Course III.

Loeschorn Studies, op. 66.; Czerny School of Velocity; Bach’s Inventions (two voice); Octave Studies by Kullak, Easier Studies of Cramer; easier Sonatas of Haydn, Mozart, Beethoven; Pieces by Lack, Godard, Chaminade and others.

Course IV.

Czerny’s School of Velocity; Clementi’s Gradus ad Parnassum; Cramer Studies; Octave Studies; Kullak; Bach Inventions (three voice); Sonatas by Mozart and Beethoven. Selections from Mendelssohn, Chopin, Schubert, Schumann, Raff, Schwenka, Godard, Chaminade, Leschetizsky, Tschaikowsky and others.

Two credits per semester is allowed for each course.
VIOLIN DEPARTMENT

Course I.

Scales and intervals by J. Dont; Hersey’s Violin Method; Studies by Hofmann and Hermann; Pieces by Wolfahrt, Du­celle, Dancla and others.

Course II.

Scales in major and minor by Dont; Studies by Kayser, Meerts, Alard, Sitt and Hofmann; Pieces by Dancla, De Beriot, Eichhorn and Sitt.

Course III.

Etudes and Studies by Kayser, Mazas, Alard, Dancla, Leon­ard, and Sitt; Pieces by Bohm, Singeele, Wieniawski, Bach, Grieg, Burleigh, Hauser, Hayden, Lalo, Brahms, De Beriot and others.

Course IV.

Scales by Schradieck; Etudes and Caprices by Kreutzer, Mazas, Sauret, Wieniawski, Fiorillo, Rode, and Paganini; Pieces by Alard, Vieuxtemps, Wieniawski, Bach, Grieg, Bur­leigh, Hubay, Saint Saens, Tartini, Corelli and others.

ORCHESTRA

Students of orchestral instruments will be admitted to mem­bership in the University Orchestra. Weekly rehearsals are held in the auditorium. The work includes the study of symphonies, overtures, and other orchestral compositions. All students who are sufficiently advanced may join this class free of charge. One-half credit hour per semester.

CHORUS WORK

A Male Chorus and a Ladies’ Glee Club have been orga­nized to which all students possessing good voices are admitted free. Oratorios, cantatas, and part songs by the best composers are studied and are performed in recitals and concerts during the season. One-half credit hour per semester.

RECITALS

Student recitals are given at intervals during the year. The object is to afford opportunity for the student to apply in public the proficiency that has been developed in the studio.
The advantage derived from these recitals cannot be overestimated.

**TUITION**

One term (18 weeks) two lessons per week, piano, violin or voice ...................................................... $36.00
One lesson per week, piano, violin or voice .................................................. $18.00

An extra fee will be charged if less than one semester is taken.

No absence from lessons will be excused. Lessons lost through fault of teacher will be made up.

**PIANO PRACTICE**

Pupils can arrange at a very moderate expense to do their daily practicing at the University.
Summer School
SUMMER SCHOOL
1914

OFFICERS OF ADMINISTRATION

Edwin Boone Craighead . . . President of the University
William Webb Kemp . . . Director of the Summer School
James Denton Dunlop . . . . . . Registrar

SUMMER SCHOOL FACULTY

EDWIN BOONE CRAIGHEAD, LL.D., D. C. L.
President.

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

MORTON JOHN ELROD, Ph. D.
Professor of Biology.

FRANCES CORBIN, B. L.
Professor of Literature.

JESSE PERRY ROWE, Ph. D.
Professor of Geology.

WILLIAM WEBB KEMP, Ph. D.
Professor of Education.

W. H. H. MUSTAINE, B. S.
Director of Physical Education.

WILLIAM G. BATEMAN, M. A.
Acting Professor of Chemistry.

LESLIE J. AYER, J. D.
Professor of Law.

C. W. LEAPHART, LL.B.
Professor of Law.

NELS JOHANN LENNES, Ph. D.
Professor of Mathematics.

THADDEUS L. BOLTON, Ph. D.
Professor of Psychology.

DE LOSS SMITH
Professor of Music.

CARL HOLLIDAY, M. A., Litt. D.
Professor of English.

GEORGE R. COFFMAN, Ph. D.
Professor of English.

ROBERT NEAL THOMPSON, B. S.
Assistant Professor of Physics.

PAUL CHRISLER PHILLIPS, Ph. D.
Assistant Professor of History.
HENRY HAXO, Ph. D.
Assistant Professor of Romanic Languages.

H. A. TREXLER, Ph. D.
Assistant Professor of Economics.

EUGENE F. A. CAREY, B. S.
Assistant Professor of Mathematics.

CHARLES C. STAELING, Ph. B.
Assistant Professor of Commerce and Accounting.

JOSEPHINE SWENSON
Assistant Professor of Piano.

MARY E. EDMUNDS, B. S.
Instructor in Domestic Science.

BELLE KEMP BATEMAN, A. B.
Instructor in Fine Arts.

ALICE M. McLEOD, A. B.
Instructor in Public Speaking.

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

JAMES H. BONNER, B. S.
Instructor in Manual Arts.

NON-RESIDENT LECTURERS

EDGAR A. DOLL
Lecturer on the Education of Exceptional Children.

ALMA L. BINZEL, Missoula, Montana.
Lecturer in Education.

HELEN HERRON, New Orleans, Louisiana.
Lecturer in Education.

KATHERYN M. RAY, Roswell, New Mexico.
Lecturer in Education.

LAURA L. RUNYON, Warrensburg, Missouri.
Lecturer in Education.

JENNIE R. FADDIS, Butte, Montana.
Lecturer in Education.

SUPT. S. R. LOGAN, Ravalli, Montana.
Lecturer in Rural Education.

H. H. SWAIN, Ph. D.
Deputy Superintendent of Public Instruction.
Lecturer in Civics and History.

MARY WHEELER
Lecturer in Fine Arts.

L. C. EUNIS
Instructor in Manual Training.

MRS. C. C. STAELING
Instructor in Playground Work.
PAULINE E. RAVEN  
Instructor in Sewing.

A. G. VESTAL  
Assistant, Biological Station.

SPECIAL LECTURERS

J. C. MUERMAN  

HON. H. A. DAVEE  
Supt. of Public Instruction of Montana.

DR. LOTUS D. COFFMAN  
Professor of Education, University of Illinois, Urbana, Ill.

J. ADAMS PUFFER  
Director Beacon Vocational Bureau, Boston, Mass.

GEORGE W. BROWN  
Supt. of Schools, Edgar County, Illinois.

CHARLES W. TENNEY  
Rural School Inspector of Montana.

GENERAL INFORMATION

Location and Climate:

The City of Missoula is beautifully located on the Missoula river at the mouth of the Bitter Root Valley. The elevation of 3200 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 & St. Paul railways bring Missoula in close touch with all parts of Montana.

Attendance in 1914:

The Summer Sessions of 1913 and 1914 had an increase in attendance of 95 and 180 per cent respectively over the session of 1912. They were attended by students from 24 of the 35 counties of Montana; and there were students from 17 states and countries outside of Montana: namely, British Columbia, Prince Edward Isle, Washington, Idaho, Wyoming, Illinois, Indiana, Minnesota, North Dakota, South Dakota, Louisiana, Nebraska, Utah, New York, Michigan, Missouri and Wisconsin.
Fully five-sixths of the students were experienced teachers and graduate students from normal schools and colleges.

The Summer School is intended to meet the needs of the following:

1. Teachers who wish to improve their professional equipment; to do residence work for credits toward degrees; to increase their knowledge and renew their enthusiasm.

2. Undergraduates who wish to shorten their university course by using the summer sessions to complete the four years' course; to broaden the field of their studies; to meet the requirements of the University Certificate of Qualification to Teach; to overcome handicaps of preparation and entrance conditions.

3. College graduates who wish to specialize or to work for an advanced degree.

4. Superintendents and principals who wish to acquaint themselves with recent progress in education.

5. High School teachers who wish to advance in their special line of work.

6. Elementary school teachers who wish to work toward a collegiate degree.

7. Candidates for certificates who need special courses in education, psychology and other subjects.

8. Persons who are preparing to become specialists in college and normal school positions.

9. Persons who desire practical field work in botany and zoology at the University Biological Station at Flathead Lake.

10. Persons who wish special instruction in physical training.

11. Persons who wish special instruction in law; or who wish, through successive summer sessions, to partially complete the requirements for a degree in law.


13. Correspondence students who wish to do some work in residence.

14. Any person who wishes to spend vacation weeks in intellectual acquisition.

The Faculty:

A corps of fifty or more professors and instructors, two-thirds from the University staff and one-third from other institutions, gave courses in thirty-two fields of work.
Scope of Courses:

Instruction was given in the following fields:

- Biology
- Botany (Flathead Lake Station)
- Chemistry
- Commerce and Accounting
- Domestic Science
- Economics
- Education
- Education of Defectives
- English
- Fine Arts
- Geology
- German
- History
- History of Montana
- Home Decoration
- Household Arts
- Law
- Library Science
- Literature
- Manual Training
- Mathematics
- Mechanical Drawing
- Music
- Physics
- Physical Education
- Physical Training
- Physiography
- Playgrounds
- Psychology
- Reading and Public Speaking
- Romanic Languages
- Supervised Play

All subjects taught in the modern high school for which there is a demand.

Session of 1915:

The Summer School of 1915 will begin its session on June 14, and continue through July 24, a period of six weeks.

Registration:

As far as possible students should enroll at the office of the Registrar on June 14. Instruction begins at 8 a.m. the following day, June 15.

Admission:

There are no formal requirements for admission to the Summer School. Its courses are open to all persons qualified to pursue them to advantage.

Credits:

University credits toward degrees will be given only to those 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 of Attendance:

Students of the Summer School who are not eligible to receive University credits will, upon request to the Registrar,
receive certificates of attendance and of courses satisfactorily completed.

Expenses:

Registration.

A general registration fee of $10.00 will be charged for any or all courses.

Room and Board.

The University will undertake to provide accommodations (including room and board) at the rate of $30.00 for the six weeks’ session for all students who make application before May 30 and who forward therewith a deposit of $5.00. The dormitories on the campus will be reserved for women. For further particulars, address the Secretary of the University. Students who wish to secure accommodations in private families may do so, making their own arrangements. Rooms may be had from $6.00 to $12.00 per month. Such persons may secure board at the University Dining Hall at the rate of $4.50 per week, or $24.00 for six weeks, if paid in advance. The Johnson flats, near the University, have been converted into a comfortable dormitory for men.

Travel:

The authorities of the University wish to place the Summer School within the reach of all teachers and students of Montana. In view of this the cost of round trip railway fare (based on cheapest route and not including meals or sleeper) less $5.00 will be refunded to those persons regularly enrolled. This privilege cannot be extended to persons living outside of the state, who, however, may find it advantageous to buy tickets via Glacier Park or Yellowstone Park. Hence for Montana teachers and students it will be seen that the total expense of the Summer School need not exceed the following: Registration, $10.00; board and room for the session, $30.00; railway fare, $5.00. Total, $45.00.

Railway Rates in Montana:

By agreement of the Chicago, Milwaukee & St. Paul, the Great Northern and the Northern Pacific Railways, one and
one-third round trip rates will be allowed in Montana, on the certificate plan. Tickets will be on sale June 10 to July 12 inclusive, and are good for return travel up to and including July 28, provided that students are in attendance not less than 10 days.

To take advantage of this every student must get a receipt when purchasing a ticket. If a student travels over two railway lines in reaching Missoula, receipts should be procured from both roads.

Summer Tourist Fares:

Yellowstone National Park is open to visitors June 15th to September 15th, 1915. The Park trip can be made in connection with through Coast tickets, from Livingston, Montana. Tickets are on sale at that station, as well as from other principal points, during the park season.

The tourist season of Glacier National Park, Uncle Sam's newest playground, is from June 15th to October 1st. The park is located in Northwestern Montana, the entrance being Glacier Park Station on the East, and Belton on the West side of the Continental Divide. All tickets allow stopovers at these points permitting passengers to make side trips in the park.

Make inquiry relative to rates before buying tickets. For full particulars concerning cost and length of time of trips, write any representative of the railways, or any of the following:

George W. Hibbard, General Passenger Agent, C. M. & St. P. R. R., Seattle, Wash.

H. A. Noble, General Passenger Agent, Great Northern R. R., St. Paul, Minn.

A. M. Cleland, General Passenger Agent, Northern Pacific R. R., St. Paul, Minn.

Fees:

There are no tuition fees, except for private instruction in music. A charge of $12.00 is made for two lessons a week during the session for each course in Voice and Piano; for Public School Music, $5.00 for the session; for Theory and Harmony,
$5.00 for the session. Fees must be paid in advance upon enrolling at the office of the Registrar in University Hall.

Laboratory Deposits:

Deposits to cover the cost of materials furnished to students or of breakage, for which they may be responsible, will be required as follows:

- **Biology**—Course S 1, $3.00.
- **Biological Station**—Any course, $5.00.
- **Chemistry**—Courses S 1 and S 2, $4.00 each; S 3, $2.00; S 4, $3.00.
- **Fine Arts**—Course S 1, $1.00; Course S 2, $2.00; Course S 3, $1.00; Courses S 4 and S 5, 50 cents.
- **Foods**—$5.00.
- **Manual Training**—Courses S 1 and S 2, $1.00 per unit credit.
- **Physics**—Course S 1 b, $2.00; Course S c, $2.00.
- **Sewing**—$2.00.

Correspondence Courses:

The University has established correspondence courses in many departments. This will be of special advantage to students who have been in attendance at Summer Sessions and who wish to go forward to degrees. The correspondence work can be very advantageously planned as a continuation of the regular Summer Session. For detailed information concerning correspondence courses write Dr. N. J. Lennes, Director, Correspondence Study Department.

Master's Degrees through Summer Sessions:

The University will accept four Summer Sessions of work as a fulfillment of the year of required residence for the Master's Degree, provided the student is able to meet the other prescribed regulations.

Teachers' Appointment Committee:

The University maintains an Appointment Committee for the purpose of assisting teachers to secure desirable positions. The services of this committee are entirely free to students and graduates of the University, and to school officers. Calls are received at all times of the year. The summer session is a good time for teachers to meet superintendents. The head of the Department of Education is chairman of the committee.
Library:

The University Library will be open throughout the Summer School; full library privileges extended to Summer School students.

Recreation:

Social and recreational features will be made attractive. Receptions, picnics, trout fishing, excursions up the mountains and to the Bitter Root and other points of interest will be frequent. The gymnasium, tennis court, ball field and track invite physical culture.

Lectures, Concerts:

A course of lectures of general interest, to be given at least once a week, will be arranged. Musical and dramatic entertainment will be a weekly feature.

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BIOLOGY

INSTRUCTOR BRAY.

S 1. General Biology.

This course is intended for teachers of Biology in High Schools who desire to extend their knowledge; for teachers of Botany who desire to gain a closer acquaintance with Biology; for those who wish to qualify as teachers of Biology and for those who desire a knowledge of Biology as a part of their general culture.

The course is outlined so as to give a thorough grasp of the fundamental principles of Biology. Animals and plants will be studied in the field and in the laboratory with special reference to their interdependence, their activities and their adjustments to the environment. The laboratory and field work will be supplemented by lectures and discussions, the reading of papers, etc.

Students intending to take this course should provide themselves with a lens, a strong knife and an ordinary school bag for collections. They should also bring with them any good text books of Botany and Zoology that they may have.

Daily recitations; daily laboratory and field work; four semester credit hours.
S 2. Teachers' Courses in Biology.

In this course an effort will be made to present the best methods of treating the subject in High Schools; a review of the best texts, and the consideration of a plan for the organization of Biological Instruction throughout the State.

Three periods per week, one semester credit hour. (For biological work offered at Flathead Lake Station see Special Announcement in this bulletin).

BOTANY

PROFESSOR KIRKWOOD

It is proposed to make the courses of the utmost practical benefit to teachers who desire a foundation for their nature work in the public schools. Any suggestions will be gladly received. These courses are proposed:

I. Nature Study and Methods.

A presentation of the nature study materials most useful in school work and the best methods of instruction in this subject; the aim and value of nature study; science in its relation to everyday life in household, field and garden; lectures, laboratory and field work. Time to be arranged.

Two semester credit hours.

II. Elementary Botany.

A study of the principal natural groups of the plant kingdom. Also a treatment of the common physiological processes in plants, and the association of wild plants in nature. The subject is presented by illustrated lectures, laboratory work and field excursions. There is abundant opportunity about Missoula for the study of life out of doors, a great variety of conditions are easily found, and very pleasant and profitable trips can be arranged with little effort. Time to be arranged. Two semester credit hours.

III. Systematic Botany.

This course affords an opportunity to students to become familiar with the native vegetation of Western Montana, the flowers, shrubs, trees, as well as groups of smaller plants such
as algae, fungi, mosses, etc. Field work will be a conspicuous feature of the instruction in this subject. Time to be arranged. Two semester credit hours.

IV. Research.

Advanced students will find in this region some excellent opportunities to do research work on ecological problems of greater or less magnitude, and for such as prefer to be occupied with the laboratories, collections and libraries at the University, the splendid summer climate of Missoula should provide conditions peculiarly attractive. The University seeks to meet all reasonable demands for equipment, literature, etc., for all doing research work in this institution. Time to be arranged. Two to four semester credit hours.

CHEMISTRY

ACTING PROFESSOR BATEMAN

During the Summer Session the Department of Chemistry aims particularly to help the following classes of students:

Those who have heavy courses scheduled in chemistry as in the second year of the Home Economics and Pharmacy Departments will find it a great advantage to take one course in the Summer Session.

Those students who have incomplete work to finish or conditions to remove will find it much easier to accomplish this in the summer when the press of other work is removed.

Those who expect to enter the University next fall to major in the Department of Chemistry, Home Economics or Pharmacy will find the regular schedule of courses made easier by credits gained in the Summer Session.

S 1. General Inorganic Chemistry.

A study of the fundamental laws of chemistry and of the properties and relations of the more common elements and their compounds. Text: "A Course in General Chemistry." McPherson and Henderson.

Four lectures; 12 laboratory hours per week.

Four semester credit hours.

S 2. Qualitative Analysis.

A study of the methods for the separation and detection of the principal bases and of the scientific principles upon which
these methods are based. Text: "Qualitative Chemical Analysis." A. A. Noyes.

Two lectures; 15 laboratory hours per week.
Four semester credit hours.

The following courses are popular in nature and intended for those interested in these particular applications of chemistry to life and industry.

S 3. Textiles and Dyeing.

A study of the principal classes of fabrics with tests for their quality as well as of the various kinds of dye stuffs and methods of dyeing. Opportunity is offered for the making of pillows, scarfs, hangings, stencil work, tint and dyed work, etc.

Six hours laboratory work with informal lectures.
One semester credit hour.

S 4. Elementary Applied Chemistry.

A study of chemistry as related to the home. Cleaning, laundering, disinfecting, simple testing of foods for quality and purity will be some of the points considered.
Six laboratory hours a week.
One semester credit hour.

(Those interested in other courses are requested to communicate with the Department. In all cases possible, arrangements will be made to give work not listed in the catalogue).

COMMERCE AND ACCOUNTING
ASSISTANT PROFESSOR STAEHLING

S 1. Bookkeeping Accounting.

This course involves the debits and credits, posting, preparations of trial balances, financial statements, closing the ledger special books of original entry, the bank account, cash proof, commercial papers, the bill book, opening and closing of double entry books. Practical sets of transactions representing a proprietary business, and later a retail partnership are used to illustrate the principles brought out in this course. Students are required to record these transactions in blank books accompanying the texts.

Three periods per week.
One semester credit hour.
S 2. Corporation Accounting.

This course involves the study of the organization and management of corporations; special accounts and books used in corporation accounting; classification and method of issuing, transferring and cancelling stock; opening corporation books, classification and interpretation of accounts; significance of various items represented in the statement; dividends; reserve fund; depreciation and surplus; voucher system. In addition to a regular set of business transactions which the student is required to enter in blank books, references and papers on special topics are assigned.

Three periods per week.
One semester credit hour.

S 3. Elementary Stenography.

The purpose of the course is to master the principles of Gregg shorthand. A careful study is made of consonants, vowels, and their combinations, phrasing, word signs, compound words, abbreviations, prefixes, affixes and the development of vocabulary. Special emphasis is placed upon accuracy and legibility. Sufficient work in dictation is given to put into practice all the principles involved in the course.

Five periods per week; two semester credit hours.

S 4. Advanced Stenography.

This course takes up a review of advanced phrasing and some of the abbreviation principles as an introduction. Dictation from various lines of business is given for the purpose of developing a large working vocabulary, drill in writing unfamiliar words, accuracy of outline, application of principles and speed. Considerable time is devoted to the reading of shorthand for the purpose of developing accurate and rapid interpretation.

Five periods per week.
Two semester credit hours.

S 5. Elementary Typewriting.

The chief object of this course is to master the keyboard thoroughly and to develop uniformity of touch and accuracy. The absolute necessity of careful mental direction in the development of proper co-ordinations and correct habits is emphasized and constructive suggestions are regularly given.

Five periods per week.
One-half semester credit hour.
S 6. Advanced Typewriting.

In this course the transcription of shorthand notes, proper use of the mechanical devices on the machine, carbon copies, stencil work, tabulation, legal forms and other miscellaneous activities connected with stenographic work are emphasized. From time to time suggestions as to the proper care of the machine and the adjustment of the working mechanism are given.

Five periods per week.
One-half semester credit hour.


This course is intended primarily for those who are preparing for the teaching of penmanship in high schools. It involves a study of the psychology, methods of presentation and a discussion of the problems peculiar to the subject that arise in the classroom. In the course of the work systematic, practical application is made of the principles emphasized in the lectures, in order to give each member of the class an opportunity to actually experience the relation of exercises to letter-form and movement.

Theory and practice are combined to make the course as interesting and helpful as possible.

Three periods per week.
One semester credit hour.

EDUCATION AND PSYCHOLOGY

PROFESSORS COFFMAN AND KEMP; LECTURERS ALMA L. BINZEL, HELEN HERRON, LAURA L. RUNYON, KATHERYN M. RAY, JENNE R. FADDIS, SUPT. LOGAN, SUPT. BROWN.

S 1. General Introduction to Psychology.

A study of the facts and laws of consciousness and their relation to the body and nervous systems. 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.
S 2. Educational Psychology.

The nature and extent of individual differences; biological and psychological aspects of learning and development; application of methods and results to the work of the school. This course applies on the University Certificate of Qualification to Teach.

Five periods per week.
Two semester credit hours.

S 3. Exceptional Children.

Education and examination of subnormal and supernormal children. Study of standard tests and their application to the class-room. Elimination, retardation, grading and promotion, special schools, individual versus class instruction.

Two lectures and one laboratory period per week.
One semester credit hour.

S 4. 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.

S 5. The Education of Childhood and Youth.

The educability of childhood; some agencies for the education of the children; the kindergarten, its nature and values; the Montessori system; the exceptional home; the elementary and secondary grades.

Three periods per week.
One semester credit hour.

S 6 and S 7. History of Education.

These courses aim to make history of education of practical as well as of cultural value to teachers and administrators. The traditional subject matter is connected with modern educational problems and life so as to broaden the vocational horizon; to teach the rudiments of self-appraisal from the vocational point of view; to awaken and develop the vocational imagination; to improve the present day educational judgment.

Readings, lectures, discussions, graphic illustrations, dramatizations, text.
Source of subject matter:
(a) Text, Monroe, Text-Book in History of Education.
(b) Current educational events in newspapers, magazines, reports of educational associations, bulletins of United States Bureau of Education, reports of the United States Commissioner of Education.


Five periods per week.
Two semester credit hours.


Five periods per week.
Two semester credit hours.


A practical course in grammar grade methods, aims, theories and means of teaching the various grammar grade subjects. Emphasis upon use of illustrative materials and aids. Application of these principles to the use of the Montana course of study. Exhibits of appropriate illustrative material, and aids for thorough examination.

Five periods per week.
Two semester credit hours.

S 9. Primary Methods. (A course designed for Superintendents or Supervisory Principals).

A practical study of the technique of instruction in the first four grades from the standpoint of principles of method. The preparation of lesson plans and the question of how to best direct the instincts and self-activity of children in class and seat work will receive consideration. The work will center about arithmetic and story-telling, with dramatic and manual activities for the concrete aspects.

Three periods per week.
One semester credit hour.


Will aid both rural and city school executives to direct teachers in knowing a locality as a source of valuable and abundant material; in training children to find and use the materials; and in using their experiences for language development.

Five periods per week.
Two semester credit hours.
S 11. Supervision of Reading.

Principles, materials and technique of teaching reading. Best uses of several adopted texts discussed.
Three periods per week.
One semester credit hour.

S 10a and S 11a. Laboratory for Demonstration of Methods Suggested in S 10 and S 11.

Groups of children ranging from beginners through the primary grades will be provided.
Two periods per week; credit to be arranged.

S 12. Recent Development of Rural Education.

A study of the problems relating to rural schools with special reference to the consolidated school and the rural high school.
(a) Rural Sociology—Daily for three weeks.
(b) Rural school organization and management—Daily for three weeks.
Two semester credit hours.

S 13. Underlying Factors of Rural Education.

The evolution of the rural school; individual, social and economic conditions; comparison of school organization, administration and supervision; problems of taxation; correlation and redirection of all rural agencies; immediate problems of teacher and teaching.
Five periods per week.
Two semester credit hours.


Purpose and aim of rural high schools; organization and equipment of a model high school; the underlying principles of the course of study; the methods for organizing and administering the course of study.
Three periods per week.
One semester credit hour.

S 15. Teaching How to Study.

Scientific management of one’s study time, whether pupil or teacher, is the aim of this course. It is based on certain principles of Psychology and experimental methods which have been proved useful. Dr. Dewey’s “How We Think,” and Dr. McMurry’s “How to Study” will be the texts, supple-
mented by Strayer’s “Teaching Process.” The object of the
course is the training of correct mental habits.
Three periods per week.
One semester credit hour.


A study of the practical problems in the organization and
management of schools, courses of study, promotion, retardation,
discipline, teachers’ meetings. Problems of economy and effi­
ciency in administration. The county superintendent in rela­
tion to the school system.
Five periods per week.
Two semester credit hours.

S 17. Problems in School Supervision.

Supervision is now recognized as a difficult and important
aspect of school work, hence requirements for special prepara­
tion are on the increase. This course aims to deal briefly with
the history and fully with the aims, the principles and tech­
nique of supervision in order that superintendents and princip­
als may do effective work in the improvement of teachers in
service.
Five periods per week.
Two semester credit hours.


Education as an atmosphere, as discipline, as life; play
element in modern education; co-operation of parents and teach­
ers; comparison of such schools as the Montessori, the kinder­
garten, the primary, with individual instruction.
Three periods per week.
One semester credit hour.

S 19. Laboratory Work With Practical Demonstrations.

With group of five or ten pupils four to seven years of age,
preferably those who have had no formal instruction in school
work. Perception, apperception, memory, imagination carefully
studied. Necessary automatism acquired, but not at expense of
spontaneity and freedom. Object to be gained—a mastery of the
tools which the child uses during this period of life, symbols in
reading and writing, relationships in time and space.
Five periods per week.
Credit to be arranged.
S 20. Laboratory Work with Practical Demonstration.

Similar work with a small group of pupils of eight to fourteen years. An attempt to appeal to the self-directing powers of individual wills; to develop quickness of perception, greater powers of retention, memory, etc.; to guide the pupil in discovering a vitalism in routine, the "Joy of the Struggle," in mastering of a given duty or a chosen task. Possibilities as to entering secondary education at an early age.

Five periods per week.
Credit to be arranged.

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ENGLISH AND LITERATURE
PROFESSORS REYNOLDS CORBIN, HOLLIDAY

S 1. Chaucer.

An introduction into the language, life and literature of the middle ages through a study of the Prologue, and some of the Canterbury Tales.

Five periods per week.
Two semester credit hours.

S 2. The Essay as a Literary Form.

A study of its historical development and of its relation to other literary types.

Five periods per week.
Two semester credit hours.

S 3. High School English.

The problems and methods of High School English in Composition and literature.

Five periods per week.
Two semester credit hours.

S 4. Advanced Composition.

A course in expository writing based on a study of the technique of the nineteenth and twentieth century writers; prerequisite, Freshman English or its equivalent.

Three periods per week.
One semester credit hour.

A review of English Literature from Anglo-Saxon days to the present—just such a course as every instructor teaching High School Literature will find helpful. The main movements and changes in the development of English literature will be discussed, and those authors whose works are most characteristic of each movement or change will be given some detailed notice. Special stress will be placed upon those masterpieces most likely to be used in High School Classes.

Five periods per week.
Two semester credit hours.

S 6. Advanced American Literature.

This course will offer Summer School Students an opportunity to become more accurately acquainted with the authors and literary movements of their own country and the causes and environments creating such writers and movements. Considerable attention will be given to the economic, social, educational and religious changes that have taken place and their influence on American literary work.

Five periods per week.
Two semester credit hours.


This course deals with the problem met with by teachers of advanced students in the subject of Grammar, Rhetoric and Composition. The historical reasons for rules, the changes that have occurred and are occurring in English usage, the conflict and agreement of authorities on language, comparisons with usage in other languages; these, as well as the ordinary subjects generally taken up in English Grammar, will be discussed.

Three periods per week.
One semester credit hour.


A survey of American literary history and the discussion of notable works in prose.

Five periods per week.
Two semester credit hours.

Selections from the verse of American poets; lectures and reports.

Three periods per week.
One semester credit hour.


A study of selections from Swineburne, Kipling, Noyes, Masefield and other contemporary poets.

Three periods per week.
One semester credit hour.

FINE ARTS

PROFESSOR KNOWLES, INSTRUCTOR BATEMAN
INSTRUCTOR TO BE APPOINTED

S 1. Drawing and Painting.

This course is elementary and advanced freehand drawing, in which studies are made from the model and still life. The student may have his choice of mediums.

Five periods per week.
One or two semester credit hours.

S 2. Handicraft.

As much design is given in this course as the time permits. Leather, copper and brass are used and pottery may be made.

Five periods per week.
One or two semester credit hours.

S 3. Landscape.

A course in out-door sketching and painting. Pastel, water color and oil will be used.

Five periods per week.
One or two semester credit hours.

S 4. The Teaching of the Fine Arts.

A lecture course on the technique of presenting art in the public schools and the development of the appreciation of art.

Three periods per week.
One semester credit hour.
S 5. Teaching Methods in Fine Arts.

A course supplementary to S 4, offering practical work in public school methods.
Three periods per week.
One semester credit hour.

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FORESTRY SURVEYING AND DRAWING
INSTRUCTOR BONNER.

S 1. Forestry Surveying.

A course in surveying, arranged especially for those preparing to enter the Forest Service. General reconnaissance methods and control; determination of meridians; land subdivision; soil classification surveys; timber estimating, etc. As this course is primarily to supply the summer demand for instrument men for field work in the Forest Service, the course will consist almost entirely of field work in neighboring forests. The work will require one and one-half full days per week. The course is also open to teachers desiring to obtain a general knowledge of surveying.
Five periods per week.
Two semester credit hours.

S 2. Forestry Drawing and Map Making.

The supply of draftsmen qualified for office and field positions in the U. S. Forest Service during the summer months is seldom equal to the demand; this course is arranged especially to train men for these positions. It consists of the compiling of maps from field notes; lettering and topography and reproduction methods.
Time and credit to be arranged.

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GEOLOGY
PROFESSOR J. P. ROWE

S 1. Physiography.

This course is intended for the teachers of the state, but college credit will be given for it. The work will be taken up
according to Salisbury’s Physiography, advanced course. Thirty lectures with twelve afternoons in the laboratory will be required to complete the course. The lectures will be largely illustrated with the lantern, stereoscopic views, and rocks and minerals from various localities. The material will be so selected that it will apply directly to illustrate the text. There will be three or four excursions to nearby deposits and rock formations, such as the volcanic ash beds near Missoula; the clay beds, Algonkian quartzite, shale and slate, and many other interesting points to illustrate the various topics in physiography. The laboratory work will consist of the study of typical minerals and rocks, together with charts, globes, topographic maps and other material applying to the problems of the subject. The department of geology is well supplied with laboratory material, and the surrounding region is a most excellent place for field study. The entire subject of physiography will be covered, and it is expected that each student will spend at least from three to four hours per day in the study, lectures and laboratory work upon this subject. If there are those who desire to take more work than is offered here, the head of the department will gladly outline a course of reading or laboratory work for such students.

Time and credit to be arranged.

S 2. Geology.

This course comprises thirty lectures and recitations and eighteen laboratory periods, together with numerous assigned readings. The text book used will be Chamberlin and Salisbury’s College Geology. Nothing new need be said concerning the region surrounding Missoula as an interesting place to study geology. It is sufficient, however, to say that the Missoula valley shows coal and volcanic ash beds of the Neocene period, and the entire valley together with the Bitter Root valley shows splendidly the evidence of an old glacial lake bed. The coal beds, the ash deposits and the various glacial deposits of the neighborhood will be visited and studied. In the laboratory there will be a general study of many minerals, rocks and fossils. This is intended primarily for those wishing to take a careful and systematic course in geology.

Two hours’ college credit will be given.

S 3. Mineralogy.

This will be an elementary course in minerals, taking up the brief study of crystallography together with glass, wire
and wooden models, showing the various forms and combination forms of crystals and the careful study of 150 minerals. The minerals will be taken up more according to their physical properties than their chemical composition, but each mineral will be studied more or less from the three standpoints: crystallographic, chemical and physical. There are a few splendid mineral deposits in the neighborhood and a trip or two will be made to nearby mines. This course is intended to give the student a fair idea of the chief characteristics of the most common minerals, many of which are found in the state of Montana. The department of geology has a splendid collection of minerals, and excellent specimens will be at hand for study in the laboratory. There will be thirty lectures and thirty laboratory periods. The prerequisite for this course is elementary chemistry and plane geometry.

Three semester credit hours.


Lectures and field work. The object of this course is to give the student a general survey of the geological formations and natural products of the state, and a careful study of the geography. The mountains, rivers, valleys and their products will be studied, together with railroad maps, temperature charts, etc.

Every student and teacher in the state should be more or less familiar with the geography and the general natural products of Montana. This course is intended to give a fairly careful study of these subjects. Three lectures and one laboratory or field afternoon per week.

One semester credit hour.

GERMAN

PROFESSOR F. C. SCHEUCH.

S 1. Elementary German.

Two periods per day.
Four semester credit hours.

S 2. Intermediate or Advanced German.

One period per day.
Two semester credit hours.

For students who have completed the grammar and who wish to do some higher reading and composition work.
S 3. Graduate Course in German.

Five periods per week.
Two semester credit hours.
Work to be arranged for individual cases.

HISTORY AND ECONOMICS

PROFESSOR UNDERWOOD; ASSISTANT PROFESSOR PHILLIPS;
ASSISTANT PROFESSOR TREXLER; LECTURERS
H. H. SWAIN, LAURA L. RUNYON

S 1. Ancient History.

A lecture and reading course concerning the Greek and Roman periods. An outline of Egyptian, Babylonian and Persian civilization will also be given. Largely a course dealing with the sources. This course prepares for the history requirements for the State certificate.

Five periods per week.
Two semester credit hours.

S 2. General History.

A study of the phases of history which go to make up modern life. Lectures, text and assigned readings.

Five periods per week.
Two semester credit hours.

S 3. Mediaeval History.

A sketch of the history of Europe from the dissolution of the Roman Empire to the dawn of the Renaissance. Special attention will be given to mediaeval culture and institutions. Lectures, text and assigned readings.

Three periods per week.
Two semester credit hours.

S 4. The French Revolution and Napoleon.

Causes of the Revolution; its character and principles; a study of the social, economic and political ideas of the period. Lectures, readings and reports.

Five periods per week.
Two semester credit hours.

S 5. United States History.

A general course in the history of the United States from colonial times to the present. Chief attention will be given to
the period of nationality. Text, sources and assigned readings.
Five periods per week.
Two semester credit hours.


A selection of typical periods in history will be made to show how they can be effectively handled with pupils. Outlines, source material, best books on specific subjects, themes, questioning, illustrative material.
Five periods per week.
Two semester credit hours.

S 7.

A more advanced course than S 6, and it will be confined to history in the high school. More time will be given to organization of material and its method of presentation to classes.
Five periods per week.
Two semester credit hours.


A study of local and state government in Montana and of present day civic problems, specially adapted to the needs of teachers who are new to the state. Attention will also be given to methods of teaching civics.
Five periods per week.
Two semester credit hours.


A course in political science. A study of the government of the United States, both historically and with reference to developments now in progress, and practical questions of current interest, also with some comparison with the governmental systems of leading European countries.
Five periods per week.
Two semester credit hours.


A brief study of the exploration, settlement and development of Montana, particularly as a part of general north-western development. Much attention will be given to correlating all these movements with the history of the United States as a whole.
Three periods per week.
One semester credit hour.

An elementary course in the school law of Montana, designed to give teachers a practical acquaintance with their legal relations to schools, school officers, pupils, and the community.

Two periods per week.
One semester credit hour.


Selected topics in present day social problems and social reform movements.

Three periods per week.
One semester credit hour.


A course in general business subjects; first, money and credit, various kinds of funds, business paper and business procedure; second, financial institutions, banks, savings banks, trust companies, Montana banks; third, the methods of organizing and financing corporations.

Five periods per week.
Two semester credit hours.


Five periods per week.
Two semester credit hours.

HOME ECONOMICS

INSTRUCTOR EDMONDS; INSTRUCTOR PAULINE E. RAVEN

S 1. Foods.

A study of food principles; their occurrence, principles involved in their preparation and their cost from various sources. Formulating of menus, preparing and serving of meals. Lectures and laboratory daily.

Four semester credit hours.

S 2. Textiles and Sewing.

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

Three semester credit hours.
S 3. Dress.

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

Two semester credit hours.
Prerequisite—Textiles and Sewing.

S 4. Teachers' Courses.

A study of methods of teaching in the lecture room and laboratory and the equipping of laboratories. Opportunity will be given for practice teaching. Daily.

Two semester credit hours.

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LAW

PROFESSORS WHITLOCK, NEFF, AYER, LEAPHART, LANGMAID

The opening of a summer session of the Law School is in direct response to numerous requests for same. The location and opportunities make a summer session of the law school of the University of Montana peculiarly desirable.

Students of this institution may thus shorten their actual resident work. Students of other institutions may continue their studies during their vacation. Men of other professions have thus a splendid opportunity to acquire the profession of law with its greater advantages of stability and general attractiveness, acquiring a great part or even all in vacations profitably spent. Business and commercial men of today are in need of such legal training; in fact, it is demanded. Attorneys, by reason of the fact that the University Law School has one of the best libraries in the Northwest, have an excellent opportunity to review courses, and to prepare, specialize, and do research work in particular lines or cases.

The resources of the State of Montana are varied and almost unlimited, the immediate future development of the state is assured, the demand for capable men in the legal profession is obvious, a profession in which its years of usefulness, the nature of work, its stability and remuneration are unexcelled.
The University of Montana offers the standard law course of the best law schools in America, and in addition, special reference and attention is given to western law, such as irrigation and mining law, and particular attention is called in all subjects to the position of the courts of Montana and the western states.

LECTURE AND RECITATION SCHEDULE.

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FIRST YEAR


Nine hours a week for six weeks. Three credits. Mr. Ayer.
Offer and acceptance; consideration; contracts under seal; contracts for the benefit of third persons; assignment of contracts; joint obligations; statute of frauds.

Quasi-Contracts. Woodruff's Cases on Quasi-Contracts.

Six hours a week for six hours. Three credits. Mr. Leaphart.
Recovery upon record; recovery upon statutory, or official, or customary duty; recovery upon doctrine that one person shall not be allowed to enrich himself unjustly at the expense of another; quasi-contracts and true contracts distinguished; benefits conferred voluntarily and involuntarily; relation of quasi-contracts to equity.

SECOND AND THIRD YEARS

Mortgages. Wyman's Cases on Mortgages.

Six hours a week for six weeks. Two credits. Mr. Ayer.
Legal mortgage; equitable mortgage; elements of mortgage; rights and duties of mortgagor and mortgagee; dower and curtesy; limitation on redemption; clogging the equity; assignment of mortgage interests; priority of interests; marshalling.

Constitutional Law. Hall's Cases on Constitutional Law.

Nine hours a week for six weeks. Three credits. Mr. Leaphart.
Function of judiciary in enforcing constitutions; separation and delegation of powers of government; political and personal
rights; protection to persons accused of crimes; various questions arising under the fourteenth amendment; interstate privileges and immunities of citizens; retroactive civil laws including laws impairing the obligations of contracts; federal powers; regulation of commerce; jurisdiction of federal courts.

Quasi-Contracts. See above.

NOTE—Students commencing the study of law may take Contracts I and Quasi-Contracts. All others may elect not to exceed fifteen (15) recitation hours or periods per week.

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 22 to 26, inclusive.

MANUAL TRAINING AND SHOP WORK
INSTRUCTOR L. C. ENNIS


This course is arranged to meet the needs of teachers taking the course of lectures in manual training. The work includes bench and lathe work in wood, pattern making, bench and lathe work in iron, etc, in wood, pattern making, etc.

Credit to be arranged.

S 2. General Shop Work.

Summer School students who do not wish to take a regular course, may take a special shop course. This will enable the student to take any work in which he may be especially interested.

Credit to be arranged.
S 3. Teachers' Course in Woodwork.

Carpentry, joinery, and wood-carving are included in the course which is designed with special reference to the needs of prospective teachers of manual training in rural high schools.
Five periods per week.
One semester credit hour.


The forms of handwork and adaptation to the grades. Prescribed equipment and material for the various lines of work. Cost and sources of equipment and material. Aims, purposes and methods in teaching manual training.
Three periods per week.
One semester credit hour.

MATHEMATICS

PROFESSOR N. J. LENNES; ASSISTANT PROFESSOR
E. F. A. CAREY

S 1. Algebra.

Five periods per week.
Credit to be arranged.

S 2. Plane Geometry.

Five periods per week.
One entrance unit.

S 3. Solid Geometry.

Five periods per week.
Two semester credit hours.

S 4. Properties of Numbers.

Five periods per week.
Credit to be arranged.

S 5. Plane Trigonometry.

Five periods per week.
Two semester credit hours.


Five periods per week.
Two semester credit hours.

Five periods per week.
Two semester credit hours.


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

Five periods per week.
Two semester credit hours.


An introductory course, designed for high school teachers.
Five periods per week.
Two semester hours.

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MUSIC

PROFESSOR SMITH, Voice.
PROFESSOR BURLEIGH, Violin.
ASST. PROFESSOR SWENSON, Piano.

Students desirous of taking work in music will find ample opportunity to do so in the University School of Music during the summer.

It has not been deemed advisable to select a set of studies to be used arbitrarily for those taking lessons in Voice and Piano, but rather to select a course to suit the needs of the individual student.

There will be a class in Public School Music and sight singing. In it is offered some preliminary work in ear training, tone thinking and notation in their particular relation to singing. The "movable Do" is used. This course is recommended to voice students and to those who wish to teach music in the public schools.

A complete course in theory and harmony will be given.

The University believes that for those desiring a thorough familiarity and mastery of music, either in instrumental or
vocal, the department now offers the best advantages to be found in the Northwest.

S 1. Voice.

Time and credit to be arranged.

S 2. Piano.

Time and credit to be arranged.

S 3. Public School Music and Methods.

Three periods per week.
One semester credit hours.

S 4. Theory and Harmony.

Three periods per week.
One semester credit hour.

READING AND PUBLIC SPEAKING
INSTRUCTOR MACLEOD.

S 1. Essentials of Public Speaking.

Development of the voice, correct pronunciation, tone production, vocal quality, flexibility, distinct articulation. The reading of narrative and didactic literature, short poems and speaking extracts from great orations with special attention to emphasis and cadence as the two fundamental elements of reading and speaking.

Five periods per week.
Two semester credit hours.

S 2. Teachers' Course in Reading and Story Telling.

The purpose of this course is to aid the teacher in the use of various tried methods of teaching children to read; in the appreciation of the standards by which reading is to be judged; and in the recognizing and correcting of speech defects that are curable. The teacher's own ability to read effectively and tell stories with naturalness, ease and power will also be enhanced.

Five periods per week.
Two semester credit hours.
316

3. Forms of Public Address.

Oratory, debate, extemporaneous speaking, the occasional address and the eulogy. This course should cultivate the power of constructive and analytical thinking and enable students to present their thoughts and feelings with clearness, force and ease before an audience.

Five periods per week.
Two semester credit hours.

4. Interpretative Reading.

The oral interpretation of the Lyric and the Drama. The aim of this course is to cultivate a keener appreciation and a greater skill in the expression of the beauty and power of imaginative literature. The study of the drama will be divided equally between modern and Shakespearean drama.

Five periods per week.
Two semester credit hours.

ROMANIC LANGUAGES

ASSISTANT PROFESSOR HAXO.

1. Elementary French.

Fraser and Squair's French Grammar, Aldrich and Foster's French Reader, Matzke's Primer of French Pronunciation. It is the object of this course to give special attention to accurate pronunciation, mastery of the essentials of grammar and acquisition of vocabulary.

Five periods per week.
Two semester credit hours.

2. Elementary Spanish.

Special attention is given to accurate pronunciation, mastery of the essentials of grammar and reading vocabulary.

Five periods per week.
Two semester credit hours.


Reading, composition and grammar. Translation of texts selected from the writings of contemporary authors.

Five hours per week.
Two semester credit hours.
S 4. Advanced French.

Grammar, composition and reading. Texts will be selected from the works of the principal authors of the classical period.
Three hours per week.
One semester credit hour.


Rapid reading of standard modern novels. Reports by the members of the class.
Three hours per week.
One semester credit hour.

S 6. Teachers' Course in French.

Review of French grammar; critical treatment of various methods of instruction; teachers' bibliography; comparison of modern text-books.
Three hours per week.
One semester credit hour.


Three hours per week.
One semester credit hour.

PHYSICS

ASSISTANT PROFESSOR R. N. THOMPSON

The following schedule of courses is a tentative scheme, arranged to meet primarily the needs of teachers. It is hoped that it may stimulate the summer students to plan a continuous course in physics summer after summer. For this reason Courses I(a) and I(b) were offered in 1914 and Courses II(a) and II(b), which follow naturally, in 1915, provided, of course, that there is sufficient demand for them. These courses are the equivalent of the first year of college physics.

Prospective university students may satisfy the entrance requirement in physics by taking Courses SA, SB and SC.

SA. 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 SB and SC are taken. These three courses 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, where such credit is desired.

Lectures M. T. W. Th. F.

SB. Elementary Physics.

This course is a continuation of SA and will cover the subjects of electricity, magnetism, sound, light and radiation phenomena.

Lectures M. T. W. Th. F.

SC. 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 SA and SB.

Laboratory M. T. W. Th. F. S.

S 1. (a). Mechanics, Molecular Physics and Heat.

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 our regular work.

Lectures M. T. W. Th. F. Two semester credit hours. To be given in 1915 if there is sufficient demand.

S 1 (b). Mechanics, Molecular Physics and Heat.

Laboratory M. T. W. Th. F. S. Two semester credit hours. To be given in 1915, if there is sufficient demand.

S 2 (a). Electricity, Sound and Light.

(Lectures). This is a course in subjects similar to I(a).

Lectures M. T. W. Th. F. Two semester credit hours.

S 2 (b). Electricity, Sound and Light.

(Laboratory). This course is similar to I(b).

Laboratory M. T. W. Th. F. S. Two semester credit hours.

S 3. Modern Electrical Theory.

This course will briefly review the more important phases of recent development of electrical theory and its relation to the constitution of matter. University credit will be allowed only to students who have had a course in college physics, but the course may be attended by anyone.

Lectures M. W. F. One semester credit hour.
There is a growing demand by school boards for teachers who understand something of the principles underlying physical education and who have a teaching knowledge of scientific exercises adaptable to schoolroom and playground use. Frequently teachers who have some familiarity with this subject have been given preference over those who have not. Progressive schools are rapidly including physical training among the required subjects and the regular teachers are expected to teach it. Lack of interest upon the part of the teacher, which usually means lack of everything but the most general knowledge of the subject, too often causes this important work to be a perfunctory performance, dull and uninteresting, when it should be attractive and productive of splendid educational results.

Many high school teachers are expected to conduct physical training in addition to the teaching of other subjects. Many doubtless realize their need of better preparation, but have no time for this except during the summer months.

There seems to be a demand for male teachers who are qualified to supervise the athletic activities of the boys and to coach them in various athletics sports. A course in athletics will be offered if a sufficient number desire to register for this class.

Classes for men and women will be organized separately for practical floor work. Men will be expected to wear rubber-soled shoes, full length trousers, and athletic shirt, and women will provide themselves with rubber-soled (or light leather-soled) shoes, divided skirt and blouse.

Through the following courses the University offers the opportunity to all persons to become more conversant with this subject during the Summer School.

S 1 (a).

Theory of physical education, two hours a week. Schoolroom exercises, with special reference to the effects of specific exercises on posture. Three hours a week.

(Course I should be of value to teachers of all grades in elementary and high schools.)
S 2.
Practical floor work, including Swedish gymnastics without apparatus and German gymnastics with light apparatus. These exercises will be selected for their general value. Five hours a week.

(Course S2 should appeal to all teachers and others who feel the need of exercise. This work daily for six weeks should accomplish great results).

S 3 (a).
Theory of play and school playgrounds. Two hours a week.

(b). Playground games and folk dancing. Three hours a week.

(Course S3 should attract all teachers whose duty it is to lead the children's games on the playground or in the gymnasium).

S 4.
Municipal playgrounds and the playground movement in America. Theory and practice. Five hours a week.

(This course will include playground location, equipment, arrangement, policy, organization, administration, and control. There will be opportunity for observation and practice on the local playgrounds. It is designed to give practical instruction to those who wish to supplement their regular school work with playground work during the summer vacation).

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BIOLOGICAL STATION
OUTLINE FOR SEASON 1915

A Station for instruction and research in Biology will be maintained by the University of Montana for the thirteenth season, as a part of its regular summer session, during the six weeks from June 17th to July 31st. Students may stay as much later as they desire.

LOCATION

The Station is located at Yellow Bay on Flathead Lake, which is about midway on the eastern shore. At this place, the University owns eighty-seven acres, with nearly a mile and a half of shore line, given by act of congress. The station building is
about a mile and a half from the postoffice Glen. The distance from Somers, the terminus of the Great Northern railroad, is about twenty miles; from Bigfork at the upper end of the lake on the mouth of Swan River, seventeen miles; and from Polson, on the lower end of the lake, about sixteen miles. Connection is made from these places by boat. An automobile road is completed along the eastern shore.

The region is a virgin forest. The Mission Mountains rise abruptly from Flathead Lake on the east, reaching an elevation of almost 8,500 feet near the station, or a mile in vertical distance above the water. These mountains present a variety of collecting fields, from the dense woods at the lake to alpine vegetation and talus meadows. A trail has been blazed to one of the summits. By boat, it is possible to reach in a short time the swampy delta of Flathead River, where it enters the lake, the swamp at the southern end of the lake, prairie country in several locations, and numerous islands. The lake itself covers more than three hundred and fifty square miles and is three-hundred feet deep.

The beach at the Station is fine gravel or sand. There is no dust at any time. The bay is a perfect harbor for boats, making a pleasant pastime for rowing. The beach is excellent for bathing.

Besides this tract the Station has two other sites of forty acres each, one on Idlewilde Island, the other on Wild Horse Island. Both of these are used during the summer.

The topography near the Station is such as to afford a variety of floral and faunal conditions. From the deep lake to high mountain top is an extreme which few places can present. From virgin prairie to virgin forest the distance is but a few miles. Rock cliffs and talus slopes and large swamps present marked contrasts for study and collecting. In these places are many rare forms of animal and vegetable life. Bear, deer, even moose, have been seen close to the Station, as have the puma, lynx, and other small animals. In such rich field there is much pioneer work yet to be done.

BUILDINGS AND EQUIPMENT

The Station building is a two-story brick structure, thirty by forty feet, with a cement floor below and rooms for investigators and others on the second floor. It is situated in a beautiful grove of native yellow-pine and tamarack several hundred years old, is above high-water mark, and commands a magnificent view in every direction. A mountain stream furnishes an abundance
of pure and ice cold water. There is a dark room for photography. A big fireplace makes the place cheerful on cool evenings.

The Station has a boat thirty feet long and seven feet beam, with a twelve horse power gasoline engine. It is capable of carrying fifteen people. There is a second smaller boat, sixteen feet long, with gasoline engine, a rowboat and two canvas boats. There is the usual collecting apparatus of various kinds. The fees mentioned later cover all expenses connected with the use of the boats and material.

**PLAN OF WORK.**

It is not the purpose of the Station to duplicate the work offered at the University, but to provide facilities for field work of a kind that cannot be well carried on with limited hours for a schedule. Each person may select the study he wishes to pursue, and give to it all or a portion of his time. Instruction will be limited to certain courses for beginners, but qualified students may elect special work and pursue any line of investigation or study they desire. Provision will be made for both elementary and advanced study in botany and zoology in its various fields. Credit for equivalent university work will be given to those requesting it to the amount of six hours. This requires full work for the entire six weeks.

**REGISTRATION.**

The number to be accommodated is limited. Hence immediate registration is necessary to insure admission and accommodations. There is a limited number of tents. There are no boarding places near. It is impossible to supply and equip a large number of tents, for it is impossible to anticipate the attendance. Applications should be addressed to the Director of the Biological Station, University of Montana, and should indicate the courses the student intends to pursue, his preparation for them, and whether he will bring his own camp equipment or use that provided by the station.

**FEES AND EXPENSES.**

Students will pay the regular Summer Session fee of twelve dollars for the six weeks, and will be entitled to take courses aggregating six hours’ University credit. If students wish to stay later and use the buildings and material for further study, they may do so without further pay. A charge of five dollars is made for the use of the scientific equipment and the boats. A
further charge of five dollars is made to each person occupying a tent. These charges are not increased, no matter how long the person may stay. Students may, however, provide their own camp equipment of such sort as they may choose. Board at the Camp Mess is provided at cost, which will be about six dollars per week.

COURSES

Elementary Zoology.

A course of lectures accompanied by suitable laboratory exercises and field work intended to meet the needs of students who have had no previous training in Zoology.

General Ecology.

A study of the animals found in the region including their collection, classification, distribution and habits. Field work with lectures and photographic records of ecological phenomena.

Ornithology.

A study of the birds of the region, their classification, modes of identification, nesting habits, songs, distribution, with methods of making and preserving skins for future study.

Entomology.

By lectures, book references and field work a fairly comprehensive study of the insects will be given, including representatives of the various orders. Attention will be given to forest insects.

Plankton.

In this course will be given a systematic and ecological study of the organisms of Flathead Lake.

Research.

Advanced students wishing to engage in research work in botany or zoology will be given problems for investigation to be conducted under the direction of the several members of the staff.

Nature Study.

While no definite courses will be outlined, those desiring it, will be given help and instruction in collecting and preparing material for use in any grade of work and will be given methods of study in connection with such material.
Photography.

Those desiring help will be given instruction in the use of both plates and films, in exposing, developing and printing. Those who know little of the subject and those who may be more proficient will alike profit from the experience and help at their disposal. It is expected that students will furnish their own cameras, with plates or films and paper.

Physiography.

High School teachers and pupils, and others will be aided in methods of study of the earth's surface by lectures and field work. Mountain formation and erosion, glacial action, river deposit, lake beaches, stream erosion, the causes producing forest and prairie, and many other phenomena, may be illustrated and studied in the region about the station.

Elementary Botany.

An introduction to the study of plants, presented by lectures and field work adapted to the needs of students who have had no previous training and who wish to pursue the study for its own sake or for credit.

Forestry.

This will include the identification of trees and shrubs, a study of the forest floor in its various aspects, distribution with respect to both moisture and altitude, the succession of timber growths, parasitic and other forest enemies, and the like, from lectures and field work.

EXCURSIONS

Frequent excursions to various parts of the lake, and to the mountains will be made. Such trips will be to points of scientific and scenic interest, which are abundant. Excursions to nearby places by boats or on foot will be of almost daily occurrence. Camping trips will be arranged during which informal instruction in camping and woodcraft will be given.

LECTURES

In addition to the lectures to be given in connection with the various courses popular evening lectures will be presented in the laboratory for all who are present. There will be two or more each week, given by members of the staff and others who may be invited. These lectures have in the past been very popular. Some of them have been published in a bulletin.
RECREATION

It is possible to do full work in hours, sleep all the time that is needed, and still have an abundance of time for recreation. But recreation will not be permitted to interfere with the regular work to be done. Boating, fishing, swimming, forest rambling, and mountain climbing may be indulged in to the heart's content. The location of the Station is in the midst of a mountain and forest wilderness, extending for miles. It is possible to combine with study the pleasure of a summer outing which will invigorate the jaded teacher, student or others of sedentary occupation, and return them to work in the fall with renewed vigor, a stock of rich experience and a wealth of information which money cannot buy and which no one can take away. Many testimonials could be given of the great gain in health, knowledge and practical experience from such a summer, as much as is possible in regular university attendance.

For further particulars regarding the work of the Biological Station, write Dr. M. J. Elrod, Director, Biological Station, University of Montana, Missoula, Montana.
University Extension
Department
UNIVERSITY EXTENSION DEPARTMENT

FACULTY

OFFICERS OF ADMINISTRATION

EDWIN BOONE CRAIGHEAD, LL. D., D. C. L.
President of the University.

GEORGE F. REYNOLDS, Ph. D.
Director of University Extension and Chairman of the Com-
mittee on University Extension.

W. W. KEMP, Ph. D., DORR SKEELS, L. J. AYER, J. D.,
M. J. ELROD, Ph. D.
Committee on University Extension.

OFFICERS OF INSTRUCTION

Edwin Boone Craighead, LL. D., D. C. L.
President of the University of Montana.

M. J. Elrod, Ph. D.
Professor of Biology.

Frederick C. Scheuch, M. E.
Professor of Modern Languages.

Jesse Perry Rowe, Ph. D.
Professor of Geology.

Joseph Harding Underwood, Ph. D.
Professor of History and Economics.

Joseph Edward Kirkwood, Ph. D.
Professor of Botany.

George Fullmer Reynolds, Ph. D.
Professor of English.

A. N. Whitlock, LL. B.
Acting Dean and Professor of Law.

Charles Melvin Neff, LL. B.
Professor of Law.

William Webb Kemp, Ph. D.
Professor of Education.

Thaddeus L. Bolton, Ph. D.
Professor of Psychology.

N. J. Lennes, Ph. D.
Professor of Mathematics.

De Loss Smith.
Professor of Vocal Music.

Leslie J. Ayer, J. D.
Professor of Law.

Dorr Skeels.
Director of School of Forestry.
Carl Holliday, M. A., Litt. D.
Professor of English.

George R. Coffman, Ph. D.
Professor of English.

A. L. Stone, B. A.
Professor of Journalism.

Mary Stewart, A. B.
Dean of Women, and Instructor in English.

W. Walter H. Mustaine, B. S.
Director of Physical Education.

Eloise Knowles, Ph. M.
Assistant Professor in Fine Arts.

Robert Neal Thompson, B. S.
Assistant Professor of Physics.

Paul Chrisler Phillips, Ph. D.
Assistant Professor of History.

William George Bateman, A. M.
Assistant Professor of Chemistry.

Harrison Anthony Trexler, Ph. D.
Assistant Professor of Economic History.

Henry Knae, Ph. D.
Assistant Professor of Romanic Languages.

Josephine Swenson.
Assistant Professor of Piano.

James H. Bonner, B. S.
Assistant Professor of Forestry.

Charles C. Staehling, Ph. B.
Assistant Professor of Commerce and Accounting.

L. S. Hill, M. A.
Assistant Professor of Mathematics and Astronomy.

Carl Getz, A. B.
Assistant Professor of Journalism.

Mary Elizabeth Edmonds, B. S.
Instructor in Home Economics.

Alice Wicklund Macleod, B. S.
Instructor in Public Speaking.

Belle Kemp Bateman, B. S.
Instructor in Art and Design.

A. George Heilman, Ph. B., M. D.
Instructor in Biology and Physiology.

Gertrude Curtiss Paxton, B. S.
Instructor in Domestic Art.

Gertrude Buckhous, B. S.
Librarian.

A. W. L. Bray, B. A., B. S.
Instructor in Biology.
WHAT THE UNIVERSITY OF MONTANA HAS DONE IN UNIVERSITY EXTENSION

The University of Montana has been engaged in University Extension work in a more or less consistent way for several years. Some of this work has not been conducted under this title, but has nevertheless served to carry the University to the people, and to make it an institution of public service. Perhaps the most apparent of these services has been that rendered by the Interscholastic Meet, with its connected activities of Debate, the Essay Contest and the Declamation Contest. For ten years this meet has been stirring the boys and the girls of the State to interest themselves in physical and mental exercise, with far-reaching and beneficial results.

These various activities, however, lie outside the usual field of the Department of University Extension. Until January, 1914, no specific organization was in charge of the lectures and addresses made by the members of the faculty. In spite of this fact, in the three years between 1911, when this work was authorized by the Legislature, and 1914, when it was taken up by this Department, Extension lectures had been delivered in twenty-five cities and towns of the State, and 21,460 persons had been reached by them.

SEASON OF 1913-1914.

Last year the bulletin of University Extension was not issued until January, 1914. In spite of this late beginning, however, 26,810 persons, forming 158 different audiences in 40 Montana cities were addressed by members of the University faculty. Fifty of these addresses were formal University Extension lectures, for which nominal fees were paid. The others were addresses to High Schools, Commencement addresses, and speeches under various auspices, for which, as a rule, no compensation was received. In addition to this, 4 schools have been assisted in their athletics, 20 persons have been advised in the choice of plays for amateur presentation, 28 furnished with dec-
lamations, 10 loaned material from the library, 6 clubs sent suggestive programs for a year of work, and 5 towns assisted in arranging and cataloging their libraries. Most of this service has been performed without charge, in spite of the fact that no person is engaged especially for University Extension work and that the faculty are all carrying full work at the University. Whatever the faculty do in this way they do simply because of their desire to forward the best interests of the University and of the state.

FORMS OF UNIVERSITY EXTENSION SERVICE

EDUCATIONAL ADDRESSES

The faculty of the University in the future, as in the past, will freely assist citizens of the State in furthering movements of educational progress or in the discussion of educational problems. Of the 150 addresses delivered last year by the University at least two-thirds were without remuneration. When school, town, church or club authorities desire such addresses to which they will admit the whole community without charge for admission, the faculty of the University will gladly respond to the invitation whenever it is possible to do so without neglect of other duties.

Towns desiring such assistance should notify the department of University Extension or the individual instructors whose assistance is desired. For such service no set fees will be charged, but towns usually arrange for the local entertainment of the University representatives.

Many towns desire members of the University faculty to deliver commencement addresses. This service has been performed very generally in the past and will be continued. As almost every town provides some special fee for this service, it will not be included under the work of University Extension, but the department will be glad to assist towns in securing speakers for these occasions.

UNIVERSITY LECTURE COURSES ON RELATED SUBJECTS

The form of University Extension work which has proved most generally successful is found where groups of people already organized into clubs or joining together especially for this purpose, arrange for a series of lectures by a single instructor on some single subject. Such courses have been given by the University of Montana in Helena (9 courses), in Bozeman (1
course), in Great Falls (1 course), in Missoula (5 courses), in Butte (1 course), and in Deer Lodge (1 course). This service will be continued.

With certain necessary modifications such courses consist of regular university lectures designed for mature persons, but not so technical or narrow in their appeal as to be uninteresting to the average auditor. They are especially valuable in bringing to their hearers fresh points of view or new facts in their respective subjects. This form of service the University especially wishes to encourage; lecturers will therefore be sent so far as possible to every town desiring them, the University paying the traveling expenses and the expenses of local entertainment, the local organization paying a fee of $10 for each lecture and providing a suitable place of meeting. Enough persons can usually be found who will join such a course to make the expense for each a merely nominal one. Lectures must as a rule occur on Fridays or Saturdays and preferably at intervals of two weeks since the instructors cannot interrupt their regular University classes.

Most of the courses consist of six lectures, but usually a less number may be arranged for on application. It will be impossible for any instructor to give such courses at more than one town; application should therefore be made at once.

Towns desiring such courses can secure them from almost any department of the University. For details of information and plans of courses address The Department of University Extension, University of Montana, Missoula.

UNIVERSITY EXTENSION WORK FOR CREDIT

It is not unlikely that where these courses of six related lectures described above are given, there will be certain persons who will wish to use them for University credit. Such credit to the amount of one hour may be secured by registration as a University Extension student, by faithful attendance at the lectures, by meeting the instructor for such conferences as he may appoint, by reading assigned books, by the preparation of assigned papers, and by passing a set examination. Generally speaking fifty hours work will be necessary for one hour of credit. At the successful conclusion of such a course, a credit card will be issued to the student; credit will be recorded at the University whenever the student matriculates. No person en-
rolled as a student at any other educational institution will be allowed to do University Extension work for credit.

The payment of the fee of sixty dollars for the course of six lectures allows the registration for credit of twenty persons; each additional person desiring credit will be required to pay a fee of three dollars.

**UNIVERSITY LECTURES, READINGS AND RECITALS**

Methods of Securing These Lectures.

Organizations desiring these programs should write the Department of University Extension indicating their first and second choice. Women's Clubs, schools, churches, and Chambers of Commerce have found this an admirable method of providing programs for special days. Some have used them to raise money for public purposes. Lyceum managers have secured variety and a larger number of entertainments by including one or more University Extension lectures in their courses. Communities with no special organizations have arranged for these entertainments simply for social purposes. In several cases courses of six such lectures have been given in various towns with great success and at a very small cost.

The cost of these lectures is simply a fee of $10.00 for each lecture and the local entertainment of the speakers. For recitals where two persons are required, the fee is $15.00. For illustrated lectures, a lantern and operator must be provided. If this is impossible, a lantern may be brought from the University, but transportation charges must be paid in addition. In applying for such lectures please state whether electricity is available. Fees, etc., should be paid to the lecturer; they need not be sent in advance. The University will supply without charge advertising cards and admission tickets if requested to do so. Applications should indicate the number desired.

(The names of the lecturers except the president are arranged alphabetically.)

**Programs of Music and Readings**

Besides vocal recitals by Prof. De Loss Smith, described below, Miss Josephine Swenson, Assistant Professor of Piano, Mrs. Carl Holliday, pianist and organist, and Prof. W. G. Bateman, pianist and composer, may be obtained for recitals in combination with Mrs. Alice W. Macleod, Instructor in Public Speaking, or with Mrs. G. F. Reynolds. Fees for recitals requiring two persons are $15.00.
EDWIN BOONE CRAIGHEAD, LL. D., D. C. L.
President of the University

President Craighead may be secured for addresses on educational or other subjects. Application should be made directly to him.

LESLIE J. AYER, J. D.
Professor of Law

Social Unrest

Special lectures dealing with The Law may also be arranged for if sufficient notice is given.

W. G. BATEMAN, A. M.
Assistant Professor of Chemistry

Pure Food

The careful manufacturer buys his coal on the chemist’s analysis, so that his grates may not burn out; he sees that his water supply is pure, so that the life of his boilers may be prolonged. But at night he sits down to dinner not knowing whence comes his food, which by devious routes may have passed the chemist by. Pure food, its necessity, how to get it, simple tests for quality and possible adulterations—these are some of the points discussed in this lecture.

Experiences in China.

For two years Mr. Bateman was professor of chemistry in a Chinese University and thus had excellent opportunities for observing this interesting people. During this time the country passed through a flood, an epidemic of bubonic plague and the revolution which made China a republic. The daily life of the common people, their conventions, joys, sorrows and struggles form the theme for a lecture which shows that in spite of the contrast between the two civilizations the westerner may still learn something of manners and morals from this ancient people.

Modern Opera

Recent developments in opera is the subject of this lecture. The older form of the opera is contrasted with those of the latest composers. The "leit-motiv," the wedding of sense and sound, the necessity for acting on the part of the singers, the important place now held by the orchestra, the innovations of Strauss, are some of the topics. The various points will be illustrated on the piano, and selections from "Carmen," "La Boheme," "Madame Butterfly," "Trovatore," etc., will be played.
Music and Reading, with Mrs. G. F. Reynolds.

A combined program of original music by Mr. Bateman and a short play read by Mrs. Reynolds, concluding with a reading of Longfellow's *King Robert of Sicily* accompanied by music composed especially for it by Mr. Bateman.

THADDEUS L. BOLTON, Ph. D. Professor of Psychology

The Significance of Pleasure and Pain for Growth and Mental Health.

This lecture will deal with the effect upon the body of the states of pleasure and pain. It is a popular exposition of the advance that has been made in modern psychology in the study of human life as it is affected by agreeable and disagreeable experiences.

On the Metamorphosis or Molting of Boys and Girls.

This is a study of adolescence. It presents the processes of change that take place in boys and girls as they transform themselves from children into men and women and it attempts to show the dangers that beset life at this critical period.

The Psychology of the American People.

The development of those traits of mind that characterize the American people is worked out historically and on the principles of modern psychology. We should be ashamed of ourselves if we were not Americans.

Psychological Aspects of Literature and Literary Appeal.

This lecture attempts to analyze literature from the standpoint of psychology and evaluate the various elements that enter into it as to their power to appear or to entertain. It is a study of the psychological foundations of the art of writing.

The Social Value of Self Effacement and Self Surrender.

This is a popular lecture, suitable for schools and churches, upon the development of moral consciousness.

Our Peculiar and Backward Children.

This lecture is given with a stereopticon. It deals especially with the laggards and sub-normal children in our schools. The various types of physical defect and arrested growth as they affect mental development will be shown on lantern slides and the nature and causes of these disorders will be explained.
How We Learn.

The course will consist of three or more lectures on the processes of learning. These lectures are both popular and scientific, suitable for audiences of general culture. They attempt to present the principles of learning and to point the way toward more economical learning and teaching.

Social Psychology.

This course will cover as many lectures as a club or society might wish to hear upon the psychology of society as we see it about ourselves. It is a study of people just as they are, laying bare their motives and springs to action. Any one of the lectures may be given alone.

Hypnotism and Its Demonstration.

This is a popular lecture with demonstration of the general characteristics of hypnotism. The lecturer must be assured before the engagement is made that an hypnotic subject is available for demonstration. In case a subject or subjects are not furnished, the community wishing the lecture must bear the expense of bringing a subject from Missoula or other place.

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

(1) The Legends of the Skies—Illustrated.

In this lecture an attempt will be made to develop an interest in Astronomy from a purely aesthetic point of view. The celestial bodies have been the object of admiration in all ages, and time and fancy have woven many beautiful myths about them and poets have sung their charms. It is the object of this lecture to make young and old familiar with the face of the sky, and acquainted with the inhabitants that people its depths.

(A number of simple star maps will be sent to the organizer on request.)

(2) The Wanderers of the Universe—Illustrated.

Deals with comets, their probable origin and composition; their wanderings through space; some of the principal comets that have visited the solar system during the historic period.

(3) Some Problems of Modern Biology.

(4) Evolution—Its Meaning and Its Factors.

(5) Life—Its Physical Basis and Definition.

(6) The Coming of Evolution.
A brief history of the development of the idea of evolution among different people up to the time of Darwin.

(7) Lamarck and Darwin and Their Successors.
A brief exposition of the theories of Lamarck and Darwin and their relative positions in the light of more recent research.

(8) Heredity in the Light of Recent Research.
Nos. 4 to 8 are in the nature of a series, but each lecture is independent of the others.

M. G. BUCKHOUS, B. S. Librarian

Library Methods.
Methods and systems for the administration and organization of a small collection of books; classification; cataloging; the most valuable reference books for a small library; the essentials of book selection.

Reference Work and Bibliography.
Instruction in the use of a library in debating and the preparation of papers, leading up to the point where the construction of a brief or the writing of the paper begins. Sources for the compiling of bibliographies will be considered and suggestions on note-taking given. The value of United States Government documents will be presented and instruction given as to the methods of obtaining this material.

GEORGE R. COFFMAN, Ph. D. Professor of English

Modern Cultural and Economic Forces in the Middle Ages.
One of the most significant periods of renaissance in the history of western civilization is that of the twelfth and thirteenth centuries. This applies to economic progress in commercial relations, to intellectual progress in art and literature, and to social and religious progress in such organizations as those of St. Francis and his followers. As one writer has put it: "The twelfth century stands beside the eighteenth as one of the greatest creative centuries in human history. The thirteenth, like the nineteenth, applied these creations in the transformation of society.''

The lecture will consider some of these cultural and economic forces, and show that in a sense they mark a turn to a modern point of view in problems involved and ways of thinking.
The Miracle or Saints' Plays.

Just as the short story is a popular literary fashion today, so was the Miracle Play during the Middle Ages.

This lecture will consider the relation of the Miracle Play to the life of the medieval people; the audience itself; the setting of the play; the subject matter; a modern Miracle Play, Maurice Materlinck's *Sister Beatrice*. (This last will be read in part).

An Evening With Stevenson.

Robert Louis Stevenson is one of the most human of nineteenth century writers. It is the purpose of this lecture to tell a little of his fine spirit of adventure and optimism, and to discuss in part his contribution to literature.

MRS. GEORGE R. COFFMAN, Ph. D.
University Extension Lecturer

1. The Rhine Country—Illustrated.

Legends of the Rhine are told and pictures shown of the ancient castles with which they are connected. Especial stress is placed upon the locations of recent battles.

2. Southern Germany—Illustrated.

A journey through Southern Germany reveals the most romantic part of the Fatherland. Among the cities visited are Bayreuth with its Wagnerian associations, Munich with its galleries, and Nuremberg with its quaint old towers. The delightful possibilities of a tramp through the Black Forest and Saxon Switzerland are suggested.

3. The Feminist Movement in Germany.

The work of the German women in social, educational and philanthropic activities compared with that of American women.

4. Some Tendencies in Modern German Literature.

The names of Hauptmann, Sudermann, Fontana, Lillieneron, Dehmel, and Nietzsche indicate the scope of the lecture. It discusses the French, Scandinavian, and Russian influences upon both the drama and novel and the influences which have affected the lyric poetry, stressing especially that of Nietzsche.

MARY E. EDMUNDS, B. S.
Instructor in Home Economics

Nutritive Value of Foods.

A discussion of the needs of the body which food can satisfy. Classification of food principles as tissue builders or heat
and energy yielders and their occurrence in ordinary foods. Methods of combining foods to produce a balanced ration and adaptation of the diet to the individual will also be taken up.

Women and the Home.

A brief study of some of the sciences and arts about which a woman must know in order to be a successful homekeeper; for example, selecting, preparing and serving foods; sanitary conditions in and around the house; furnishing and decorating the home; organization of the household and division of the income.

M. J. ELROD, Ph. D.  Professor of Biology

The Yellowstone National Park—Illustrated.

A new lecture on the National Playground, illustrated with lantern slides, many of them colored, and not included in the lecture described in the first bulletin.

The Glacier National Park—Illustrated.

Illustrated with over one hundred stereopticon slides, mostly colored.

Five trips to the park during the past ten years have been made by the lecturer. Several of these expeditions were undertaken before the park was established by the government. The lecture is descriptive of the mountains, lakes, glaciers, waterfalls, trails and passes of this wonderland. The slides are from original negatives from all parts of the park. Most of the places shown in the pictures are not visited by tourists, and hence are seen by few.

The Trail of Lewis and Clark in Montana—Illustrated.

Illustrated by over one hundred stereoptican slides, mostly colored.

The lecture deals only with that part of the Lewis and Clark trail which lies within the State of Montana. A brief account of the trip is given to make clear the plan of the expedition. Conditions at the beginning of the last century and the beginning of the present century are compared, showing the great advancement that has been made. The slides represent in part Montana scenery as it is today, in part copies of illustrations used a century ago. A summary of the scientific work of the expedition is given.
An Evening Among Montana's Mountains—Illustrated.

Illustrated by over one hundred stereopticon slides, mostly colored.

Fifteen seasons have been spent in scientific work in the hills and mountains of Montana, and a camera is always in the pack. The result is a collection of several thousand negatives from which a hundred or more slides not used in the other lectures are made use of in this entertainment. The lecture deals with the uses of mountains as affecting climatic conditions and their value as snow-holders, with the forests and their uses, and with many suggestions about life at higher elevations. The display of so many pictures from different places in the state makes the evening pass very pleasantly, yet the lecture is educational and instructive from beginning to end.

Game Animals and Birds of Montana—Illustrated.

Illustrated by the stereoptican; sixty or seventy slides, many of these colored, will be used.

Our game animals are fast disappearing. Most people consciously or unconsciously, help them along a little in their passage. In another generation the national parks and zoological gardens will be the only places where they may be seen. Every man should lend a little aid toward saving wild life. The lecture deals with the animals and their habits, the places in which they live, their enemies and their protection. The pictures will show the animals and typical places in which they live. Many of the pictures will therefore be of scenery. The lecture is educational and should foster a spirit favorable to the vanishing wild life. It was through the efforts of the lecturer that the Montana National Bison range was established.

CARL H. GETZ, A. B. Assistant Professor of Journalism

A Day With a "Cub" Reporter—Illustrated.

A popular lecture in which a glimpse of the daily life of the metropolitan newspaper reporter is obtained. The lecturer follows the reporter from the time that he reports to the city editor for his first assignment until the newspaper comes from the press. The organization of the modern newspaper office is explained and the methods of gathering news are described. The lecture is punctuated with a series of stories about the adventures of a "Cub" reporter, and is illustrated by numerous slides.
A. GEORGE HEILMAN, Ph. B., M. D.  
Instructor in Biology and Physiology

Bacteriology and Hygiene of White Plague or Tuberculosis.

This will be treated from different standpoints—history, bacillus causing disease, relation of bovine and human tuberculosis, exciting and predisposing causes, modes and routes of infection, organs and tissues affected, results, etc.; also to show what steps have been taken by legislation, state and city boards of health towards the prevention, care and treatment of this dreaded disease.

Bacilli or Disease Carriers.

Their influence in the dissemination of infections, relative to typhoid fever, diphtheria and influenza. The hygienic and sanitary principles for the prevention and control of epidemics, including houses, streets, water and milk supply, disposal of waste, work done by legislation and boards of health in this direction.

Contagious Diseases.

The bacteriology and hygiene of the most important and common diseases, such as smallpox, scarlet fever, etc., will be discussed with reference to their history, source, transmission and dissemination, vaccination, etc.; the good done by state and city officials towards controlling the spread of contagious diseases; the relation of the doctor, the patient, the community and the health boards under such conditions.

Physiology of Sleep.

Dealing with the normal and abnormal states of mind, as to personality, self-consciousness, sub-consciousness and unconsciousness; meaning of sleep; external phenomenon associated with sleeping state; chief causes of sleep, and physiological theory of sleep; amount of sleep required and effects of insufficient sleep; hypnosis as an artificial form, with its legal dangers.

HENRY HAXO, Ph. D.  
Assistant Professor of Romanic Languages

The Spirit of French Literature.

This lecture deals with the main characteristics of French literature as shown in the most important literary masterpieces of France. This lecture may be given in French.
L. S. HILL, M. A.

Assistant Professor of Mathematics and Astronomy

The Italian Temperament.

A discussion based upon evidence furnished by the Italian language and literature, as well as by Italian contributions to the pictorial and plastic arts and to science. Temperament will be studied as a moment in the cultural development of the Italian people.

CARL HOLLIDAY, M. A., Litt. D.

Professor of English

American Humor.

Under this title will be offered either a general lecture on the entire subject of American Humor or on some special period or famous humorist. In the former instance, the development of American wit and humor will be treated from the earliest colonial specimens to those of the present time, and the influence of humor will be shown on American customs, politics, literature, and life in general. If a lecture on a special humorist is desired, his life as well as his writings will be discussed.

When Our Forefathers Went to School.

This lecture deals with early educational conditions in America, and describes, along with many other items, the peculiar school books used in public schools and colleges, the strange conditions under which students studied and lived in the older universities, and the rules enforced, not only by the faculties, but by the students. The lecture deals not only with the well known colleges of New England but also with the preparatory schools and colleges of the South and Middle West. The influence of the training given by these institutions will be compared with that given by the schools of modern days. Various humorous and indeed ridiculous customs and ideas of early school days will be presented.

WILLIAM WEBB KEMP, Ph. D.

Professor of Education

Old Time Schools and School Customs—Illustrated.

Illustrated by means of stereopticon slides. A single lecture contrasting the conditions of school buildings, of school organizations and procedure of the colonial period with such conditions in the early fifties and at the present time.

Ancient and Mediaeval Schools as Pictorially Described.

Illustrated by means of selected stereopticon slides. A single lecture dealing with many interesting as well as humorous
phases of early education as recorded through old-time records and illustrations.

Changes in American Life and Education.

Contrast between colonial and modern life; the age of invention, manufacture and industrial expansion; problems of immigration, specialization and economic pressure; the schools of the nineteenth century; the schools of the future.

Modern Educational Problems.

A summary of the discussions, conclusions and results of current educational investigation.

Conservation of Boys and Girls.

A single lecture dealing with some of the results of human wastage, the hereditary background, the health movement in school administration, the relation of the school to sex and social hygiene, and the relation of these problems to morality and religion, and to the home and the church, in the training of boys and girls.

Gems From the Opera.

An introduction describing the origin of the opera, followed by a description of selections from the modern operas; illustrated by means of Victrola records. (Towns desiring this lecture should arrange for a suitable instrument.)

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

Mexican Plants and People—Illustrated.

A lecture descriptive of the plateau region of Central Mexico—a country rich in interest from the standpoint of its natural features, mountains, landscapes, plants and animals, and from the standpoint of its people, their primitive customs, institutions, estates, etc. This region is occupied by many large private domains which date back to the time of the conquest. The country is covered with a growth of peculiar and interesting vegetation; many forms of cactus, century plants, the mesquite and other shrubs, with a varied flora of smaller forms of plant life. The substance of this lecture presents a phase of Mexican life not usually met by the tourist; fully illustrated.
Forest Trees of Montana—Illustrated.

A lecture descriptive of the various species of the coniferous trees of the northern Rocky Mountains. These are shown in their native habitats and their peculiar distinctive features are presented so that one not familiar with their distinctive marks would be enabled to recognize the different types. Their distribution is also presented and their relative values, their peculiar requirements and other features of interest. The views are from photographs taken by the lecturer in different parts of the state.

Arizona—Desert Life of the Southwest—Illustrated.

The desert region of the Southwest is a part of our country little known or appreciated by northern residents. Its landscapes, its mountains and valleys, its climate, its vegetation, its animal life and native people are of fascinating interest. The lecture presents the problems peculiar to life in a desert region, and is illustrated by many excellent views of the plant life, topography and people, taken during the lecturer’s sojourn in southern Arizona.

ELOISE KNOWLES, Ph. M. Assistant Professor in Fine Arts

Decoration of the School Room—Illustrated.

A popular lecture discussing the selection and proper placing of pictures and other decorations in the school room. Pictures pleasing to both children and parents will be described. The lecture is illustrated by lantern slides.

Some Phases of Modern Art—Illustrated.

This lecture treats of recent developments in figure and landscape painting, discusses the various phases of technique in tone and color, contrasts European and American art of the present day, and touches upon the dawning struggle between idealism and realism as manifested in recent freak productions. Illustrated with abundant lantern slides.

N. J. LENNES, Ph. D. Professor of Mathematics

Charles Darwin, His Social and Private Life.

This lecture deals with the relations of Charles Darwin to his family, his friends and his scientific colleagues.
Charles Darwin, the Man of Science.

This lecture deals with the change of thought from 1840 to 1880, and the part which Darwin’s life played in bringing about this change.

Wonders of Modern Astronomy—Illustrated.

Slides made at Yerkes observatory during the past four years will be shown showing the surface of the moon with its “craters” some of them miles in diameter; the sun with its “spots” and its envelopes of flame and gases; Jupiter and Saturn with their satelites; and some of the most interesting spots of the Milky Way.

MRS. ALICE WICKLUND MACLEOD, B. S.,
Instructor in Public Speaking

Readings From Kipling.

Illustrative of various forms of the poetry and prose of this popular author.

“The Lane That Had No Turning.”

One of Gilbert Parker’s most dramatic stories, full of life and action.

“Macbeth.”

“Strife,” by John Galsworthy.

A play presenting in an unusually forceful way, but without taking sides with either party, the struggle between capital and labor.


One of Fitch’s most delightful comedies of American life.

“Molly Make Believe,” by Eleanor Abbott.

A convincing love story—tender, human, whimsical.

“In a Balcony,” by Robert Browning.

A poetic play presenting in beautiful form a romantically tragic story.

“Passing of the Third Floor Back,” by Jerome K. Jerome.

A dramatized morality.


A one-act comedy, scintillating with subtle humor.
Miscellaneous Readings.

A program of short poems and selected readings.
Readings of other plays from Shakespeare, Ibsen, Kennedy and other authors will be arranged for, if desired.

W. WALTER H. MUSTAINE, B. S. Director of Physical Education
Physical Education, Aims and Methods.

CHARLES MELVIN NEFF, LL.B. Professor of Law

Interstate Problems in Irrigation.

This lecture will take up the various questions now arising between states as to the right of the inhabitants of one state to the use of water in streams flowing into other states, and as to the right of such inhabitants to tap water sheds belonging wholly or partly to other states.

GERTRUDE CURTISS PAXTON, B. S. Instructor in Domestic Art
Art in Ornament and Dress.
A talk dealing with the principles of design in costume, appreciation of fabrics, and selection of materials.

What Dress Makes Us.
Influence of dress on character and health.

G. F. REYNOLDS, Ph. D. Professor of English

O. Henry—America's Most Popular Story Teller.
Probably no writer is so popular with American young men as O. Henry (Sidney Porter). The reason for this is that his stories represent those qualities which most appeal to the every­day citizen. The lecture discusses his life and his work and includes the reading or telling of a considerable number of his most successful stories.

The Greatest Invention of the English Race.
A presentation of the humors, the intricacies, the peculiar­ities of the English language as an instrument for the expres­sion of thought.

An Afternoon in Shakespeare's Theater.
A description of the theater in which Shakespeare's plays were first given, the audiences that attended them, and the way in which they were performed. As a special illustration any
play may be chosen which may be desired. If the club or school has been interested in some particular play, the lecture will especially discuss its performance; if no particular play is desired illustrations will be taken from typical Elizabethan plays.

"Cyrano de Bergerac," by Edmond Rostand.

An heroic comedy portraying the wonderful adventures and romantic life of one of the most strikingly conceived of dramatic characters.


An Irish comedy rich in humor satirizing the village politician.


A poetic drama, written by an American woman, emphasizing the importance of the child.

MRS. G. F. REYNOLDS, M. A.

University Extension Lecturer and Reader

Gibson and Gilbert.

A reading of two or three of W. W. Gibson’s striking labor plays, beautiful in their restraint and pathos, and of W. S. Gilbert’s delightful comedy, "Sweethearts."

Paul Lawrence Dunbar.

A brief account of the tragic life of this negro poet and a reading of several of his typical poems.

The Irish Plays and the Irish Players.

The rise of this remarkable national drama with the reading of two short plays.


This play, which was produced only a few years ago, has already won its place among the few really great modern tragedies. As a drama dealing with the life of every-day people, it is not surpassed by any other play in English.


These two short plays together make up a program for an evening, or either may be chosen to be used by itself with a miscellaneous program. The first is a delicately conceived bit
of pleasantry. *Riders to the Sea*, by the greatest modern Irish writer, sums up in brief form the tragic meaning of the sea to those who gain their livelihood from it.

**Miscellaneous Program.**

Readings from modern representative authors.

**Music and Readings with W. G. Bateman.**

A program of original music by Mr. Bateman, with readings by Mrs. Reynolds, concluding with a reading of Longfellow’s *King Robert of Sicily*, accompanied by music composed especially for it by Mr. Bateman.

J. P. ROWE, Ph. D.

Professor of Geology

**Montana Before Man and Today—Illustrated.**

In this lecture there will be shown about 150 lantern slides picturing to the audience the various animals that inhabited the earth, especially Montana, before the advent of man. Also many illustrations will be thrown on the screen showing the forests, dam-sites, power plants, mineral deposits, etc., from the State. The lecture is intended to cover the geological building of the State and the economic products that are now found within its borders.

**Genesis and Geology.**

This lecture deals entirely with the book of Genesis and geological beliefs of today. It is not a criticism of the Bible, but merely a scientific presentation of the age of the earth, its method of formation as contrasted with the allegory as presented in Genesis concerning the creation of man and the earth. It is purely a scientific discussion and does not, in any way, reflect or depreciate the great value of religion.

**The Earth and Its History or Animals Before Man—Illustrated.**

In this lecture the various hypotheses accounting for the earth’s formation will be explained, together with the position of the Earth in the Solar System, and the relation of the Solar Systems to the other systems in the universe; also a general discussion of the evolution of the land forms and the past life that has existed thereon. Many lantern slides will be used to show the various past animals, some of which are very large and peculiar indeed. Such animals as the half fish and half reptile; half reptile and half bird; and the largest and most
spectacular reptiles that ever lived will have their likeness projected upon the screen.

Glaciers, Mountains and Volcanoes—Illustrated.

In this lecture a general discussion of the kinds, localities, theories of cause, etc., of glaciers, mountains and volcanoes will be given. In the discussion of glaciers, the various types will be shown; their rate of movement, size, work done, where found, etc. Mountains and volcanoes, their geological age, belt, size, height, etc., will be considered, together with many other interesting and instructive features concerning each. About 125 splendid lantern slides will be shown. Each one will tell its own story and typically illustrate some feature of a glacier, mountain, or volcano.

F. C. SCHEUCH, M. E.

Professor of Modern Languages

Life in Spain—Illustrated.

An illustrated lecture describing Spain and its customs. The speaker spent eight years in Barcelona, and speaks from a first hand knowledge.

The Past of Spain.

The romanic literature and history of Spain from before the Moorist conquest—a survey.

DORR SKEELS

Director of School of Forestry

What Forestry Means to Montana.

DE LOSS SMITH

Professor of Music

Accompanied by Florence Marion Smith.

Recital; the following is a typical program:

Two American Indian Songs.................................Cadman
From the Land of the Sky Blue Water.
The Moon Drops Low.
The Just So Songs.................................................Kipling-German
When the Cabin Portholes.
The Camel’s Hump.
Rolling Down to Rio.
Polish Dance .........................................................X Scharwenka
Mit einer Wasserlilie.
Zweignung............................................................Strauss
It Is Enough.........................................................Handel
Valse Chromatique ..............................................Godard
CHARLES C. STAEHLING, Ph. B.
Assistant Professor of Commerce and Accounting

Vocational Guidance—Its Influence and Value in High Schools and Colleges.

This lecture will consider the growth of vocational guidance, the purpose, the various phases of its influence and methods of conducting it in schools. This is a live subject in our educational field and in the course of the lecture suggestions will be given as to what can be done to guide the pupil even in small and inadequately equipped schools.

The Commercial Curriculum and Its Place in High Schools.

This lecture includes the more important phases of the Development of the Commercial Curriculum, the subjects that should be included, and the relation of the Commercial Department to the other courses and to the school organization in general.

MARY STEWART, A. B.
Dean of Women and Instructor in English

The New Note in Literature.

A cursory review of some types of modern literature, in drama, verse, and story, with the purpose of showing how the “spirit of the age”—democracy in its best and broadest sense—is dominating its literature as well as its life.

The New Note in Religion.

Presenting a new view point of the relation between church and state when the state is a democracy, and finding in awakened social consciousness and practical and specialized philanthropy rather a more vital application of religion to life than a decline of church influence.
Robert Burns.

A brief review of the life of the poet and an appreciation of his genius, together with a "little journey" through the Burns' country.

Jean Valjean.

Selected readings from Victor Hugo's masterpiece, Les Miserables, tracing the dramatic life of Jean Valjean, with an interpretation of its significance as an "Epic of the Soul of Man."

"The Blue Bird."

Readings from Maeterlink's fairy play, with a description of its scenic effects as represented in London and an interpretation of its philosophy.

Woman and Democracy.

An uncontroversial analysis of the so-called feminist movement, its place in the social evolution, and its significance to the individual.

Paris—Illustrated.

The lecture discusses reminiscently, life in Paris with its side lights on French characteristics, illustrated by pictures of the most famous and interesting buildings, streets and parks of the city, together with the well-known pictures, statues, and other art works of its museums.

A. L. STONE, B. A.  
Professor of Journalism

The Newspaper Game.

The story of the making of a newspaper, from the inside. Newspaper making, which is popularly surrounded with a glamor and an air of mystery, is really a prosaic business. Like all other lines of occupation, however, it has its interesting phases. It abounds in incidents which illustrate human nature perhaps better than the happenings in any other profession. This lecture is an informal discussion of some of these out-of-the-ordinary occurrences in the life of the newspaper man.

H. A. TREXLER, Ph. D.  
Assistant Professor of Economic History

Student Life in a German University—Illustrated.

The lecturer has his own pictures of the famous German professors, of the old university buildings, of the fraternity
houses, of the inter-fraternity duels, and of the beautiful Rhine-
land scenery where the students wander through quaint vine-
yards, past ruined castles and over historic mountains. We fol-
low the merry German student from his lecture to the duel and
then to the antique little inn nestling among the Rhineland hills.

JOSEPH HARDING UNDERWOOD, Ph. D., LL. D.
Professor of History and Economics

Unter Den Linden and the Boulevards.
Observations of men and women and things on the streets
of Berlin and Paris.

European Christianity.
Observations of churches and social conditions from Dublin
to Damascus.

Is the "Holy" Land Holy?
Observations and reflections from a six weeks' tour in Pal-
estine.

The Economist's Understanding of the Social Question.

A. N. WHITLOCK, LL. B. Acting Dean and Professor of Law

Some Tendencies in the Law.

ADVICE ON CLUB PROGRAMS

Clubs desiring assistance in the planning of their club pro-
grams may secure it free of charge by writing to Miss Mary
Stewart, Dean of Women. A typical program, adopted by sev-
eral clubs, is as follows:

The New Note in Literature.

This is a suggestion for a program of nine meetings. It can
be expanded indefinitely. It attempts to secure unity in a curs-
sory study of types of modern literature, through emphasis on
what is thought to be a consistent underlying theme—that is, it
seeks to define the "new note" in the literature of the day as
exemplified in the novel, the drama, and poetry. And this
"new note" is democracy in the broadest and best meaning of
the word. All thinking men and women are conscious of the
great social unrest that is manifest in every phase of modern
life, the struggle for larger opportunities and better living for
all classes of men and women and little children, and this not
merely for classes as classes, but for the individuals within them.
It is a day when we are calling our principles and creeds to account, bidding them "make good" in application, as it were. We reaffirm that all men have an equal right to life, liberty, and the pursuit of happiness, not merely as a principle of government, but as a condition of society. It is not enough to say that they have a right to it, but we must see that they get it. There is a wide-spread feeling that brotherly love is not so much a question of faith as of works, and that Christianity to be worth anything must be applied; in short, that social justice is the only basis on which can be built individual freedom having any sort of permanency. It is not strange, then, that this democratic spirit which so dominates all ideals of government and life should leaven the literature of the day.

The following types of modern literature are more or less imbued with this spirit.

A list of references which will help in understanding this viewpoint is appended.

HELPFUL REFERENCES.

Social Reforms Suggested Through Poetry—Craftsman, October, 1911.
(Very good.)
Two of the Newest Poets—Atlantic monthly, April, 1913, (very good.)
Democracy in English Fiction—Living Age, April 1, 1911.
(Not much to the point, though the first few pages are illuminating.)
Literature and Democracy—The Forum, August, 1913, (very good.)

* * *

The program may be arranged somewhat as follows:

THE NOVEL

First Meeting.

Paper—Democracy—the "new note" in Modern Literature. This should be a comprehensive statement of the general treatment of the whole program.

Note—A limited number of Clubs which desire it may secure Miss Stewart for this introductory lecture, on application to the University.

Second Meeting.

V. V's Eyes—Harrison.
2. What the critics think. (Consult current magazines, e.g., The Nation, Current Opinion, etc.)
Third Meeting.

Clayhanger—Bennett.
2. What the critics think.

Fourth Meeting.

The Promised Land—Mary Antin.
2. A few facts about the author.
3. Paper—"Equality for the Immigrant.''

THE DRAMA

Fifth Meeting.

The Silver Box—Galsworthy.
1. Readings from the play with its story.
2. Its message, (i. e., the "new note.")

Sixth Meeting.

The Servant in the House—Charles Rann Kennedy.
Treat as above.

Seventh Meeting.

Kindling—Charles Kenyon.
Treat as above.

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POETRY

Eighth Meeting.

"Daily Bread"—Gibson.
1. Readings.
2. The "new note" in his verse.

Ninth Meeting.

The Everlasting Mercy or The Story of a Round House—Masefield.
Treat as above.

Note—Clubs desiring to have one or more of these plays or poets read and interpreted to them may, if application is made early enough, secure the assistance of some member of the University faculty. Mrs. Reynolds is now prepared to give "The Silver Box" and "Gibson." Mrs. Macleod will give "The Servant in the House." Other readings by other University instructors may be arranged on request.

(Other recent books more to the taste of any club may be substituted for those listed. There are no doubt others expressing the general theme as well or better).
PACKAGE LIBRARY SERVICE

The University Library is forming, in a tentative way, a series of package libraries, to which, during the year, it will add new subjects as rapidly as possible. As at present made up, they consist mainly of clippings from metropolitan newspapers. Magazines containing related material are to be found in most city libraries, or, in some cases, the University can lend them. These libraries may be obtained by applying to the University Librarian with a deposit fee of fifty cents for each library desired. This fee will be refunded, less postage and fines for mutilation or delay in returning. Each library may be retained two weeks; a fine of five cents a day will be imposed for each library kept overtime. Libraries are now ready on the following subjects.


UNIVERSITY ASSISTANCE IN HIGH SCHOOL ACTIVITIES PLAYS

PLAYS

Schools or other organizations which are about to put on a play may secure a director from the University for one, two or perhaps more visits on the following terms: The play to be given must be approved by the director. The director should be notified as early as possible before the rehearsals are to begin that his services are desired. If one visit is made, it should be at the beginning of the rehearsals. At least six weeks should be allowed for the preparation of a play intended to fill an evening. If two visits are made, the second should be shortly before the play is to be given. The University will pay the traveling expenses; the local organization will provide local entertainment and pay a fee of $10 for each visit. For this plan to be successful, it is necessary that there should be a person competent to conduct the rehearsals and carry out the suggestions of the director. The University will be glad to assist in the suggestion of plays. As only a limited number of towns can be served in this way, application should be made early in the season.
Helpful hints for the staging and rehearsals of plays may be found (1) in the Ladies' Home Journal for October, 1913, and (2) in the English Journal for December, 1913 (published by the University of Chicago Press, Chicago, price 30c.) All persons interested in the study or production of plays, should belong to the Drama League. The publications of this Society are extremely valuable, and the cost of membership is only one dollar a year. Application should be addressed to 736 Marquette Building, Chicago.

A classified list of plays suitable for amateurs, prepared by Mrs. G. F. Reynolds, may be obtained free of charge on application to the Department of University Extension. Most of these plays may be borrowed from the University Library for examination.

LIBRARY MANAGEMENT

Schools or towns putting in new libraries or arranging old ones may secure the assistance of Miss Gertrude Buckhous, Librarian of the University. Miss Buckhous will be able to visit a limited number of towns during the winter and will give explicit directions for the classification and arrangement of the library and advice as to its management. She will do this either in the way of a formal lecture or in private consultations with the officers interested. The University will pay the traveling expenses; the local authorities will pay a fee of $10 and the expenses of entertainment.

ATHLETICS

It will be possible for a limited number of high schools to secure the assistance of the University coaches and some of the most proficient athletes, in training contestants for basketball and track. One of these gentlemen will come to any school making application, stay for a day at the school, and give the students demonstrations and practical advice in training for the various contests. The only expense to the school will be a fee of $10. In this way the University hopes to be of material value to those High Schools which do not employ regular athletic directors, especially in assisting the students to avoid harmful forms of exercises and to practice proper habits of training.

DECLAMATION

A limited number of schools desiring it may secure the assistance of University instructors in training the contestants
for the declamatory contests. One of the University instructors will spend a day at any High School, hear the declaimers, and give each one such criticism and suggestion as seems necessary. The only expense will be a fee of $10. By arranging for a recital on the preceding evening schools will usually be able to pay the expenses of both services from the proceeds. Mrs. Alice Macleod and Mrs. G. F. Reynolds are available for this work.

Mrs. Alice Macleod has prepared a classified list of declamations suitable for high school students. This list may be obtained free of charge on application to the Department of University Extension. Most of the declamations listed may be borrowed from the University Library.
Correspondence Study
Department
CORRESPONDENCE STUDY DEPARTMENT

1. General Information.

1. Correspondence study should appeal to the following classes of persons: (1). Teachers who are seeking promotion. (2). Persons preparing for the University who cannot find time to attend the usual preparatory school. (3). Those who want to take a regular course at the University but who desire to shorten the time of residence. (4). Those who are temporarily absent from the University. (5). Graduates of Colleges and Universities who desire to pursue some special work. (6). Any person who desires guidance in systematic work.

2. Admission and Registration.

No preliminary examination or proof of previous work is required of an applicant for Correspondence Work. A student desiring to undertake Correspondence Study should first select such course or courses as he may desire to take, and send for a registration blank. He should then fill out this blank with the information called for, and return it with the required fee to the Extension Department of the University. The University reserves the right to reject unsuitable applicants or to recommend other courses than those chosen if the data furnished on the application blank should warrant such action, but it will promptly return all fees if the applicant is rejected, or if the substitution of courses recommended is not acceptable to the student. (See Regulations below.)

3. Methods of Instruction.

Upon receipt of application blank and fee, the first lesson assignment will be sent, with directions for study and instructions for preparing and returning lesson sheets and reports. Each lesson will be returned to the student with such corrections, explanations and suggestions as the instructor may think the student needs. The lesson sent to the student will contain: (1) Full directions for study, including references to text books by chapter and page; (2) questions to test the student’s method of work and his understanding of the ground covered; (3) lists of books and assignments for further reading and such other suggestions and helps as the instructor thinks the student needs.
After careful preparation of the lesson sent, the student writes his answers to the question or prepares the assignment as 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. Informal Courses.

In certain advanced courses the direction of the student's work takes the form of informal correspondence between the student and the instructor. The course is usually arranged between the student and the instructor to meet the special needs of the former. The student must present evidence that he is doing useful and effective work. This evidence may consist of several themes or a thesis covering the whole work. If not otherwise specified, courses are formal.

5. The Unit Course.

All Correspondence Work is based upon the Unit Course, which consists of 35 assignments and is the equivalent of the work of a resident student for five hours per week for one semester or half year. A Unit Course may, however, consist of one or more subjects or courses each embracing 1-5, 2-5, or 3-5 of a full course and representing 7, 14, 21 assignments, or 1, 2, 3 semester hours of credit. It is believed that a full Unit Course or its equivalent should be completed by the average student in thirty-five weeks on a minimum of leisure for study of one hour per day, six days in the week. The student may, however, pursue his studies as rapidly as he is able.

6. The Lesson.

Each formal course, therefore, consists of a definite number of assignments, 7, 14, 21, 28 or 35, depending upon the number of credit hours represented by the course. An assignment represents in general about a week's work for the average student, not an evening work, as at school.

7. Examinations.

Examinations are optional with the student, but are required if credits or certificates of credit are sought. These ex-
aminations should be taken at the University, but may be held at some other convenient place approved by the University.


(a). All courses offered by the Correspondence Department, whether taken for University credit or not, are on a uniform basis in reference to amount of work covered. Courses which are satisfactorily completed have, therefore, a definite value, and all students who successfully complete such courses will be given a certificate of credit for all work satisfactorily completed.

(b). Credits toward graduation will be given by the University for work done in Correspondence Courses of collegiate rank if satisfactory examinations have been passed.

(c). Credit records for all Correspondence Courses successfully completed will be kept in the office of the University and may, if the student enters the University, be applied toward entrance or graduation requirements.

(d). The maximum credit towards a University degree which may thus be earned by Correspondence Study may not exceed one-half the unit hours required for graduation. At least one year or four summer sessions amounting to not less than 24 credit hours of work must be done in residence at the University.

Regulations.

(a). Correspondence Courses may be begun at any time during the collegiate year.

(b). For admission to the Correspondence Study Department no examination is required, but the student is required to fill out a regulation blank, giving such information as may be helpful to the instructors in adapting the work to the needs of the student.

(c). Students who undertake Correspondence Study Work for University credit must comply with all the requirements of the University and make known this intention in advance.

(d). Correspondence students are expected to complete a Unit Course within twelve months, two courses within fifteen months, and three courses within eighteen months from date of registration.

(e). No fee is refunded because of student's inability to finish a course for which he has registered. If an application
for instruction cannot be met by the University or is for any cause rejected by the University, the fee is returned.

(f). If a student does not report in 90 days by sending in lesson sheets or otherwise he may forfeit the right to further instruction.

(g). Credit for work done by correspondence may be used to satisfy entrance requirement to the University.

10. Expenses.

The fees for the correspondence course are payable in advance, at the rate of $3.00 per credit hour. Thus the fee for a course giving three hours credit, is $9.00, and for a course giving five hours credit the fee is $15.00. If the student registers for a total of more than five credit hours at one time, the fee for each credit hour above five is $2.00 per credit hour. In the case of preparatory subjects for which University credit is not granted the number of credit hours is given in parenthesis to indicate the amount of the fee. These amounts cover the cost of the necessary outlines, laboratory materials, etc., but do not cover the cost of the necessary text books which must be procured by the student himself. The student must enclose a stamped and self-addressed envelope with each lesson sheet returned. The fees for this work have been fixed at the lowest possible rate, as the motive is purely one of public service. In general, it is thought best to register for only one or at the most two courses at one time, and to carry these through to completion as rapidly as possible.

COURSES OF INSTRUCTION

Special Courses.

Persons who do not find in the list of courses given below just what they want, should write the Correspondence Study Department, describing in detail the work which they wish to do. Special courses to suit individual needs will be given whenever that seems justified. It is the aim of the University to help every student applying to it who is prepared and willing to do serious work.

ART


This course will cover the growth of painting in Italy from the time of Giotto to its decadence. Two credit hours. Miss Knowles.
2. Elementary Drawing and Painting.

Instruction will be given in object drawing and shading, in sketching from nature, in the principles of perspective, and in the technique of water color painting. While this course does not purpose to teach methods, it will be found of value to the teacher who desires to become proficient.

Two credit hours; Miss Knowles.

COMMERCE AND ACCOUNTING

1. Bookkeeping.

This course involves the theory of debits and credits, posting preparation of trial balances, financial statements, closing the ledger, special books of original entry, the bank account, cash proof, commercial papers, the bill book, opening and closing of double entry books. Practical sets of transactions representing a proprietary business, and later a retail partnership are used to illustrate the principles brought out in this course. Students are required to record these transactions in blank books accompanying the text.

Two credit hours.

2. Wholesale Partnership Accounting.

A knowledge of bookkeeping is presupposed in this course. It covers the method of procedure in taking in a partner, articles of co-partnership, adjustment of interest between the partners, the dissolution of partnership, use of auxiliary ledgers, special column cashbook and journal, suspense account, and controlling accounts. The student is required to record practical transactions in a set of books and handle the business papers involved.

Two credit hours.

3. Corporation Accounting.

This course involves the study of the organization and management of corporations, special accounts and books used in corporation accounting; classification and method of issuing, transferring and cancelling stock; opening corporation books; classification and interpretation of accounts; significance of various items represented in the statement; dividends; reserve fund; depreciation and surplus; voucher system. In addition to a regular set of business transactions which the student is required to enter in blank books, reference and papers on special topics are assigned.

Two credit hours.
4. **Cost Accounting.**

This course takes up that phase of accountancy concerned in the determination and recording of the actual cost of manufacturing any article or product. Emphasis is placed upon the elements and principles concerned in the cost of material; labor and factory expense; the cost formula; advantages of the cost system; distribution of indirect expenses; wage systems; cost method of manufacturing accounts; classification of accounts under cost system; manufacturing statements; forms. A set of business transactions covering the work of a manufacturing concern for a period of time is used to illustrate the principles set forth, and special problems are given to emphasize certain important elements.

Two credit hours.

5. **Bank Accounting.**

This course presupposes a knowledge of bookkeeping and involves a study of the organization and management of banks emphasizing the national bank particularly. Methods of accounting, forms and books used in various departments of the national banks are carefully considered. Banking customs and various details in the routine of the banking business, bringing out the interdependence and the close relation existing between the departments, are emphasized. A set of transactions representing the actual business of a national bank, and involving the duties, forms and records of the various clerks in the organization, is entered in blanks especially prepared for the purpose. These are then properly closed and a financial statement rendered.

Two credit hours.

**Elementary Shorthand.**

The purpose of this course is to master the principles of Gregg shorthand. A careful study is made of consonants, vowels and their various combinations, phrasing, wordsigns, compound words, abbreviation, prefixes and affixes, and the development of vocabulary with special emphasis placed upon accuracy and legibility. Sufficient work in dictation and writing exercises is given to put into practice all principles involved in the course.

Three credit hours.
ECONOMICS AND SOCIOLOGY


A study of the economic process of producing and 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 textbook. Other books will be read on specified subjects. Professor Underwood.

Three credit hours.

2. Business Organization.

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

Two credit hours.


A study of the economic and social forces underlying the explorations and settlements of America, the development of the Colonies and their trades, industry and agriculture. The economic and financial struggles of the new Republic—its expansion to south and west, the coming of canal and railway, the slavery system, and more recent economics and industrial advancement will be employed.

Two credit hours.

4. Sociology.

A course in the theory of sociology and some of our social problems. In connection with the above a study of the local social formation and activities will be developed.

Three credit hours.

EDUCATION

History of Education.

This course provides for a general survey of the evolution of educational ideals and school systems from savagery to the present time. The presentation of the subject shows the relation of the theory and practice of education to the contemporary industrial and social conditions, traces the chief stages in the origin and development of theory and practice, and forms the basis for
evaluating present-day problems in education. Professor Kemp.
Two or four credit hours.

Principles of Education.
The biological, sociological and psychological background of
education. The possibilities of organizing the course of study in
such a way that it shall be based on the above background rather
than on mere tradition. Professor Kemp.
Two credit hours.

School Supervision.
A study of practical problems in elementary and secondary
education, the organization and management of schools, courses
of study, electives, correlation of studies, promotions, discipline,
teachers' meetings, etc. Professor Kemp.
Two credit hours.

ENGLISH AND LITERATURE
Any person desiring correspondence work in English should
indicate, as definitely as possible, in his letter of application,
just how much work he has done, both in literature and in theme
writing. It will also make it easier to arrange the course if the
student can give some information as to the books at his disposal.
On the basis of this letter, the student will be advised as to the
course for which he seems best prepared.

Course A.—Preparatory English Composition.
A simple introduction to English composition, intended
mainly for:
1. Those who have had no formal training in the subject.
2. Foreigners with no knowledge of grammar, but with
some experience in writing the language.
3. Any persons who are not properly prepared for a more
advanced course.

The work consists in the writing of simple themes, based
mainly on the student's own experience and observation, the pre-
paring of exercises illustrating the simpler rhetorical principles,
and the reading of a few assigned books, which are to be used as
the basis for themes.

Course B. Preparatory English Composition.
A continuation of Course A. The two courses are approxi-
mately equivalent to the work required in composition for en-
trance to the University.
Credit hours.
Preparatory English Literature.

The works in English and American literature required for admission to college will be studied. The aim, however, is to make the courses valuable not only to students preparing for college, but also to persons who wish to take up, either for the first time or by way of review, the more simple and concrete phases of the study of literature.

(a.) This course will cover approximately the work in literature of the first two years of the high school, with study of the simpler masterpieces among those listed “for reading” in the list of college entrance requirements.

One entrance credit. (Six credit hours.)

(b.) In this course, the masterpieces listed “for study” will be emphasized, with attention also to some of the more difficult books among those listed “for reading.” The work is approximately that of the last two years of high school.

One entrance credit.
Six credit hours.

11. Freshman English.
A study mainly of exposition, with frequent themes and assigned reading.
Three credit hours.

12. Freshman English.
A continuation of Course 11. Study of exposition continued, and of simple narration and letter writing.
Three credit hours.

This course covers in some detail English Literature from the fifth to the nineteenth century. Not only the lives and works of the better known authors will be studied, but also a number of the minor writers, the social conditions of each period, the growth of various literary movements, and the influence of one period upon another. The work is equivalent to the survey course given in the sophomore year of many colleges and presents a course equal to that of two semesters.
Six credit hours.

A course planned as the one above and equivalent to sophomore work of two semesters upon the same subject as presented in a standard college.
Four credit hours.
FRENCH

1. Intermediate French.
   Composition and reading. Prerequisite: One year of French.
   Three credit hours.

2. Advanced French.
   Composition and reading. Prerequisite: Two years of French.
   Three credit hours.

GERMAN

1. German.
   Composition, conversation and some of the following readings: Wilhelm Tell, Karl Heinrich, Das Abenteuer einer Neujahrsnacht, Maria Stuart, Minna von Barnhelm, Herman und Dorothea, Wallenstein. Prerequisites: Knowledge of German Grammar.
   Three credit hours.

2. Reading and Composition.
   Such works as Wallenstein, Deutche Liebe, Ekkehart, Composition.
   Three credit hours.
   Work will be planned for each individual.

GREEK

1. White's First Greek Book; 5 credit hours.
2. Xenophon: Anabasis, Book 1; 5 credit hours.
3. Xenophon: Anabasis, Books 2-4; 5 credit hours.
4. Homer: Iliad, Books 1-3; 3 credit hours.
5. Plato: Apology and Crito; 3 credit hours.

HISTORY

   Historical development; organization, form and practical working of the national government of the United States. Attention is given to the development of political parties, their methods and present day political questions.
   Two credit hours.

2. State and Local Government.
   Powers, obligations and limitations of state in the Federal Union; formation and admission of states; evolution of state
constitutions, organizations of state and local government; political methods. Especial attention will be given the government of Montana.

Two credit hours.

3. United States History, 1600-1914.

Especial attention will be given to social and economic factors in American history, to westward expansion, and the development of the West.

Three credit hours.

4. Problems in Montana History and Government.

Open only to those who have training to do advanced work and who can furnish evidence of facilities with which to undertake research in some special topics of Montana history. (Informal).

HOME ECONOMICS

1. Foods.

A study of nutrients; their occurrence in foods, the principles involved in their preparation, their cost from various sources. Formulating menus, preparing and serving meals. Practical work in the kitchen will be required as well as reference reading.


b. Study of proteins. Reference reading and practical work in the preparation of milk, egg and cheese dishes.

c. A continuation of study of proteins illustrated by the cooking of meals with special reference to the effect of different temperatures. Making of soups. Gelatin, its source and uses.

d. Carbohydrates and Fats. Classification and general study of carbohydrates.

e. Sugar.

f. Starch; food value and cooking of cereals. Flour. Doughs and batters and a study of the various leavening agents; chemistry of baking powers; yeast and breadmaking.

g. Vegetables and green vegetables. The making of salads.

h. Fats—their food value and use in cooking.

i. The cost, planning, preparation and serving of meals.

Reference readings will be taken largely from Norton's Food and Dietetics, obtainable from the American School of
Home Economics, Chicago, $1.50, and from Government Bulletins.

Four credit hours.

2. Household Management.

This course is planned to study the underlying principles and give training in the processes involved in housekeeping. The organization of the household, the division of the income and keeping up accounts, the buying and storing of supplies and equipment, the household processes, and care of the household.

Text: Terrill Household Management, American School of Home Economics, Chicago. $1.50.

Three credit hours.

JOURNALISM

1. News Writing.

A course offered by the School of Journalism.

Designed to prepare the student for reporting and correspondence, by instruction in the construction of a news story, the assembling of facts for its foundation and the most effective form of expression of these facts. Textbooks will be required, probably two.

Three credit hours.

2. The Short Story.

This course gives the student practical instruction in the producing and marketing of the modern short story and helps him to appreciate the short story as a distinct form of literature. A study is made of the evolution of the short story and of the various types of short stories. The student will be required to submit written work from week to week and will be given the benefit of careful criticisms of all manuscripts sent to the instructor. The student will be asked to purchase a textbook and will be assigned to read representative short stories.

Two credit hours.

3. The Photoplay.

This course is similar in character to the one above. A practical study of the technique of the motion picture scenario will be made. Emphasis will be placed upon the marketing of the photoplay manuscript. The student will be asked to purchase a manual. No credit. (Fee, $6.00).
LATIN

1. Cicero: *Desenectute* and *DeAmicitia*; 3 credit hours.
2. Livy: Book 22; 3 credit hours.
3. Tacitus: *Agricola* and *Germania*; 3 credit hours.
4. Prose Composition; 3 credit hours.
5. Horace: *Odes*, selected; 3 credit hours.
6. Horace: *Satires* and *Epistles*; 3 credit hours.

LIBRARY SCIENCE

Reference Work.

1. A course to help the general reader to make the best use of the resources of any library in investigating any subject and to collect material for the preparation of papers, etc. Only the fundamental principles of reference will be considered. Open to anyone who has access to a library.

   One credit hour.

2. A course in practical reference work that will enable a library attendant to give efficient assistance to readers in their use of the resources of a library. This will cover all the standard general reference books and many on special subjects. Open to graduates of high schools.

   Four credit hours.

MATHEMATICS

Professor N. J. Lennes, Assistant Professor E. F. A. Carey.
Assistant Professor L. S. Hill. Academic Courses.

1. Elementary Algebra.

   This course begins with the fundamentals of the subject and continues through quadratic equations. One entrance unit.

   Six credit hours.

2. Elementary Algebra.

   A continuation of Course 1, with a repetition of some of the topics therein contained treated more exhaustively. One-half entrance unit.

   Three credit hours.


   The fundamental propositions of plane geometry are demonstrated with the aim of placing the student in possession of methods of attacking "original exercises." One entrance unit.

   Six credit hours.

The minimum number of propositions with application to mensuration. One-half entrance unit.
Three credit hours.

5. Trigonometry.

Definitions of the trigonometric functions; their properties and solution of triangles. One-half entrance unit.
Three credit hours.

Collegiate Courses.

1. College Algebra.

This course aims to give a clearer insight in the academic mathematics as well as to lay the foundation for more advanced mathematics.
Three credit hours.


A treatment of the important properties of the several conics, including a discussion of a few of the more interesting higher plane curves.
Three credit hours.


Three credit hours.

4. Integral Calculus.

Three credit hours.
The ground covered in Courses 3 and 4 is the equivalent of that included in a standard text.


Composition and resolution of forces; the principles of equilibrium; application of the principles of states to simple machines; brief discussion of graphical statics with applications to structures.
Four credit hours.


A critical review of secondary mathematics, including a discussion of current developments in methods of teaching.
Two credit hours.
7. **Protective Geometry.**

An introductory course. Prerequisite: Differential and Integral Calculus.
Three credit hours.

8. **Functions of a Real Variable.**

An introductory course. Prerequisite: Calculus and Differential Equations.
Three credit hours.

7. **Shop Mathematics.**

This course aims to meet the needs of those engaged in Mechanical Engineering trades.
One credit hour.

8. **Mathematics for Foresters.**

This course deals with such subjects and problems as are of practical use to the forester.
One credit hour.

7. **Constructive Geometry.**

This course is given primarily for forest rangers and mechanics who have not had a course in geometry. It consists in part of drawing to scale a large number of geometrical figures by means of which theorems are deduced. These theorems are then applied to practical problems.
One credit hour.

**PHYSICS**

1. **Elementary Physics.**

In this course we are trying to meet the needs of three classes of persons; those actively engaged in teaching the subject; those making preparation for first grade or professional certificates, and those looking forward to entrance to the University.

The work of this course will consist of the study of some suitable text-book, the solution of assigned problems and exercises. Should the candidate desire credit for this subject toward entrance to the University, a note-book containing the results of about fifty assigned laboratory problems must be submitted in addition to an examination on the text-book use. The laboratory work may be carried along with the text-book study if the
candidate has access to a high school laboratory or may be taken later at the University Summer School.

One entrance unit; (six credit hours); Professor Thompson.

**PSYCHOLOGY**

**General Psychology.**

This course treats of the general principles of mental activity. The work will be presented by outlined readings and experiments of simple character that students can perform upon themselves or others of their acquaintance. It will offer lists of questions to be answered by observations upon children, animals and adult persons. Students are expected to purchase several books for reading purposes.

Three credit hours.

**Psychology of Thinking.**

This course will aim to direct the reading and observations of the student to the end that he may come to a fuller understanding of the reasoning processes and to make clearer and more exact use of them.

Four credit hours.

**Psychology of Religion.**

This course will cover a discussion of the origin and functions of religion among primitive peoples and aim to show the psychological character of religion among cultured peoples in Europe and America. The standpoint is that of sympathy and appreciation rather than of criticism. The place of religion in the individual life will find treatment.

**Social Psychology.**

This will include a study of the forces that are operative in society and show the organization of peoples into nations. The student will be led to observe people in their activities towards one another and so to discover the general principles of social living. The student will be expected to purchase some books and others will be supplied. He will be given questions to answer by observing his fellows about him. In this way the student should come to a better understanding of himself and the people with whom he lives.

Two credit hours.

**Note**—Persons desiring work in psychology along the line of the courses laid down in the general catalogue may do so by making application through the correspondence department to the professor of psychology, who will arrange the work and the amount of credit.

The study will include examination of specimens representative of the various invertebrate types. The lessons will cover anatomy and morphology, physiology, ecology and distribution of species. To clearly present the idea of organic evolution and to develop methods of working and thinking will be the ends sought.

Four credit hours; Professor M. J. Elrod.


Following the same general plan as for invertebrates. Material included will be the lowest vertebrates, the fish, frog, bird, rabbit or squirrel, etc., not merely from an anatomical standpoint, but from a broad view as given above. Material from the University will be furnished at cost.

Four credit hours; Professor M. J. Elrod.

3. Photography.

A study of the camera, the dark room, plates, lenses, ray filters, papers, development and reducers, followed by work in making lantern slides, copying, enlarging, making transparencies, and the like. A camera and dark room will be necessary. Working material will be furnished at cost.

Two credit hours; Professor Elrod.
Bureau of Public Information

The Bureau of Public Information was established in October, 1913, for the purpose of furnishing information to all classes of citizens of Montana on all classes of subjects. Such information is furnished absolutely free except that each letter of inquiry must be accompanied with a stamp in order to pay return postage. During the short time in which the Bureau has been in existence hundreds of questions have been answered—questions from teachers, farmers, miners, and numerous other kinds of workers. The information furnished has been of wide variety—from the correction of defects in a pump to the translation of an Armenian letter written in the Gregorian script. Thus far no letter of inquiry has been left unanswered. It is believed that this new effort on the part of the University to aid citizens of the State has proved its value, and every person seeking information of any character whatever is therefore urged to take advantage of this offer of help.
### DEGREES CONFERRED, JUNE, 1914

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree—Major Subject</th>
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<tbody>
<tr>
<td>Bireley, Esther</td>
<td>B. A. (English)</td>
</tr>
<tr>
<td>Bol, Cornelius</td>
<td>B. S. (Physics)</td>
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<tr>
<td>Culmer, Orpha Ann</td>
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<tr>
<td>Dickey, Carl Chandler</td>
<td>B. A. (History, Economics)</td>
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<tr>
<td>Fischl, Louis James</td>
<td>Ph. C. (Pharmacy)</td>
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<tr>
<td>Hardenburgh, Alice</td>
<td>B. S. (Biology)</td>
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<tr>
<td>Lyden, Mabel</td>
<td>B. A. (Mathematics)</td>
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<tr>
<td>Saner, Grace Yates</td>
<td>B. A. (English)</td>
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<tr>
<td>Speer, Earl LeRoy</td>
<td>B. A. (History, Economics)</td>
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<tr>
<td>Watkins, Gordon</td>
<td>B. A. (History, Economics)</td>
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<tr>
<td>Whiting, June</td>
<td>B. A. (Literature)</td>
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<tr>
<td>Wilde, Bessie May</td>
<td>B. A. (Modern Languages)</td>
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<tr>
<td>Smith, Helen</td>
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<tr>
<td>Cameron, Carl Ernest</td>
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<td>Dornblaser, Laul Logan</td>
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<td>Kelly, Edward Patrick</td>
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<td>Smith, Ellsworth G</td>
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<td>Wiedman, Raymond Henry</td>
<td>LL. B. (Law)</td>
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### DEGREES CONFERRED, DECEMBER, 1914

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<tr>
<td>Armitage, George</td>
<td>B. A. (Journalism and Commerce and Accounting)</td>
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<tr>
<td>Jackson, Clifton F</td>
<td>B. A. (History, Economics)</td>
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<tr>
<td>Finley, Catherine</td>
<td>B. S. (Biology)</td>
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<tr>
<td>Whitaker, Jocelyn Alfred</td>
<td>B. S.</td>
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### THE FOLLOWING RECEIVED CERTIFICATES TO TEACH, 1914:

- Bireley, Esther
- Lyden, Mabel
- Wilde, Bess
- Bol, Cornelius
- Saner, Grace
- Shunk, Shirley
- Hardenburgh, Alice
- Whiting, June
- Culmer, Orpha
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<th>Name</th>
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<th>Residence by Counties</th>
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<tr>
<td>Adamson, James</td>
<td>Law</td>
<td>Lewis &amp; Clark</td>
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<td>Ade, Harry George</td>
<td>Forestry</td>
<td>Powell</td>
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<td>Ainsworth, Lewina R</td>
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<td>Allen, Edward D.</td>
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<td>Anderson, Carl</td>
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<tr>
<td>Bacheller, E. Paul</td>
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Matticks, Amos C | Special Law | Teton
Maxwell, Margery | | Missoula
May, Clarence B | Law | (Kentucky)
May, Rex | | Missoula
Metten, Genevieve | Special | Beaverhead
Molchoir, C. W | Special | Missoula
Molchoir, Herbert | | Missoula
Mollet, Chas. E. F | | Missoula
Moore, Virgil E | | Sweet Grass
Morehouse, Inez | | Ravalli
Murphy, Velma | | Missoula
Murray, Irene | | Missoula
Napton, Alice L | | Missoula
Nelson, Byron Webster | Special | Missoula
Nelson, Jennie Irene | | Missoula
Nesbit, Millard F | Law | Missoula
Nissel, Nis | Law | (Washington)
Nuckolls, Steven F | Forestry | Silver Bow
Nuckolls, Virginia E | | Silver Bow
Nutting, Ruth | | Yellowstone
O'Donnell, Carol | | Yellowstone
O'Donnell, Irene A | | Yellowstone
O'Flynn, Patricia | | Silver Bow
O'Rourke, Arthur (A. B., Univ. of Montana) | Law | Lewis & Clark
O'Rourke, Mrs. Arthur | Music Special | Lewis & Clark
O'Sullivan, Robert | Special Law | (Ireland)
Olander, Emil | Law | (South Dakota)
Orr, Conrad | | Missoula
Orvis, Helen | Music Special | Missoula
Oslund, Robert | Law | Cascade
Owsley, Merrit | Law | Madison
Parkhurst, Perry C | Pharmacy | Fergus
Parmelec, Myrtle May | | Missoula
Patterson, Edith | | Sweet Grass
Patterson, John F | | Missoula
Paul, Lucille J | | Missoula
Peek, Tate W | Forestry | Sanders
Peppard, Bert | Music Special | Missoula
Perkins, Bernice Floy | | Yellowstone
Perrine, Della Mae | | Sweet Grass
Perrier, Alna | Special | Missoula
Peterson, Elma | Music Special | Missoula
Peterson, Emily Gladys | Music Special | Missoula
Phillips, Mrs. Alice M | | Missoula
Pope, Lila May | | Yellowstone
Powell, Gregory | | Yellowstone
Prescott, Doris | | Missoula
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Price, Vera | | Ravalli
Pritchard, Tiny | Music Special | Missoula
Purcell, James | | Yellowstone
Quast, Cora | | Missoula
Ray, Willis E | Special | Richland
Rector, Anna | | Cascade
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Reiter, Martin Anderson (A. B., Gustavus Adolphus Col.) | | Dawson
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### SHORT COURSE IN COMMERCE & ACCOUNTING

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<td>Healy, Mary Barbara</td>
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<td>Helm, Mrs. Myrtle</td>
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<td>Helterbran, Marietta</td>
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<td>Hughes, Elizabeth</td>
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<td>Jeffers, Altha May</td>
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<td>Kingsley, R. M.</td>
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<td>Kramer, O. J.</td>
<td>Custer</td>
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<td>Kurtz, Millard</td>
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<td>Laird, Cassie</td>
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<td>McFarland, Burrus</td>
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<td>Mann, Richard O.</td>
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<td>Madison, Fred Harold</td>
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<td>Reed Minnie A.</td>
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<td>Rutherford, William L.</td>
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<td>Sand, Albert U.</td>
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<td>Schanck, Donna M.</td>
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<td>Sheeder, Ruth Elizabeth</td>
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<td>Shellenberger, Mrs. Harriet</td>
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Stanley, Arthur U. .........................................................Custer
Stewart, Mrs. Glenna ............................................. Broadwater
Sumner, Sarah Evelyn ........................................ Missoula
Thomas, Russell B. .................................................... Lincoln
Thompson, Agnes S. .................................................. Teton
Thompson, Howard Edgar ....................................... Jefferson
VanCleve, Gretchen Olga .......................................... Custer
Wyatt, William R. ...................................................... Granite
Young, Louis L. ........................................................ Yellowstone
### SUMMARY OF REGISTRATION

For the Academic Year, 1914-15.

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REGISTER OF ALUMNI

1898

Mrs. Helen Robb Glenny, B. A. ..........1013 Lake St., Minneapolis, Minn.
Eloise Knowles, B. Ph. (Ph. M., University of Chicago) ..........Missoula

1899

Zoe Bellew (Mrs. Sidney M. Ward), B. A. (M. A. 1902) ..........Hamilton
Earl Douglas (B. S., Iowa State College), M. S. ...........................................Carnegie Institute, Pittsburgh, Pa.
Anna Louise Hatheway (Mrs. W. D. Harkins), B. S. ..........Chicago
George Hempstead Kennett, B. S. (M. D., Rush Medical College) ..........Kellogg, Idaho
Helen McCracken, B. A. (M. A., University of Chicago) ..........Hamilton
Charles Pixley, B. A. (M. D., Rush Medical College) ..........Missoula

1900

Charles Earl Avery, B. Ph. ........................................... Missoula
Mary Gertrude Buckhous, B. S. ........................................... Missoula
Caroline Harrington Cronkrite (Mrs. C. T. DeWitt Grubbs), B. S. ..........Missoula
Lu Knowles, (Mrs. R. J. Maxey), B. S. ..........Camp Josman, Iloilo, P. I
Eben Hugh Murray, B. A. ........................................... Address unknown
Percy Shelley Rennick, B. Ph., (M. D., Kentucky Medical College) ..........Helenville
Sidney Elery Walker, B. S., (LL. B., University of Michigan) ..........National City, New Mexico

1901

Estelle Bovee, B. Ph. ........................................... Glendive
Sue Lewis (Mrs. W. A. Thompson), B. A. ........................................... 1802 College Ave., East St. Louis, Ill.
Mary Lewis (Mrs. W. B. Simpson), B. A. ..........Leavenworth, Wash.
Lydia Jimmie Mills (Mrs. C. H. Rittenour), B. S. ..........Plains
Bertha Simpson, B. Ph. ........................................... Missoula
Sidney Mire Ward, B. Ph. ..........Hamilton
Kathryne Clara Wilson, B. Ph. ..........East Aurora, N. Y.

1902

Harold Blake, B. S. (in M. E.) ..........Anaconda
William O. Craig, B. S. ..........Helena
Helene Kennett (Mrs. Geo. Wilcox) B. A. (Literary) ..........Missoula
Helen La Caff (Mrs. Roy Jackson) B. A. (Classical) ..........(Deceased Jan., 1910.)
Agnes McDonald, B. A. (Classical) ..........Anaconda
Homer McDonald, B. S. ..........Great Falls
Helen McPhail, B. A. (Classical) ..........Mace, Idaho
Fanny Maley, B. A. (Literary) ..........Missoula
Jeanette Pickering Rankin, B. S. ..........Missoula
Katherine Ronan (Mrs. E. C. Trask), B. A. (Classical) ..........1124 E. Fifth St. S., Salt Lake City, Utah
Margaret Ronan, B. A. (Classical) ..........Missoula
Pearl Scott (Mrs. Fritz Kroger), B. A. (Classical) ..........Phillipsburg
Guy Emerson Sheridan, B. S. ..........659½ W. Granite St., Butte
Benjamin Stewart, B. S. ........................................Juneau, Alaska
Edith Watson (Mrs. C. H. Keel), B. A. (Classical).............Red Lodge

1903

Myrtle Weber Avery (Mrs. Charles E. Avery), B. S., (Classical), Missoula
Miriam Hatheway, B. A. (Classical)................................Missoula
Mabel Emily Jones, B. A., (Literary) ................................Missoula
Martin Jones, B. S. ................................................Cabanagan, Nueva, Luzon, P. I.
Lillian F. Jordan (Mrs. I. L. Bendon), B. A. (Literary)..........Glendive
Lucy Likes, B. A. (Literary) ........................................Missoula
Rella Likes, B. A. (Literary) ........................................Missoula
Claude Otto Marcyes, B. A. (Literary) ...............................Forsyth
Wellington Duncan Rankin, B. S. .....................................Helena
Ida Rigby, B. A. (Literary) ..........(Deceased Feb. 19, 1904) .....Carlton
Harriet Laura Rankin (Mrs. Oscar Sedman), B. A. (Classical)....Polson
Leslie Mitchell Sheridan, B. S. (in M. E.) ........................Anaconda

1904

Page Bunker, B. A. (Classical) ........................................KalisPELL
Moncure Cockrell, B. A. (Classical) ................................Deer Lodge
George Herbert Greenwood, B. A. (Classical) (M. A., Dartmouth
College) .................................................................443 Twenty-Second Ave., Spokane, Wash.
Walter Hammer, B. A. (Literary) ........................................Foster
Alice Herr, B. A. (Literary) .............................................112 Rutgers, St. Belleville, N. J.
Roxane Howell (Mrs. J. A. Derge), B. A. (Classical) ............Salt Lake City
Georgia Evelyn Polleys (Mrs. D. T. Mason), B. A. (Literary) ....Missoula

1905

Jessie May Bishop (Mrs. E. P. Giboney), B. A. (Literary) ....Great Falls
Anna F. Carter, B. S. .....................................................Missoula
William Oran Dickinson, B. S. ........................................Missoula
Alice Gertrude Glancy, B. A. (Literary) ..............................Portland, Ore.
Herbert H. Hughes, B. S. (Ph. G., Chicago School of Pharmacy)
(M. D., Rush Medical College) .......................................Portland, Ore.
John Ray Haywood, B. S. (in Engineering) .........................Great Falls
Avery Faulkner May (Mrs. W. O. Dickenson), B. A. (Classical), Missoula
Charles Edward Schoonover, B. A. (Classical), (Deceased, March 21, '09)
Frances Sibley, B. A. (Literary) .......................................Sewanee, Tenn.
Charles Edward Simons, B. A. (Classical) ..........................Missoula
Blanche May Simpson (Mrs. Frank Borg), B. A. (Literary) ....Missoula
Ray Epperson Walters, B. A. (Classical) .............................Larson, Idaho
Edward Williams, B. A. (Classical) ................................Hotel Lenox, Portland, Ore.

1906

Fred Elliott Buck, B. S. (in M. E.) ....................................Missoula
Joseph Buckhous, B. S. (in M. E.) .................................St. Ignatius
Maud Burns, B. A. .......................................................Missoula
Edwin Reed Corbin, B. S. (in M. E.) ..............................Los Angeles, Cal.
Mary P. Evans, B. A. (Classical) ....................................Livingston
Grace Serena Flynn, B. A. (Classical) .............................Missoula
Thomas Leo Greenough, B. S. (in M. E.) ...........................Larson, Idaho
Delbert I. Grush, B. S. (in M. E.) ....................................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 McPhall, B. A. ............................................Drummond
Fay Abernathy Murray (Mrs. James Gilly), B. A. ..............701 W. Galena St., Butte
Alma Lottie Myers (Mrs. John D. Jones), B. A. ...........................................Missoula
Josie May Bobb, B. A. ..............................................................................Stevensville
Ona Mansfield Sloane, B. A. ....................................................................Missoula
Thomas Claude Spaulding, B. S., (M. S. F., University of Michigan) ....Missoula
Margaret Summers, B. A. (Literary) ..............................................................Missoula
Ruth Ward (Mrs. D. L. Gruch), B. A. .........................................................Anaconda
Debora Wagy, B. A. (Mrs. J. Lee Sedwick) ..............................................Fort Benton

1907

Cora Averill (Mrs. N. S. Poole), B. A. (Classical)...............................Townsend
James Henry Bonner, B. S. (in Engineering) .........................................Missoula
Charles Patrick Cotter, B. A. (Literary) ....................................................Townsend
Charles Scovill Dimmick, B. S. (in Engineering) ....................................Missoula
Frederick Eugene Dion, B. S. (in Engineering) .........................................Glendive
Stella Louise Duncan, B. A. (Classical) .......................................................Missoula
Florence Editha Ervy (Mrs. Gilbert J. Heyford), B. A. (Classical) .......Missoula
Thomas Joseph Farrell, Jr., B. A. (Literary) .............................................Missoula
Linda Ellen Featherman, B. A. (Literary) (Mrs. J. E. Meyers) Drummond
Mary Monica Fergus, B. A. (Literary) .......................................................625 S. Washington St., Butte
Susie Garlington (Mrs. E. A. Cole), B. A. (Classical)...............................Charlotte, N. C.
Rufus King Garlington, B. S. ......................................................................Missoula
Ralph Edward Gilham, B. S. .....................................................................Missoula
Lawrence Edward Goodbourne, B. A. (Classical) ......................................Roseburg, Ore.
Laura May Hamilton (Mrs. R. L. Harmon), B. A. (Literary) .................Walla Walla, Wash.
Ralph L. Harmon, B. A. (Literary) .............................................................Walla Walla, Wash.
Anna Jo Hutter, B. A. (Literary) .................................................................Elma, Wash.
Daisy Kellogg (Mrs. Lynn Ambrose), B. A. (Literary) .........................Missoula
Jennie Andrews McGregor, B. A. (Classical) ...........................................Bonner
James Hamilton Mills, B. S. (in Engineering) ........................................Butte
Josiah John Moore, B. S. ..........................................................................2225 W. Polk St., Chicago, Ill.
Frances Nuckolls (Mrs. E. P. Kelley), B. A. (Literary) ............................975 Copper St., Butte
William Hovey Polleys, B. S. (in Engineering) ......................................(Deceased, Aug. 2, 1910)
Joseph William Streit, B. S. .......................................................................Missoula
Montgomery De Smith, B. S. (in Engineering) .........................................Augusta
Lillian Warren, B. A. (Classical) ...............................................................(Deceased, Feb. 22, 1908)
Alice Brown Welch, B. A. (Literary) .........................................................64 Scott St. Chicago, Ill.

1908

Ethel Olive Ambrose (Mrs. H. L. Hitchcock), B. A. (Literary) ..............Los Angeles, Cal.
Agnes Dorothea Berry, B. A. (Literary) .....................................................Missoula
Oral Jay Berry, B. S. .................................................................................Drummond
Charles Amos Buck, B. S. (Engineering) .............................................Stevensville
Nell Cavette Bullard, B. A. (Literary) ..........................................................Plains
Vincent Stuart Craig, B. S. (Engineering) ..................................................Terminal, Cal.
Arthur George Davidson, B. S. (Engineering) ..........................................Anaconda
Margery Winnifred Feighner, B. A. (Literary) ........................................Missoula
Phoebe Aditha Finley, B. A. (Literary) ......................................................Forsyth
Helen Goddard, B. A. (Classical) ..............................................................Billings
Carrie Hardenburgh (Mrs. R. L. Gilham), B. A. (Literary) .....................Townsend
Fanny Hatheway (Mrs. John Lucy), B. A. (Classical) ..............................Missoula
Frances Margaret Jones, B. A. (Literary) .................................................Anaconda
Minta Lee McCall (Mrs. J. H. Bonner), B. A. (Classical) .......................Missoula
Herman Cole McGregor, B. S. (Engineering) .........................................1116 Boston Bldg., Salt Lake, Utah

May Elizabeth Murphy, B. A. (Literary) ....................................................506 Twenty-Second St., San Diego, Cal.
Ruth Lenore Smith (Mrs. T. S. Houston), B. A. (Classical).................2716 North Eighth St., Tacoma, Wash.
Helen Antoinette Smead, B. S. (Mrs. O. M. Harris).........................Missoula
James Beryl Speer, B. A. (Literary).............................................Stevensville
Clarissa Elinor Spencer, B. A................................................................Wash.
Roy Newton Whitesitt, B. A. (Literary).............................................Anaconda
Edward Angus Wenger, B. S. (Engineering)........................................

1909

Almeda Andrews (Mrs. C. F. Farmer), B. A. (Classical).....................Missoula
George Edward Beavers, B. S................................................................Billings
Bess Margaret Bradford (Mrs. Charles Hopkins), B. A. (Literary)........

Dora Montana Buswell, B. A. (Literary) (Mrs. W. V. Rowland)..........

Ida May Cunningham, B. A. (Literary).................................................Victoria, B. C.
Cecile Katherine Dwyer, B. A. (Literary)...........................................Missoula
Charles Frederick Farmer, B. S. (Engineering)....................................Missoula
Marie Sophie Freeser, B. S..................................................................Two Dot
Frederick Greenwood, B. A. (Literary).................................................Spokane, Wash.
Jennie Marguerite Lyng, (Mrs. Berney F. Kitt), B. A. (Literary), Missoula
Gilbert Drake McLaren, B. S..................................................................Hamilton
Edna Crete Pratt, B. A. (Literary).........................................................Lincoln, Neb.
Mary Frances Rankin, B. A. (Classical).............................................Colville, Wash.
Florence Ethela Thieme (Mrs. Ray Hamilton), B. A. (Classical, Missoula
Alice Anne Wright, B. A. (Literary).....................................................Missoula
William Montgomery Van Eman, B. S. (Engineering)........................Augusta

1910.

Mary Elizabeth Burke, B. A. (Latin).....................................................Livingston
Anna Hazel Butzer (Mrs. C. A. Bisbee), B. A. (Latin).........................Missoula
May Opal Cronk, B. A. (Latin).............................................................Townsend
Homer Roswell Deuel, B. S. (Engineering)..........................................

Frances Folsom Foster (Mrs. Frank Bonner), B.A.(Literature), Missoula
Edna Fox, B. A. (Modern Languages)....................................................Twin Bridges
Mary Dorothy Graham, B. A., (Latin)...................................................Pony
Josephine Mary Henderson, B. A. (Literature).....................................Hall
Renee Jane Henderson (Mrs. M. R. Henderson), B. A. (Literature)...........

Edna Frances Hollensteiner, B. A. (Latin)..........................................Lolo
Laura Seawright Johnson, B. A. (History and Economics) (Mrs.
Chas. McVey).........................................................................................Cambridge, Mass.
Lizzie Beulah Leaf, B. A. (Latin)............................................................Townsend
Arbie Eugene Leech, B. A. (Economics).................................................Dupuyer
Robert Campbell Line, B. A. (Economics and History) (A. M., Har-
vard University)......................................................................................Mt. Holyoke, 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, (Mrs. John Logan), B. A. (Latin).....................Columbus
Martha Edith Rolfe, B. A. (Modern Languages)....................................Missoula
Roberta Satterthwaite, B. A. (Literature).............................................Falls City, Wash.
Frederick Thayer Stoddard, B. S. (Geology)..........................................Missoula
William James Tait, B. S. (Engineering)...............................................Anaconda
Helen Margaret Whittaker (Mrs. Charles Donnally), B. A. (Modern
Languages)..............................................................................................Washington, D. C.

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)........................................………Belgrade
Arthur Fowler Bishop, B. S. (Forestry)....................................................Helena
Conrad Henry Bowman, B. A. (History and Economics)..........................Corvallis
Millard S. Bullerick, B. A. (Economics and History), Coupageville, Wash.
Florence E. Catlin, B. A. (Literature).....................................................Sylvan, Washington
Eva M. Coffe, B. S. (Biology).........................................................................Missoula
Oliver Raymond Dinmore, B. S. (Engineering)...........................................Missoula
Isma Caroline Eldill (Mrs. H. H. Slaughter), B. A. (Literature)....................West Point, N. Y.
Mary Ethrod, B. S. (Biology)........................................................................Missoula
Hugh Temple Forbis, B. S. (Geology)............................................................Missoula
Frank Elliott Gleason, B. S. (Engineering)..................................................Schenectady, N. Y.
Jessie Hanon, (Mrs. Emil Saxi) B. A. (Latin and Greek)............................Lewiston
Mary Hansen, B. S. (Biology)........................................................................Y. W. C. A., Great Falls
Charles Henry Hoffman, B. S. (Engineering)................................................232 Liberty Street, Schenectady, N. Y.
Ethel Grace Hughes, B. A. (Modern Languages)........................................Missoula
Abbie Catherine Lucy, B. A. (Modern Languages)......................................Missoula
Charles Stuart McGowan, B. A. (Economics and History)..........................Great Falls
Massey Sanderson McCullough, B. S. (Geology).........................................Missoula
Mildred Alene McGregor, B. A. (Literature)..................................................Hinsdale
Gladys Ann McLean, B. A. (History and Economics)..................................Anaconda
Harry David Maclay, B. S. (Engineering)....................................................Missoula
Mary Lucile Marshall, B. A. (Modern Languages).......................................Madison, Wis.
Stephen James Reardon, B. S. (Engineering)................................................Wilkinsburg, Pa.
Lucia Ione Rolfe, B. A. (Latin and Greek)..................................................Ronan
Marjorie Ross, B. A. (Modern Languages)....................................................Missoula
Ralph Wallace Smith, B. S. (Engineering)...................................................St. Ignatius
Harvey George Spencer, B. S. (Chemistry)...................................................Missoula
Mary Edith Steele, (Mrs. D. B. McGregor), B. A. (Biology).........................Frenchtown
Lillian Williams (Mrs. Chas. Kelley), B. A. (Literature)..............................Deer Lodge

1912

Leo Walter Baker, B. S. (Engineering).......................................................Great Falls
Daniel Marion Conner, B. S. (Engineering)....................................................Missoula
Florence DeRyke, B. A. (Literature).............................................................Kokomo, Indiana
Clarence Jenks Forbis, B. S. (Biology).........................................................Minneapolis, Minn.
Ernest W. Fredell, B. S. (Engineering).........................................................Anaconda
Nina Pearl Gough, B. A. (Modern Languages)..............................................Potomac
Ernest E. Hubert, B. S. (Forestry).................................................................Missoula
Birdie Florence Hunter, B. A. (Mathematics)..............................................Columbus
Bessie Irwin, B. S. (Botany).........................................................................Lolo
Sarah Maude Johnson, B. A. (History and Economics)...............................St. Ignatius
Florence Leech, B. A. (Modern Languages)................................................Valier
Holmes Maclay, B. S. (Geology).................................................................Lolo
Maude Brooks McCullough, B. A., Mrs. H. Turner (Modern Languages)......Missoula
Milton Mason, B. S. (Engineering)...............................................................Missoula
Arthur Williams O’Rourke, B. A. (Economics)............................................Helena
Grace Evelyn Rankin, B. A. (Mrs. Tom Kinney), (History and Economics).....Thompson Falls
David Dudley Richards, B. S. (Geology).....................................................Missoula
Annabelle Robertson, B. A. (Latin and Greek).............................................Hamilton
William Emmett Ryan, B. S. (Geology)........................................................Valier
Azelle Agnes Savage, B. A. (Modern Languages).........................................Ronan
Shirile Belle Shunk, B. A. (History and Economics)....................................Missoula
Florence Sleeman, B. A. (History and Economics)......................................Stevensville
Fred E. Thleme, B. S. (Engineering)............................................................Missoula
<table>
<thead>
<tr>
<th>Name</th>
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<tr>
<td>Helen Frances Metcalf</td>
<td>B. A. (History)</td>
<td>Missoula</td>
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<tr>
<td>DeWitt Cregler Warren</td>
<td>B. A. (History and Economics)</td>
<td>Missoula</td>
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<tr>
<td>Helen Wear</td>
<td>B. A. (Latin and Greek)</td>
<td>Missoula</td>
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<tr>
<td>Carolina Pack Wharton</td>
<td>B. S. (Biology)</td>
<td>Butte</td>
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<tr>
<td>Gertrude A. Whipple</td>
<td>B. A. (Modern Languages)</td>
<td>Townsend</td>
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<td>Edward Alexander Winstanley</td>
<td>B. S. (Geology)</td>
<td>Los Angeles, Cal.</td>
</tr>
<tr>
<td>Hermann Thomas Allison</td>
<td>B. A. (Mathematics)</td>
<td>Laurel</td>
</tr>
<tr>
<td>Carl Ernest Cameron</td>
<td>B. A.</td>
<td>Missoula</td>
</tr>
<tr>
<td>Cecil Frank Dobson</td>
<td>B. S. (In Engineering)</td>
<td>Schenectady, N. Y.</td>
</tr>
<tr>
<td>Gladys Julia Freeze</td>
<td>B. A. (History)</td>
<td>DeBorgia</td>
</tr>
<tr>
<td>Mabel Alma Garlington</td>
<td>B. A. (Modern Languages)</td>
<td>Missoula</td>
</tr>
<tr>
<td>Gladys Loe Heyward</td>
<td>B. A. (Literature)</td>
<td>Hamilton</td>
</tr>
<tr>
<td>Gladys Marguerite Huffman</td>
<td>B. A. (Modern Languages)</td>
<td>Butte</td>
</tr>
<tr>
<td>Alvin Bailey Hoblit</td>
<td>LL.B.</td>
<td>Missoula</td>
</tr>
<tr>
<td>Anne Elizabeth Hutchinson</td>
<td>B. S. (Physics)</td>
<td>Missoula</td>
</tr>
<tr>
<td>Mildred Franklyn Ingalls</td>
<td>B. A. (Modern Languages)</td>
<td>Red Lodge</td>
</tr>
<tr>
<td>Cecil Ince Kramer</td>
<td>B. A. (Mathematics)</td>
<td>Valier</td>
</tr>
<tr>
<td>Rose Leopold</td>
<td>B. A. (Modern Languages)</td>
<td>Hysham</td>
</tr>
<tr>
<td>Gladine Lewis</td>
<td>B. A. (English)</td>
<td>Dixon</td>
</tr>
<tr>
<td>Gertrude Cornelia McFarlane</td>
<td>B. A. (Modern Languages)</td>
<td>Winifred, Alberta, Canada</td>
</tr>
<tr>
<td>Florence May Mathews</td>
<td>B. A. (Literature)</td>
<td>Missoula</td>
</tr>
<tr>
<td>Alice Seabury Mathewson</td>
<td>B. A. (Mathematics)</td>
<td>Anaconda</td>
</tr>
<tr>
<td>Helen Frances Metcalf</td>
<td>B. A. (History)</td>
<td>Stevensville</td>
</tr>
<tr>
<td>Mrs. Glen O'Neal</td>
<td>B. A.</td>
<td>Wisdom</td>
</tr>
<tr>
<td>Mary Patience Shull</td>
<td>B. S. (Botany)</td>
<td>Dixon</td>
</tr>
<tr>
<td>P. M. Silloway</td>
<td>M. S.</td>
<td>Lincoln, Ill.</td>
</tr>
<tr>
<td>Royal Daniel Sloan</td>
<td>B. S. (In Engineering)</td>
<td>Schenectady, N. Y.</td>
</tr>
<tr>
<td>Louise Elizabeth Smith</td>
<td>B. A. (Modern Languages)</td>
<td>Willmette, Ill.</td>
</tr>
<tr>
<td>Suzanne Stavern</td>
<td>B. A. (Mathematics)</td>
<td>Helena</td>
</tr>
<tr>
<td>Oscar James Thompson</td>
<td>LL.B.</td>
<td>Fairmont, N. D.</td>
</tr>
<tr>
<td>Roscoe Ward Wells</td>
<td>B. A. (Economics)</td>
<td>Missoula</td>
</tr>
<tr>
<td>George Armitage</td>
<td>B. A. (Journalism and Commerce and Account-</td>
<td>Billings</td>
</tr>
<tr>
<td>Esther Birely</td>
<td>B. A. (English)</td>
<td>Billings</td>
</tr>
<tr>
<td>Cornelius Bol</td>
<td>B. S. (Physic)</td>
<td>Palo Alto, Cal.</td>
</tr>
<tr>
<td>Carl Ernest Cameron</td>
<td>LL.B.</td>
<td>Missoula</td>
</tr>
<tr>
<td>Orpha Ann Culmer</td>
<td>B. A. (Mathematics)</td>
<td>Missoula</td>
</tr>
<tr>
<td>Carl Chandlee Dickey</td>
<td>B. A. (History and Economics)</td>
<td>Belt</td>
</tr>
<tr>
<td>Paul Logan Dornblaser</td>
<td>LL.B.</td>
<td>Missoula</td>
</tr>
<tr>
<td>Catherine Finley</td>
<td>B. S. (Biology)</td>
<td>Missoula</td>
</tr>
<tr>
<td>Alice Hardenburgh</td>
<td>B. S. (Biology)</td>
<td>Missoula</td>
</tr>
<tr>
<td>Clifton Jackson</td>
<td>B. A. (History and Economics)</td>
<td>Hamilton</td>
</tr>
<tr>
<td>E. Pat Kelly</td>
<td>LL.B.</td>
<td>Butte</td>
</tr>
<tr>
<td>Mabel Lyden</td>
<td>B. A. (Mathematics)</td>
<td>Butte</td>
</tr>
<tr>
<td>Grace Yates Saner</td>
<td>B. A. (English)</td>
<td>Butte</td>
</tr>
<tr>
<td>Ellsworth G. Smith</td>
<td>LL.B.</td>
<td>Missoula</td>
</tr>
<tr>
<td>Helen Mary Smith</td>
<td>B. A. (Modern Languages)</td>
<td>Great Falls</td>
</tr>
<tr>
<td>Gordon Watkins</td>
<td>B. A. (History and Economics)</td>
<td>Champaign, Ill.</td>
</tr>
<tr>
<td>Raymond Henry Wiedman</td>
<td>LL.B.</td>
<td>Columbia Falls</td>
</tr>
<tr>
<td>Jocelyn Alfred Whitaker</td>
<td>B. S. (Botany and Forestry)</td>
<td>Washington</td>
</tr>
<tr>
<td>June Whiting</td>
<td>B. A. (Literature)</td>
<td>Missoula</td>
</tr>
<tr>
<td>Bessie May Wilde</td>
<td>B. A. (Modern Languages)</td>
<td>Missoula</td>
</tr>
</tbody>
</table>
**PHARMACY ALUMNI**

Allen, Edgar Warren, '10, Red Lodge Drug Co., Proprietor

Burlfiend, Henry C., '12, Proprietor City Drug Store

Conrad, Blanche, '10, Gallatin Drug Co.

Converse, Earl W., '13, Fuller Drug Co.

Cox, Harvey H., '10, Gallatin Drug Co.

Crosby, Spencer J., G. W. Sparrow Pharmacy

Drinville, James, '10, Igel Drug Co.

Fischl, Louis James, '14

Mitchell, Paul L., '09, Foster Drug Co.

McCarthy, Ray, '11 (Mrs. E. H. Williams), Williams Pharmacy

Morris, Abbie F., '11

Solberg, Harold, '13, Nelson Drug Co.

Stieb, Clyde W., '13, A. C. Roecher Pharmacy

Valentine, Charles P., '10, Student Jefferson Medical College

Young, Earl, '10, Igel Drug Co.
HONORARY DEGREES CONFERRED

1901
Thomas H. Carter, LL.D. .................................. (Deceased, Sept. 17, 1911)
United States Senator

1902
Joseph K. Toole, LL.D. .................................. Helena
E-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.
<table>
<thead>
<tr>
<th>Index</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absence, Regulations</td>
<td>44</td>
</tr>
<tr>
<td>Accredited High Schools</td>
<td>33</td>
</tr>
<tr>
<td>Course of Study</td>
<td>34</td>
</tr>
<tr>
<td>List of</td>
<td>35</td>
</tr>
<tr>
<td>Admission, Committee on</td>
<td>23</td>
</tr>
<tr>
<td>On Examination</td>
<td>29</td>
</tr>
<tr>
<td>Of Special Students</td>
<td>32</td>
</tr>
<tr>
<td>On Certificates</td>
<td>29</td>
</tr>
<tr>
<td>Requirements</td>
<td>29, 245</td>
</tr>
<tr>
<td>To Advanced Standing</td>
<td>32, 139</td>
</tr>
<tr>
<td>With Conditions</td>
<td>32</td>
</tr>
<tr>
<td>Advanced Degrees</td>
<td>39, 140</td>
</tr>
<tr>
<td>Advanced Standing</td>
<td>32</td>
</tr>
<tr>
<td>Alumni</td>
<td>398</td>
</tr>
<tr>
<td>Assistants, Office</td>
<td>22</td>
</tr>
<tr>
<td>Astronomy Courses</td>
<td>119</td>
</tr>
<tr>
<td>A. S. U. M</td>
<td>48</td>
</tr>
<tr>
<td>Athletics, Committee on</td>
<td>23, 49</td>
</tr>
<tr>
<td>Attendance Committee</td>
<td>23</td>
</tr>
<tr>
<td>Regulations</td>
<td>44</td>
</tr>
<tr>
<td>Bennett Prize</td>
<td>46</td>
</tr>
<tr>
<td>Biological Station</td>
<td>142, 220</td>
</tr>
<tr>
<td>Biology Courses</td>
<td>56, 140, 291</td>
</tr>
<tr>
<td>Board, Executive</td>
<td>4</td>
</tr>
<tr>
<td>Board of Education, State</td>
<td>4</td>
</tr>
<tr>
<td>Bonner Scholarship</td>
<td>45</td>
</tr>
<tr>
<td>Books for Scholarship</td>
<td>47</td>
</tr>
<tr>
<td>Botany Courses</td>
<td>64, 142, 292</td>
</tr>
<tr>
<td>Buckley Prize</td>
<td>46</td>
</tr>
<tr>
<td>Buildings</td>
<td>27</td>
</tr>
<tr>
<td>Calendar, University</td>
<td>8</td>
</tr>
<tr>
<td>Campus, The</td>
<td>27</td>
</tr>
<tr>
<td>Cert. of Qualification to Teach</td>
<td>40</td>
</tr>
<tr>
<td>Certificates of Admission</td>
<td>23</td>
</tr>
<tr>
<td>Certified Public Accountancy</td>
<td>270</td>
</tr>
<tr>
<td>Charter Day</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry Courses</td>
<td>68, 142, 293</td>
</tr>
<tr>
<td>Christian Associations</td>
<td>48</td>
</tr>
<tr>
<td>Christmas Holidays</td>
<td>3</td>
</tr>
<tr>
<td>Class Day</td>
<td>3</td>
</tr>
<tr>
<td>Commerce and Accounting</td>
<td>256, 284</td>
</tr>
<tr>
<td>Commencement</td>
<td>3</td>
</tr>
<tr>
<td>Committees of the Faculty</td>
<td>23</td>
</tr>
<tr>
<td>Conditional Admission</td>
<td>32</td>
</tr>
<tr>
<td>Conduct and Scholarship</td>
<td>44</td>
</tr>
<tr>
<td>Correspondence Courses</td>
<td>360</td>
</tr>
<tr>
<td>Course of Study for Accredited</td>
<td>34</td>
</tr>
<tr>
<td>High Schools</td>
<td>34</td>
</tr>
<tr>
<td>Courses of Instruction</td>
<td>56</td>
</tr>
<tr>
<td>Astronomy</td>
<td>119</td>
</tr>
<tr>
<td>Biology</td>
<td>56, 140, 291</td>
</tr>
<tr>
<td>Botany</td>
<td>64, 142, 292</td>
</tr>
<tr>
<td>Chemistry</td>
<td>68, 142, 293</td>
</tr>
<tr>
<td>Commerce and Accounting</td>
<td>256, 294</td>
</tr>
<tr>
<td>Designing</td>
<td>88</td>
</tr>
<tr>
<td>Economics</td>
<td>73, 144, 307</td>
</tr>
<tr>
<td>Education</td>
<td>76, 145, 296</td>
</tr>
<tr>
<td>English</td>
<td>79, 146, 301</td>
</tr>
<tr>
<td>Faculty</td>
<td>5</td>
</tr>
<tr>
<td>French</td>
<td>135, 158, 316</td>
</tr>
<tr>
<td>Fine Arts</td>
<td>85, 148, 303</td>
</tr>
<tr>
<td>Forestry</td>
<td>196, 197</td>
</tr>
<tr>
<td>Geology</td>
<td>89, 148, 304</td>
</tr>
<tr>
<td>German</td>
<td>96, 150, 306</td>
</tr>
<tr>
<td>Greek</td>
<td>98</td>
</tr>
<tr>
<td>History</td>
<td>101, 151, 307</td>
</tr>
<tr>
<td>Home Economics</td>
<td>107, 309</td>
</tr>
<tr>
<td>Journalism</td>
<td>183</td>
</tr>
<tr>
<td>Latin</td>
<td>98</td>
</tr>
<tr>
<td>Law</td>
<td>162, 252, 310</td>
</tr>
<tr>
<td>Library Science</td>
<td>112</td>
</tr>
<tr>
<td>Manual Arts</td>
<td>115, 312</td>
</tr>
<tr>
<td>Mathematics</td>
<td>116, 154, 313</td>
</tr>
<tr>
<td>Mineralogy</td>
<td>92</td>
</tr>
<tr>
<td>Music</td>
<td>276, 314</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>244</td>
</tr>
<tr>
<td>Philosophy</td>
<td>128, 156</td>
</tr>
<tr>
<td>Physical Education</td>
<td>121, 319</td>
</tr>
<tr>
<td>Physics</td>
<td>127, 317</td>
</tr>
<tr>
<td>Political Science</td>
<td>101, 151</td>
</tr>
<tr>
<td>Psychology</td>
<td>129, 156, 296</td>
</tr>
<tr>
<td>Public Speaking</td>
<td>133, 315</td>
</tr>
<tr>
<td>Reading</td>
<td>133, 315</td>
</tr>
<tr>
<td>Sociology</td>
<td>73, 144</td>
</tr>
<tr>
<td>Spanish</td>
<td>136, 316</td>
</tr>
<tr>
<td>Summer School</td>
<td>233</td>
</tr>
<tr>
<td>Couse Scholarship</td>
<td>46</td>
</tr>
<tr>
<td>Craig Hall</td>
<td>28, 43</td>
</tr>
<tr>
<td>Credits, Admission</td>
<td>42</td>
</tr>
<tr>
<td>Correspondence Courses</td>
<td>275</td>
</tr>
<tr>
<td>For Graduation</td>
<td>36</td>
</tr>
<tr>
<td>Debating Contests</td>
<td>49</td>
</tr>
<tr>
<td>Debating Courses</td>
<td>82</td>
</tr>
<tr>
<td>Debating League, High Schools</td>
<td>50</td>
</tr>
<tr>
<td>Degrees</td>
<td>39</td>
</tr>
<tr>
<td>Degrees Conferred, June</td>
<td>390</td>
</tr>
<tr>
<td>Deposits</td>
<td>42</td>
</tr>
<tr>
<td>Dormitory for Women</td>
<td>28, 43</td>
</tr>
<tr>
<td>Dramatic Club</td>
<td>48</td>
</tr>
<tr>
<td>Drawing Courses</td>
<td>66</td>
</tr>
<tr>
<td>Dunway Prizes</td>
<td>114, 115, 211, 304</td>
</tr>
<tr>
<td>Economic Courses</td>
<td>73, 144, 307</td>
</tr>
<tr>
<td>Education Courses</td>
<td>76, 145, 296</td>
</tr>
<tr>
<td>Educational Library</td>
<td>52</td>
</tr>
<tr>
<td>Elective Courses</td>
<td>36</td>
</tr>
<tr>
<td>Electives, Major</td>
<td>36, 37</td>
</tr>
<tr>
<td>Electives, Restricted</td>
<td>36</td>
</tr>
<tr>
<td>Employees</td>
<td>22</td>
</tr>
<tr>
<td>Employees for Students</td>
<td>43</td>
</tr>
<tr>
<td>Engineering, Forest</td>
<td>199</td>
</tr>
<tr>
<td>English Courses</td>
<td>79, 146, 301</td>
</tr>
<tr>
<td>Enrollment</td>
<td>381</td>
</tr>
<tr>
<td>Elective Board</td>
<td>4</td>
</tr>
<tr>
<td>Expenses</td>
<td>43</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Extension, University</td>
<td>329</td>
</tr>
<tr>
<td>Committee on</td>
<td>23</td>
</tr>
<tr>
<td>Expenses</td>
<td>328</td>
</tr>
<tr>
<td>General Information</td>
<td>331</td>
</tr>
<tr>
<td>Methods</td>
<td>332</td>
</tr>
<tr>
<td>Faculty, The</td>
<td>5</td>
</tr>
<tr>
<td>Faculty Committees</td>
<td>22</td>
</tr>
<tr>
<td>Fees</td>
<td>42, 43, 140, 132, 333</td>
</tr>
<tr>
<td>Fine Arts Courses</td>
<td>85, 148, 303</td>
</tr>
<tr>
<td>Forestry Building</td>
<td>28</td>
</tr>
<tr>
<td>Courses</td>
<td>196, 197</td>
</tr>
<tr>
<td>Engineering</td>
<td>199</td>
</tr>
<tr>
<td>Lecturers</td>
<td>191</td>
</tr>
<tr>
<td>Short Course</td>
<td>197</td>
</tr>
<tr>
<td>Admission</td>
<td>197</td>
</tr>
<tr>
<td>French Courses</td>
<td>135, 158</td>
</tr>
<tr>
<td>General Information</td>
<td>24</td>
</tr>
<tr>
<td>Geology Courses</td>
<td>89, 148, 304</td>
</tr>
<tr>
<td>German Courses</td>
<td>96, 160, 306</td>
</tr>
<tr>
<td>Glee Club</td>
<td>48</td>
</tr>
<tr>
<td>Graduate Department</td>
<td>139</td>
</tr>
<tr>
<td>Graduate Work, Committee on</td>
<td>23</td>
</tr>
<tr>
<td>Graduation Requirements</td>
<td>36</td>
</tr>
<tr>
<td>Greek Courses</td>
<td>98</td>
</tr>
<tr>
<td>Gymnasium</td>
<td>28, 49, 121</td>
</tr>
<tr>
<td>Gymnasium Classes</td>
<td>121, 319</td>
</tr>
<tr>
<td>High Schools</td>
<td>33</td>
</tr>
<tr>
<td>Course of Study</td>
<td>34</td>
</tr>
<tr>
<td>Debating League</td>
<td>50</td>
</tr>
<tr>
<td>Interscholastic Meet</td>
<td>49</td>
</tr>
<tr>
<td>List of</td>
<td>35</td>
</tr>
<tr>
<td>Teachers’ Certificates in</td>
<td>41</td>
</tr>
<tr>
<td>Historical Sketch</td>
<td>24</td>
</tr>
<tr>
<td>History Courses</td>
<td>101, 151, 307</td>
</tr>
<tr>
<td>Holidays</td>
<td></td>
</tr>
<tr>
<td>Home Economics</td>
<td>107, 309</td>
</tr>
<tr>
<td>Honor Scholarships</td>
<td>45</td>
</tr>
<tr>
<td>Honorary Degrees</td>
<td>405</td>
</tr>
<tr>
<td>Incidental Fee</td>
<td>42</td>
</tr>
<tr>
<td>Infirmary</td>
<td>28</td>
</tr>
<tr>
<td>Interest and Income Fund</td>
<td>24</td>
</tr>
<tr>
<td>Interscholastic Meet</td>
<td>3, 49</td>
</tr>
<tr>
<td>Committee on</td>
<td>23</td>
</tr>
<tr>
<td>Irregular Students</td>
<td>32</td>
</tr>
<tr>
<td>Journalism</td>
<td>180</td>
</tr>
<tr>
<td>Journalism Building</td>
<td>28</td>
</tr>
<tr>
<td>Joyce Medal</td>
<td>46</td>
</tr>
<tr>
<td>Kalmin</td>
<td>49</td>
</tr>
<tr>
<td>Keith Scholarship</td>
<td>45</td>
</tr>
<tr>
<td>Latin Courses</td>
<td>98, 252</td>
</tr>
<tr>
<td>Law School</td>
<td>162</td>
</tr>
<tr>
<td>Admission</td>
<td>163</td>
</tr>
<tr>
<td>Degrees</td>
<td>163</td>
</tr>
<tr>
<td>Fees</td>
<td>43</td>
</tr>
<tr>
<td>Courses</td>
<td>167, 310</td>
</tr>
<tr>
<td>Regular and Spec. Standing</td>
<td>163</td>
</tr>
<tr>
<td>Library</td>
<td>162</td>
</tr>
<tr>
<td>Tuition</td>
<td>164</td>
</tr>
<tr>
<td>Methods</td>
<td>165</td>
</tr>
<tr>
<td>Practice Court</td>
<td>165</td>
</tr>
<tr>
<td>Special Lectures</td>
<td>167</td>
</tr>
<tr>
<td>Lecture Course, Committee on</td>
<td>23</td>
</tr>
<tr>
<td>Lecturers in Forestry</td>
<td>20</td>
</tr>
<tr>
<td>Lectures, Extension</td>
<td>244</td>
</tr>
<tr>
<td>Library, The</td>
<td>25, 50, 257, 312</td>
</tr>
<tr>
<td>Library Science Courses</td>
<td>112</td>
</tr>
<tr>
<td>Literary Societies</td>
<td>48</td>
</tr>
<tr>
<td>Machine Design Courses</td>
<td>115</td>
</tr>
<tr>
<td>Major Elective</td>
<td>36</td>
</tr>
<tr>
<td>Major Requirements (See each department)</td>
<td></td>
</tr>
<tr>
<td>Manual Arts</td>
<td>113, 312</td>
</tr>
<tr>
<td>Mathematics Courses</td>
<td>116, 154, 313</td>
</tr>
<tr>
<td>Matriculation Fee</td>
<td>42</td>
</tr>
<tr>
<td>Mechanical Drawing Courses</td>
<td>114</td>
</tr>
<tr>
<td>Mechanics Courses</td>
<td>115</td>
</tr>
<tr>
<td>Mineralogy Courses</td>
<td>92</td>
</tr>
<tr>
<td>Missoula</td>
<td>24, 25, 28, 285</td>
</tr>
<tr>
<td>Museum, The</td>
<td>51</td>
</tr>
<tr>
<td>Music Courses</td>
<td>276, 314</td>
</tr>
<tr>
<td>Music Medals</td>
<td>47</td>
</tr>
<tr>
<td>Observation and Practice</td>
<td></td>
</tr>
<tr>
<td>Teaching</td>
<td>42</td>
</tr>
<tr>
<td>Instructors in</td>
<td>21</td>
</tr>
<tr>
<td>Oratory Prize</td>
<td>45</td>
</tr>
<tr>
<td>Painting Courses</td>
<td>85, 148</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>244</td>
</tr>
<tr>
<td>Degrees</td>
<td>246</td>
</tr>
<tr>
<td>Pharmaceutical Society</td>
<td>48</td>
</tr>
<tr>
<td>Philosophy Courses</td>
<td>129, 156</td>
</tr>
<tr>
<td>Photography</td>
<td>62</td>
</tr>
<tr>
<td>Physical Courses</td>
<td>121, 319</td>
</tr>
<tr>
<td>Physics Courses</td>
<td>127, 317</td>
</tr>
<tr>
<td>Political Science</td>
<td>101, 151</td>
</tr>
<tr>
<td>Prizes</td>
<td>46</td>
</tr>
<tr>
<td>Psychology Courses</td>
<td>129, 156, 296</td>
</tr>
<tr>
<td>Public Accountancy</td>
<td></td>
</tr>
<tr>
<td>Committee on</td>
<td>270</td>
</tr>
<tr>
<td>Board of Examiners</td>
<td>270</td>
</tr>
<tr>
<td>Regulations</td>
<td>269</td>
</tr>
<tr>
<td>Public Exercises Committee on</td>
<td>23</td>
</tr>
<tr>
<td>Public Information</td>
<td>379</td>
</tr>
<tr>
<td>Public Speaking Courses</td>
<td>133, 315</td>
</tr>
<tr>
<td>Publications</td>
<td>48, 49</td>
</tr>
<tr>
<td>Rangers’ School</td>
<td>230</td>
</tr>
<tr>
<td>Reading</td>
<td>133, 315</td>
</tr>
<tr>
<td>Recommendations</td>
<td></td>
</tr>
<tr>
<td>Committee on</td>
<td>23</td>
</tr>
<tr>
<td>Register of Alumni</td>
<td>393</td>
</tr>
<tr>
<td>Of Students</td>
<td>381</td>
</tr>
<tr>
<td>Registration Day</td>
<td>3</td>
</tr>
<tr>
<td>Registration Fee</td>
<td>42</td>
</tr>
<tr>
<td>Registration, Scholarship Regulations, affecting</td>
<td>37</td>
</tr>
<tr>
<td>Registration, Summary of</td>
<td></td>
</tr>
<tr>
<td>Required Courses</td>
<td>36, 183</td>
</tr>
<tr>
<td>Requirements for Admission</td>
<td>29, 245</td>
</tr>
<tr>
<td>Requirements for Graduation</td>
<td>36</td>
</tr>
<tr>
<td>Romanic Languages</td>
<td>135, 158, 316</td>
</tr>
<tr>
<td>Schedule and Examinations</td>
<td></td>
</tr>
<tr>
<td>Committee on</td>
<td>23</td>
</tr>
<tr>
<td>Scholarship, Committee on</td>
<td>23</td>
</tr>
<tr>
<td>Scholarship and Conduct</td>
<td>44</td>
</tr>
<tr>
<td>Scholarship and Registration</td>
<td>37</td>
</tr>
<tr>
<td>Topic</td>
<td>Page</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Scholarships</td>
<td>45</td>
</tr>
<tr>
<td>School of Forestry</td>
<td>196</td>
</tr>
<tr>
<td>School of Journalism</td>
<td>180</td>
</tr>
<tr>
<td>School of Law</td>
<td>162</td>
</tr>
<tr>
<td>School of Music</td>
<td>276</td>
</tr>
<tr>
<td>School of Pharmacy</td>
<td>244</td>
</tr>
<tr>
<td>Schools, High</td>
<td>33</td>
</tr>
<tr>
<td>Science Hall</td>
<td>27</td>
</tr>
<tr>
<td>Semester Dates</td>
<td>3</td>
</tr>
<tr>
<td>The Sentinel</td>
<td>49</td>
</tr>
<tr>
<td>Shop Work Courses</td>
<td>113, 312</td>
</tr>
<tr>
<td>Societies</td>
<td>48</td>
</tr>
<tr>
<td>Sociology</td>
<td>73, 144</td>
</tr>
<tr>
<td>Spanish Courses</td>
<td>136</td>
</tr>
<tr>
<td>Special Students, Admission</td>
<td>38</td>
</tr>
<tr>
<td>State Board of Education</td>
<td>4</td>
</tr>
<tr>
<td>State Fair Exhibit, Committee on</td>
<td>23</td>
</tr>
<tr>
<td>Student Affairs, Committee on</td>
<td>23</td>
</tr>
<tr>
<td>Student Assistants</td>
<td>21</td>
</tr>
<tr>
<td>Student Employment</td>
<td>43</td>
</tr>
<tr>
<td>Students, Register of</td>
<td>381</td>
</tr>
<tr>
<td>Summer School</td>
<td>283</td>
</tr>
<tr>
<td>Faculty</td>
<td>283</td>
</tr>
<tr>
<td>Admission</td>
<td>287</td>
</tr>
<tr>
<td>Credits and Certificates</td>
<td>287</td>
</tr>
<tr>
<td>Fees</td>
<td>288</td>
</tr>
<tr>
<td>Deposits</td>
<td>288</td>
</tr>
<tr>
<td>Board and Room</td>
<td>288</td>
</tr>
<tr>
<td>Courses of Instruction</td>
<td>287</td>
</tr>
<tr>
<td>Summer School Students</td>
<td>298</td>
</tr>
<tr>
<td>Surveying Courses</td>
<td>211, 304</td>
</tr>
<tr>
<td>Teachers' Certificate of Qualification</td>
<td>40</td>
</tr>
<tr>
<td>Teachers, Courses for</td>
<td>41</td>
</tr>
<tr>
<td>Thanksgiving Recess</td>
<td>3</td>
</tr>
<tr>
<td>University Extension</td>
<td>329</td>
</tr>
<tr>
<td>University Hall</td>
<td>27</td>
</tr>
<tr>
<td>University Publications</td>
<td>48</td>
</tr>
<tr>
<td>University Surroundings</td>
<td>28</td>
</tr>
<tr>
<td>Vacations</td>
<td>3</td>
</tr>
<tr>
<td>Vocational Guidance</td>
<td>257</td>
</tr>
<tr>
<td>Woman's Dormitory</td>
<td>28</td>
</tr>
<tr>
<td>Writers' Club</td>
<td>48</td>
</tr>
</tbody>
</table>
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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.
No. 1. Some Volcanic Ash-Beds of Montana, by J. P. Rowe, Pages 29, plates 9, 1903.