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University of Minnesota  
Bulletin

The College of

Homeopathic Medicine and Surgery

1908-1909

Volume XI

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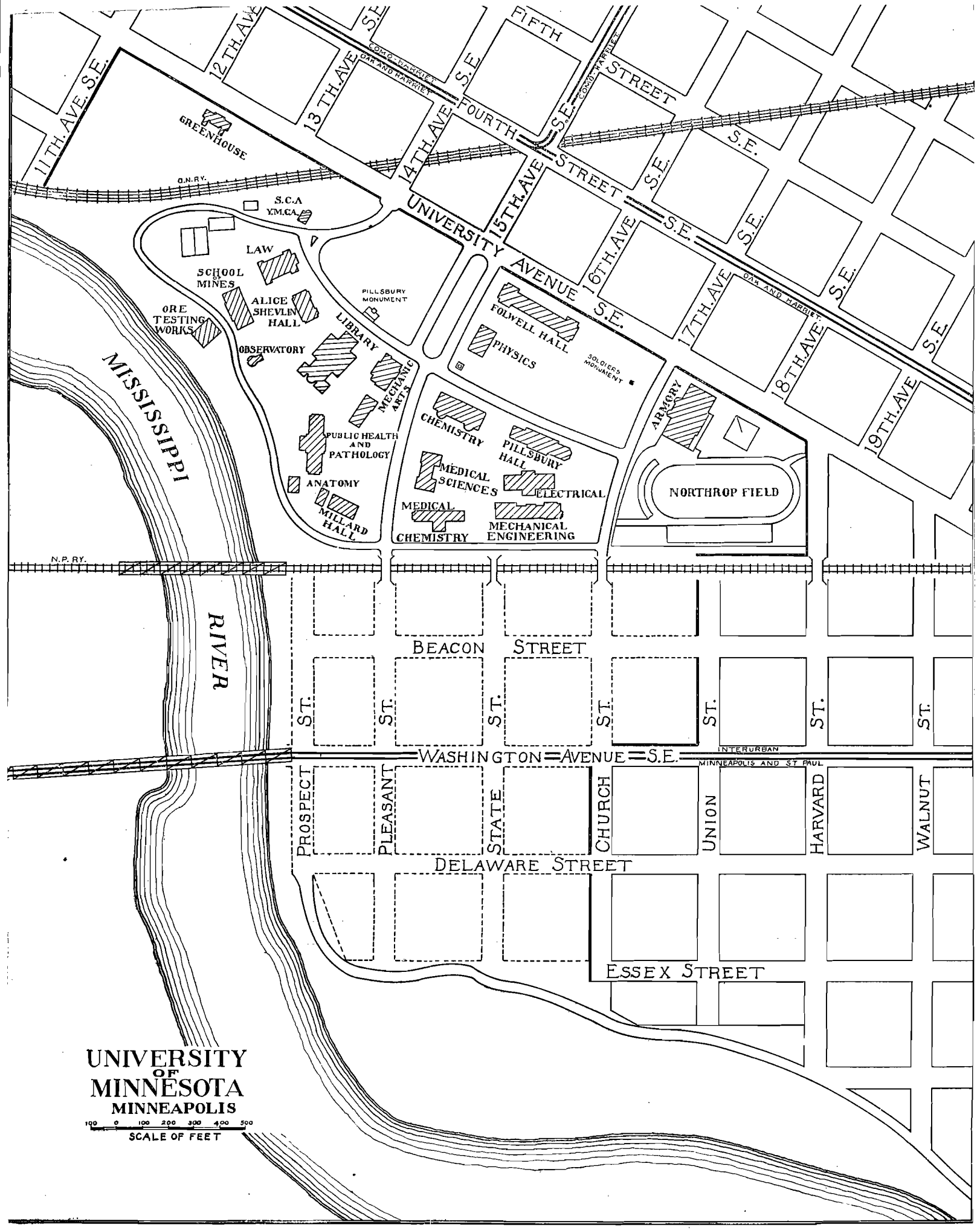
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The University catalogues are published by authority of the Board of Regents, as a regular series of bulletins. One bulletin for each college is published every year, and in addition a bulletin of general information outlining the entrance requirements of all colleges of the University, and embodying such items as University equipment, organizations and publications, expenses of students, loan and trust funds, scholarships, prizes, etc. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them. In calling for bulletins, please state the college or school of the University concerning which information is desired. Address,

THE REGISTRAR,

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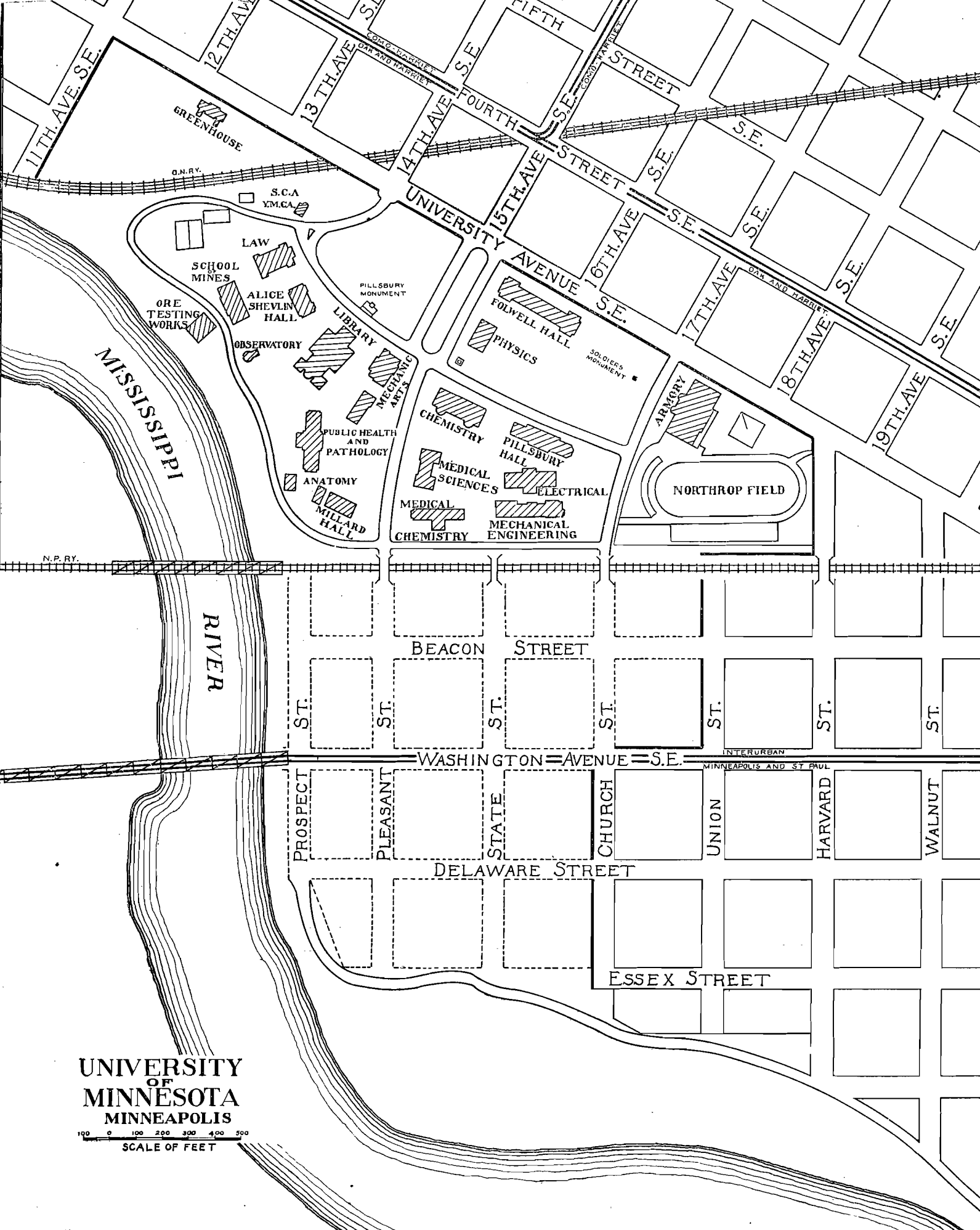
Minneapolis, Minnesota.



**UNIVERSITY  
OF  
MINNESOTA  
MINNEAPOLIS**

100 0 100 200 300 400 500  
SCALE OF FEET

MISSISSIPPI  
RIVER



UNIVERSITY AVENUE

BEACON STREET

WASHINGTON AVENUE S.E.

DELAWARE STREET

ESSEX STREET

NORTHROP FIELD

GREENHOUSE

S.C.A.  
Y.M.C.A.

SCHOOL  
MINES

ALICE  
SHEVLIN  
HALL

OBSERVATORY

LIBRARY

PILLSBURY  
MONUMENT

MECHANIC  
ARTS

PUBLIC HEALTH  
AND  
PATHOLOGY

ANATOMY

MILLARD  
HALL

CHEMISTRY

MEDICAL  
SCIENCES

MEDICAL  
CHEMISTRY

PILLSBURY  
HALL

ELECTRICAL

MECHANICAL  
ENGINEERING

FOLWELL HALL

PHYSICS

SOLDIERS  
MONUMENT

ARMORY

G.N.R.Y.

N.P.R.Y.

INTERURBAN

MINNEAPOLIS AND ST. PAUL

# CALENDAR FOR 1908-1909

1908

1909

## MAY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	<b>30</b>
31	..	..	..	..	..	..

## JUNE

..	1	2	3	4	5	6
<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
..	..	..	..	..	..	..

## SEPTEMBER

..	..	1	2	3	4	5
6	<b>7</b>	8	9	10	11	12
13	14	<b>15</b>	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..
..	..	..	..	..	..	..

## OCTOBER

..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
..	..	..	..	..	..	..

## NOVEMBER

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	<b>26</b>	<b>27</b>	<b>28</b>
29	30	..	..	..	..	..
..	..	..	..	..	..	..

## DECEMBER

..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	<b>19</b>
20	21	22	23	24	25	26
27	28	29	30	31	..	..

## JANUARY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	4	<b>5</b>	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

## FEBRUARY

..	1	<b>2</b>	3	4	5	6
7	8	9	10	11	<b>12</b>	13
14	15	16	17	18	19	20
21	<b>22</b>	23	24	25	26	27
28	..	..	..	..	..	..
..	..	..	..	..	..	..

## MARCH

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
..	..	..	..	..	..	..

## APRIL

..	..	..	..	1	2	3
4	5	6	7	8	<b>9</b>	<b>10</b>
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	..
..	..	..	..	..	..	..

## MAY

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	<b>31</b>	..	..	..	..	..

## JUNE

..	..	1	2	3	4	5
<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..

# University Calendar

1907-1908

## THE UNIVERSITY YEAR

The University year covers a period of thirty-eight weeks beginning on the second Tuesday in September. Commencement day is always the second Thursday in June.

FEBRUARY	4 T	Third quarter begins. Classes called for regular work
	12 W	Lincoln's birthday—legal holiday
	22 S	Washington's birthday—legal holiday
APRIL	4 S	Third quarter ends
	6 M	Fourth quarter begins
	17 F	Good Friday. Recess two days
MAY	2 S	Regular meeting Board of Regents
	30 S	Decoration Day—legal holiday
JUNE	5 F	Annual faculty meeting
	6 S	Fourth quarter ends

### COMMENCEMENT WEEK, 1908

SUNDAY	June 7	Baccalaureate service
MONDAY	June 8	Senior class exercises
TUESDAY	June 9	Phi Beta Kappa address, Senior promenade
WEDNESDAY	June 10	Alumni Day. Regular meeting Board of Regents
THURSDAY	June 11	Commencement Day. The thirty-sixth annual commencement
FRIDAY	June 12	Summer vacation begins

### 1908-1909

SEPTEMBER	7-14	Entrance examinations, condition examinations and registration
	14 M	Classification of students. Opening lecture, 8 p. m.
	15 T	Classes called for regular work. Twenty-first annual session
OCTOBER	1 Th	Regular meeting Board of Regents
	5 M	Regular meeting University Council
NOVEMBER	14 S	First quarter ends
	16 M	Second quarter begins
	26 T	Thanksgiving Day. Recess three days
DECEMBER	7 M	Regular meeting University Council
	8 T	Annual meeting Board of Regents
	19 S	Holiday recess begins (no classes)
JANUARY	5 T	Work resumed in all departments
	30 S	Second quarter ends

FEBRUARY	2 T	Third quarter begins. Classes called for regular work
	12 F	Lincoln's birthday—legal holiday
	22 M	Washington's birthday—legal holiday
APRIL	3 S	Third quarter ends
	5 M	Fourth quarter begins. Regular meeting University Council
	9 F	Good Friday—recess two days
MAY	6 Th	Regular meeting Board of Regents
	31 M	Decoration Day—legal holiday
JUNE	4 F	Annual Faculty meeting
	5 S	Fourth quarter ends
	7 M	Regular meeting University Council

COMMENCEMENT WEEK, 1909

SUNDAY	June 6	Baccalaureate service
MONDAY	June 7	Senior class exercises
TUESDAY	June 8	Sigma Xi address. Senior promenade
WEDNESDAY	June 9	Alumni Day. Regular meeting Board of Regents
THURSDAY	June 10	Commencement Day. The thirty-seventh annual commencement
FRIDAY	June 11	Summer vacation begins

PROGRAM ENTRANCE EXAMINATIONS

MONDAY,	September 7, 9 A. M.	3 Botany 3 Zoology 1 Astronomy 3 Geology
	2 P. M.	2 American Government 2 Political Economy
TUESDAY,	September 8, 9 A. M.	2 History 5 Physics
	2 P. M.	4 Chemistry 3 Physiography
WEDNESDAY,	September 9, 9 A. M.	1 English 2 P. M. 1 German 1 French 1 Latin
		1 Scandinavian
THURSDAY,	September 10, 9 A. M.	6 Elementary Algebra 3 Commercial Geography
	2 P. M.	6 Higher Algebra
FRIDAY,	September 11, 9 A. M.	6 Plane Geometry
	2 P. M.	6 Solid Geometry

1 Folwell Hall, 2 Library Building, 3 Pillsbury Hall, 4 Chemical Laboratory, 5 Physics Building, 6 Mechanic Arts Building.

SCHEDULE OF EXAMINATIONS FOR ADVANCED STANDING  
AND TO REMOVE CONDITIONS

September 7-12, 1908.

- |   |   |
|---|---|
| <p style="text-align: right;">Monday, Sept. 7, 9:00 a. m.</p> <p>I. Year.<br/>II. Year Histology and Embryology, practical.<br/>III. Year Special Pathology and Bacteriology, practical.<br/>IV. Year by arrangement.</p> | <p style="text-align: right;">2:00 p. m.</p> <p>I. Year Histology and Embryology, practical.<br/>II. Year General Pathology and Bacteriology, practical.<br/>III. Year Practical Pharmacy.<br/>IV. Year by arrangement.</p> |
|---|---|

- |  |   |
|--|---|
| <p style="text-align: right;">Tuesday, Sept. 8, 9:00 a. m.</p> <p>I. Year Physiology.<br/>II. Year Chemistry.<br/>III. Year Principles of Surgery.</p> | <p style="text-align: right;">2:00 p. m.</p> <p>I. Year Histology and Embryology, written.<br/>II. Year Histology and Embryology, written.<br/>III. Year Surgery.</p> |
|--|---|

- |   |   |
|---|---|
| <p style="text-align: right;">Wednesday, Sept. 9, 9:00 a. m.</p> <p>I. Year Chemistry.<br/>II. Year Physiology.<br/>III. Year Practice of Medicine.</p> | <p style="text-align: right;">2:00 p. m.</p> <p>I. Year.<br/>II. Year General Pathology and Bacteriology, written.<br/>III. Year Special Pathology and Bacteriology, written.</p> |
|---|---|

- |  |  |
|--|--|
| <p style="text-align: right;">Thursday, Sept. 10, 9:00 a. m.</p> <p>I. Year Anatomy.<br/>II. Year Anatomy.<br/>III. Year Surgical Anatomy.</p> | <p style="text-align: right;">2:00 p. m.</p> <p>I. Year.<br/>II. Year Materia Medica and Pharmacology.<br/>III. Year Therapeutics.</p> |
|--|--|

Examination for advanced standing and to remove conditions in the following third- and all fourth-year subjects will be held by *appointment* during September 7-12: Diseases of Children, Physical Diagnosis, all elective subjects, and all subjects not listed above. In all subjects not specifically scheduled, condition examinations must be arranged for not later than Sept. 7.

Students must register for examinations in dean's office at least twenty-four hours prior to any examination they may wish to take. See also under Rules, page 41, for regulations concerning unremoved conditions, etc.

Conditioned students will not be admitted to any examination without presenting receipt from the cashier for the examination fee, to the dean and obtaining entrance ticket.

## The Board of Regents

CYRUS NORTHROP, LL. D., MINNEAPOLIS . . . . .	<i>Ex-Officio</i>
The President of the University	
The HON. JOHN LIND, MINNEAPOLIS . . . . .	1914
The President of the Board	
The HON. JOHN A. JOHNSON, ST. PETER . . . . .	<i>Ex-Officio</i>
The Governor of the State	
The HON. JOHN W. OLSEN, ALBERT LEA . . . . .	<i>Ex-Officio</i>
The State Superintendent of Public Instruction	
The HON. THOMAS WILSON, ST. PAUL . . . . .	1909
The HON. A. E. RICE, WILLMAR . . . . .	1909
The HON. B. F. NELSON, MINNEAPOLIS . . . . .	1910
The HON. PIERCE BUTLER, ST. PAUL . . . . .	1910
The HON. CHARLES A. SMITH, MINNEAPOLIS . . . . .	1910
The HON. S. M. OWEN, MINNEAPOLIS . . . . .	1913
The HON. W. J. MAYO, ROCHESTER . . . . .	1913
The HON. HENRY B. HOVLAND, DULUTH . . . . .	1914

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C. D. DECKER, MINNEAPOLIS  
Secretary of the Board.



# Executive Officers

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## THE UNIVERSITY

CYRUS NORTHROP, LL. D., *President*

ERNEST B. PIERCE, B. A., *Registrar*

JAMES T. GEROULD, B. A., *Librarian*

C. D. DECKER, *Purchasing Agent*

J. D. BREN, *Cashier*

## THE COLLEGES

JOHN F. DOWNEY, M. A., C. E., *Dean of the College of Science, Literature,  
and the Arts*

FREDERICK S. JONES, M. A., *Dean of the College of Engineering and the  
Mechanic Arts*

EUGENE W. RANDALL, *Dean and Director of the Department of Agriculture*

WILLIAM S. PATTEE, LL. D., *Dean of the College of Law*

FRANK FAIRCHILD WESBROOK, M. A., M. D., C. M., *Dean of the College of  
Medicine and Surgery*

EUGENE L. MANN, B. A., M. D., *Dean of the College of Homeopathic  
Medicine and Surgery*

ALFRED OWRE, D. M. D., M. D., *Dean of the College of Dentistry*

FREDERICK J. WULLING, Phm.D., LL.M., *Dean of the College of Pharmacy*

WILLIAM R. APPELBY, M. A., *Dean of the School of Mines*

GEORGE B. FRANKFORTER, Ph. D., *Dean of the School of Chemistry*

GEORGE F. JAMES, Ph. D., *Dean of the School of Education*

HENRY T. EDDY, C.E., Ph. D., LL. D., *Dean of the Graduate School*

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ADA L. COMSTOCK, M. A., *Dean of Women*

# The University Council

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At the regular meeting of the Board of Regents of the University, May 31st, 1905, a University Council was established according to the following plan:

I. The name of the body shall be The University Council. It shall consist of the President of the University, the deans of the various colleges and schools, one elected representative from each college or school for each 400 students or major fraction thereof, and one representative of the general alumni association.

II. The elected members shall serve for a period of one year. They shall be chosen from the various faculties at the time of the selection of standing committees. The representative of the general alumni association shall be chosen by that body at its annual meeting from among the alumni who are not members of the University.

III. The Council shall be authorized to—

a) Appoint the following committees or the faculty representation thereon:

The University auditing committee

The University press committee

The committee on athletics

The committee on University relations to other institutions of higher learning

The committee on health and sanitation

The committee on commencement and other University functions

The committee on catalogue, programs and courses of study

The committee on student entertainments and social affairs

And such other committees as the general University interests may require

b) Receive reports from such committees and to make such recommendations as may be required.

c) Consider and act upon any matter of general University interest beyond the province of a single faculty which may be referred to it by the President of the University or any faculty.

IV. The Council shall hold stated meetings upon the first Monday of October, December, April and June, and such other meetings as the President of the University may call

# Representatives to the Council

## **The University**

PRESIDENT CYRUS NORTHROP

## **The College of Science, Literature and the Arts**

DEAN JOHN F. DOWNEY

PROFESSOR JOHN H. GRAY

PROFESSOR J. C. HUTCHINSON

PROFESSOR H. F. NACHTRIEB

PROFESSOR NORMAN WILDE

## **The College of Engineering and the Mechanic Arts**

DEAN FREDERICK S. JONES

PROFESSOR GEORGE D. SHEPARDSON

## **The College and School of Agriculture**

DEAN EUGENE W. RANDALL

PROFESSOR HARRY SNYDER

PROFESSOR SAMUEL B. GREEN

## **The College of Law**

DEAN WILLIAM S. PATTEE

PROFESSOR HENRY J. FLETCHER

## **The College of Medicine and Surgery**

DEAN F. F. WEBBROOK

PROFESSOR THOMAS G. LEE

## **The College of Homeopathic Medicine and Surgery**

DEAN EUGENE L. MANN

## **The College of Dentistry**

DEAN ALFRED OWRE

## **The College of Pharmacy**

DEAN FREDERICK JOHN WULLING

## **The School of Mines**

DEAN WILLIAM R. APPLEBY

## **The School of Chemistry**

DEAN GEORGE B. FRANKFORTER

## **The College of Education**

DEAN GEORGE F. JAMES

## **The Graduate School**

DEAN HENRY T. EDDY

## **General Alumni Association**

DAVID P. JONES

## **The Dean of Women**

ADA L. COMSTOCK

# University Council Committees

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**The University Auditing Committee**

PROFESSORS ANDERSON, FLETCHER, OWRE, SIGERFOOS, SPRINGER

**The Committee on Athletics**

PROFESSORS PAIGE, BROOKE, HARDING, D. P. JONES, LITZENBERG

**Committee on Grounds and Sanitation**

PROFESSORS FEATHER, BASS, BRACKEN, HICKMAN, RANDALL, SIDENER,  
WESBROOK

**The Committee on Catalogue, Programs and Course of Study**

DEANS APPLEBY, EDDY, FRANKFORTER, JAMES, JONES, MANN, OWRE,  
WULLING; PROFESSORS FLETCHER, JOHNSTON, SCHLENKER, SNYDER,  
E. B. PIERCE

**The Press Committee**

PROFESSORS SCHAPER, BAUER, CONSTANT, ERDMANN, JAMES

**The Committee on Commencement and other University Functions**

PROFESSORS NACHTRIEB, JENKS, OWRE, PATTEE, RANDALL, SCHLENKER,  
WASHBURN

**The Committee on Student Entertainments and Social Affairs**

PROFESSORS FRANKFORTER, BASS, COMSTOCK, COOKE, MULLEN, PIKE

**The Committee on University Relations to other Institutions of  
Higher Learning**

PROFESSORS DOWNEY, BOTHNE, EDDY, GRAY, GREEN, JAMES, LEE

**The Committee on University Extension and University Lectures**

PROFESSORS WEST, HAECKER, RANKIN, SCHLENKER, SHEPARDSON

**The Committee on the Library**

PROFESSORS EDDY, FLETCHER, F. S. JONES, LEE, REYNOLDS,  
VAN BARNEVELD, WEST

# The Department of Medicine

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The Department of Medicine includes the following colleges:

*The College of Medicine and Surgery*

FRANK F. WESBROOK, M.A., M.D., C.M., *Dean*

THOMAS G. LEE, B.S., M.D., *Secretary and Librarian, Department of Medicine*

*The College of Homoeopathic Medicine and Surgery*

EUGENE L. MANN, B.S., M.D., *Dean*

*The College of Dentistry*

ALFRED OWRE, D.M.D., M.D., *Dean*

*The College of Pharmacy*

FREDERICK J. WULLING, Phm.D., LL.M., *Dean*

Each College is self-governed as to its internal affairs, having its own faculty and an independent curriculum. The laboratories and staff of the College of Medicine and Surgery provide instruction for all students in each of the four colleges, as required, in the following branches:

Gross and microscopic anatomy, histology, embryology, neurology, physiology, chemistry, physiological chemistry, pathology and bacteriology, pharmacology, principles of surgery and clinical microscopy.

For the betterment of medical education in Minnesota, it was deemed advisable, after consultation, that the College of Physicians and Surgeons of the Medical Department of Hamline University should merge with the College of Medicine and Surgery of the University of Minnesota. The final formalities were completed at a special meeting of the Board of Regents of the University of Minnesota, held March 4, 1903.

Arrangements have been perfected whereby the members of the present freshman, sophomore and junior classes of the Medical Department of Hamline University will receive their instruction in the University of Minnesota, being required to comply with the rules and regulations which govern the College of Medicine and Surgery of the University of Minnesota. At the end of each year, certificates will be issued by the State University authorities to President Geo. H. Bridgman, Vice-President J. T. Moore, M. D., and Dean C. A. McCollom, M. D., as representing the trustees of the College of Physicians and Surgeons, Medical Department, Hamline University. This arrangement is continued for the next four years only, for the purpose of enabling the students now enrolled in Hamline Medical Department, who satisfactorily complete the requirements for the degree in medicine, to receive the usual degrees from Hamline University.

# The College of Homeopathic Medicine and Surgery

## FACULTY

CYRUS NORTROP, LL., D., *President of the University*  
EUGENE L. MANN, A. B., M. D., *Dean of the College*  
694 Endicott Arcade, St. Paul

### MATERIA MEDICA AND THERAPEUTICS

W. E. LEONARD, A. B., M. D., *Senior Professor*  
Andrus Building, Minneapolis  
ADOLPH W. JOHNSON, *Lecturer on Pharmacy*  
H. O. SKINNER, M. D., *Lecturer on Pharmacology*

### PRACTICE OF MEDICINE

H. M. LUFKIN, M. D., *Professor*  
Masonic Temple, Minneapolis  
O. H. HALL, M. D., *Professor, Renal Diseases*  
Pittsburg Building, St. Paul  
ANNA H. HURD, Phm. D., M. D., *Associate Professor, Diseases of Blood and  
Ductless Glands*  
Pillsbury Building, Minneapolis

### CLINICAL MEDICINE AND PHYSICAL DIAGNOSIS

ASA H. HAMMOND, A. B., M. D., *Professor*  
Germania Life Ins. Bldg., St. Paul  
H. O. SKINNER, M. D., O. K. RICHARDSON, M. D., A. E. AHRENS, M. D.,  
G. B. HAMLIN, M. D., *Assistants*

### SURGERY

R. D. MATCHAN, M. D., *Senior Professor*  
Masonic Temple, Minneapolis  
W. S. BRIGGS, B.S., M.D., *Professor*  
Pittsburg Building, St. Paul  
A. E. COMSTOCK, M. Sc., M. D., *Professor, Regional Surgery*  
N. Y. Life Building, St. Paul  
A. E. BOOTH, A.B., M.D., *Professor of Orthopaedia*  
Andrus Building, Minneapolis  
W. B. ROBERTS, A. B., M. D., *Professor of General Surgery*  
Pillsbury Building, Minneapolis  
A. E. AHRENS, M. D., *Assistant*

OBSTETRICS

- B. H. OGDEN, A. B., M. D., *Senior Professor*  
Pittsburg Building, St. Paul  
HUGH J. TUNSTEAD, M. D., *Professor*  
829 16th Ave. N., Minneapolis

GYNAECOLOGY

- R. R. ROME, M. D., *Senior Professor*  
Andrus Building, Minneapolis  
H. C. ALDRICH, M. D., *Professor*  
Medical Blk., Minneapolis  
E. E. AUSTIN, M. D., *Professor*  
Andrus Building, Minneapolis  
S. G. COBB, M. D., *Associate*

MEDICAL JURISPRUDENCE

- ARTHUR W. SELOVER  
Guaranty Building, Minneapolis

OPHTHALMOLOGY

- H. H. LEAVITT, M. D., *Professor*  
Pillsbury Building, Minneapolis

OTOLOGY, RHINOLOGY AND LARYNOLOGY

- EUGENE L. MANN, A.B., M.D., *Professor*  
Endicott Arcade, St. Paul  
GEO. M. HAYWARD, M. D., *Clinical Professor*  
Medical Building, Minneapolis

SKIN AND GENITO-URINARY DISEASES

- C. H. NEILL, M. D., *Professor*  
Medical Building, Minneapolis

PAEDOLOGY

- GEO. B. HAMLIN, M. D., *Professor*  
506 Masonic Temple, Minneapolis

MEDICAL ECONOMICS

- O. K. RICHARDSON, A.B., M.D., *Professor*  
506 Masonic Temple, Minneapolis

ELECTRO-THERAPEUTICS

- ETHEL E. HURD, M. D., *Associate Professor*  
Pillsbury Building, Minneapolis

## ANATOMY

C. A. ERDMANN, M. D., *Professor*  
Pillsbury Building, Minneapolis

## PHYSIOLOGY

R. O. BEARD, M. D., *Professor*  
Pillsbury Building, Minneapolis

## HISTOLOGY AND EMBRYOLOGY

T. G. LEE, B. S., M. D., *Professor*  
The University

## PATHOLOGY AND BACTERIOLOGY

F. F. WESBROOK, M. A., M. D., C. M., *Professor*  
The University

## CHEMISTRY

GEORGE B. FRANKFORTER, A. M., Ph. D., *Professor*  
The University



# Announcement

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The College of Homeopathic Medicine and Surgery offers special advantages to students seeking a medical education. Homeopathy, as an expanding science, draws toward itself as a part of its rightful possession, every addition to medical knowledge that can be of any service in curing the sick. The homeopathic physician should feel that he is "heir of all ages" in medical learning, having that catholicity of training which places at his command every known resource, including as his especial advantage, the added power of coping with disease, that comes from his knowledge of the science of homeopathy.

The breadth of view of this result is provided in the college of homeopathic medicine and surgery in a real university course, botany, chemistry (organic and inorganic), histology, embryology, bacteriology, pathology, anatomy, physiology, hygiene and sanitary science, with all the accessories of laboratory work; second, in building upon this foundation a comprehensive knowledge of therapeutics, practice and surgery. The student has daily training in both the practical and theoretical aspects of medicine. In the first two years the practical training is provided in constant individual work in the laboratories and dissecting rooms; in the last two in a broad field of clinical study and observation, in both medical and surgical cases, which the nearly one-half million population of the Twin Cities abundantly supplies. The theoretical work is carried on in daily didactic lectures and text-book study throughout the entire course.

Special emphasis is placed upon the clinical instruction in both dispensary and hospital practice. Senior students have the opportunity to attend out-door patients, assist in special and general operations, and to attend obstetrical cases during the last course of lectures.

The college alumni now in practice are evidence of the character of its work. The loyal support of the profession throughout the northwest has encouraged and upheld the faculty.

The college proposes to stand for a broad, catholic, scientific, homeopathic education in medicine and surgery.

## REQUIREMENTS FOR ADMISSION

I. Candidates for admission to the College of Homeopathic Medicine and Surgery who have received degrees in arts or science from approved universities or colleges will be admitted on presenting their diplomas or other satisfactory testimonials (subject to conditions under IV).

II. Students will be admitted who present evidence that they have satisfactorily performed the equivalent of at least two full years of work

of collegiate grade of fifteen hours per week (subject to conditions under IV).

III. Other candidates who have not completed the two years of required work will be required to pass examinations, conducted by the College of Science, Literature, and the Arts, upon such subjects as may be lacking (subject to conditions under IV).

IV. All candidates for admission must furnish evidence that they have completed one year of at least three credit\* hours per week in each of the following named subjects, either in this University or in some other college or university of equal rank:

1. Physics
2. General Inorganic Chemistry
3. Qualitative Analysis
4. Biology, *i. e.*, Zoology or Botany
5. Language, *i. e.*, German or French

Since the two years of required collegiate work must include the aforementioned subjects, students are advised to choose the prescribed six-year course which leads to the degrees of bachelor of science and doctor of medicine. For detailed outline of this course see pages 25-30.

V. In addition students must offer for entrance two years of Latin.

VI. Candidates may be allowed to enter with not more than one condition in the second year of academic work. This condition, however, must be removed before the beginning of the second-year work in medicine.

For regulations governing admission to the College of Science, Literature and the Arts, and detailed information concerning its curriculum, see the bulletin of that college.

## ENROLLMENT

Students are advised to matriculate or register in the office of the University Registrar on or before September 7, 1908. Entrance and condition examinations will be held September 7 to 12. Opening lecture, September 14th. Classes called for regular work on September 15.

Students are fined twenty-five cents per day who matriculate or register in the Registrar's office after September 14, 1908, for the first semester's work, or after February 2, 1908 for the second semester's work.

## MATRICULATION

Students who are entering the College of Homeopathic Medicine and Surgery for the first time must present to the Registrar satisfactory evi-

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\* NOTE.—A credit hour in a laboratory subject is taken to be two or more hours of consecutive work.

dence of having completed the required amount of work for admission, and obtain proper classification card and statement of fees. The Registrar will determine and record any deficiency in the entrance qualifications of a student and will arrange with the student for the removal of such deficiencies.

Students who have matriculated in previous years must first present registration slips and obtain statement of fees in the Registrar's office at the beginning of each semester.

### REGISTRATION

The registration of all students consists of three parts and should be carried out in the following order:

1st. Present registration slip to the Registrar and secure a statement of fees.

2nd. Present this statement at once to the cashier and pay fees.

3rd. Report to the dean at once for final classification and registration. Students must follow this order and complete registration as promptly as possible in order to secure tickets for entrance to the various courses.

As the rules of the Minnesota State Board of Medical Examiners and of the Council on Medical Education of the American Institute of Homeopathy and the examining boards of several other states, require four full years' work in a medical college, students are not given time credit for work done outside a medical school. However, when a student presents *satisfactory* evidence of good work done elsewhere, he may be given subject credit for such work, and be permitted to take *optional* or *advanced* work in the branches and for the time in which he has received subject credit. It is consequently of considerable advantage to a student to be able to present subject credits.

No student may be advanced with his class or given advanced standing unless he has passed the majority of the required studies of the previous year; nor shall any student be admitted to the second semester's work of the fourth year who has any unremoved conditions of any of the preceding years.

### TERMS OF TUITION

The annual tuition fee in the College of Homeopathic Medicine and Surgery is one hundred dollars. This includes all charges for matriculation, lecture and laboratory courses, dissections and graduation, except a hospital fee of three dollars for juniors and seniors and a rental fee for microscopes, payable by all students who do not own their own instruments. (See microscope rental.)

One-half of the annual fee will be payable when the student matriculates. The cashier's receipt for this portion of the fee will entitle the holder to take the entrance examinations and to classify. The second half will be payable at the opening of the second semester, February 2, 1909. Failure to register within the dates assigned for registration will subject the delinquent to an increase in the registration fee, amounting to twenty-five cents for each day of such delinquency. If the applicant fails to pass the entrance examination, his fees will be returned by the cashier. Absence or failure to continue study will not entitle the student to return of fees, except in cases of special hardship, when application may be made to the executive committee of the Board of Regents.

A student who takes advanced standing will not receive any credit therefor upon his annual fees.

The fee of one dollar is charged for permission to take any examination to remove a condition. The student obtains a fee statement from the Registrar for the conditions charged against him, this he presents to the cashier, and the cashier's receipt must be registered with the dean at least twenty-four hours prior to the examination.

Special examinations may be ordered by the faculty under exceptional circumstances for which a fee of five dollars must be paid to the University cashier.

#### MICROSCOPE RENTAL

To students who do not own their own instruments, microscope fees are charged as follows: First year, first semester, four dollars; second year, first semester, three dollars; second semester, four dollars; third year, first semester, four dollars. Fourth year, clinical microscopy, two dollars.

In all elective courses requiring the use of microscopes, the fee of two dollars for each course is charged.

#### BREAKAGE AND LOSS

In each laboratory course the student will be assigned a certain amount of apparatus and material, for which he will give a receipt.

For apparatus and material attaching to his laboratory desk he will also be held responsible. At the end of each course, if such apparatus and material are restored in good condition, this receipt will be returned to him.

A deposit of five dollars will be made with the University cashier each year, by every student, at the time of enrollment as a caution fee. This fee is intended to cover the cost of unnecessary damage in the college buildings and of breakage and loss of laboratory apparatus and materials. It will be returned to the student at the close of each year, minus the cost

of articles assigned to him, which are not returned in good condition, or of damage to college property for which he is individually responsible. If responsibility for such damage cannot be individually fixed, a pro rata charge upon all students will be made.

#### GRADUATE AND SPECIAL STUDENTS

Special students will pay to the cashier a fee of twenty dollars per year for each study they elect to pursue. They will be charged additional fees, varying from five to twenty dollars, for each laboratory course they may enter.

Graduate students will pay an admission of ten dollars, which will entitle them to attend any lectures they may desire in regular courses.

Additional charges varying from ten to twenty dollars per course are made for laboratory courses, and microscope rental must also be paid.

#### EXAMINATIONS—FINAL STANDINGS

No student with an entrance condition will be allowed to register for any second-year subject, nor will any student with any first-year condition or failure be allowed to register for a third-year subject; nor will any student having a second-year condition or failure be allowed to register for any fourth-year subject.

No student will be allowed to omit any freshman work in order to make up entrance conditions, except by special permission of the department affected.

Habitual absence without satisfactory excuse, continued indifference to study, or persistently poor scholarship will subject the student to temporary or permanent suspension.

Students will not be permitted to substitute work in any branch for the regular college courses.

Final examination in every required subject is held at the close of the work at the end of the semester or quarter, according to the extent of the course given. Opportunity is offered to remove conditions at the opening of the school year in September. The examinations at the end of the semester or quarter are only for those who are taking the courses, while the September examinations are only for those who are attempting to remove conditions or are applicants for advanced standing.

The final standing of any student in a given subject shall be determined as the result of his (a) practical work (laboratory or clinical), (b) recitations, and (c) oral or (d) written examinations.

All of these factors shall be taken into consideration in making up the final grading in any subject.

Students' standings shall be determined at the end of the year by a conference of the heads of the departments, in which the work is pursued during the year.

All standings shall be reported officially to and from the registrar's office at the end of the year.

Students shall be reported as Passed, Incomplete, Conditioned or Failed.

No student will be registered for any examination to remove conditions until he presents a receipt from the cashier for the fee for said examination. (See Terms of Tuition.)

Conditions must be removed at the beginning of the school year in September. No student who has any conditions unremoved at the close of this examination is allowed to continue with his class without the express permission of the dean on the recommendation of the department concerned.

A condition not removed at the first opportunity becomes a failure subject to the rule governing failures.

Failures necessitate the taking of the work again in class.

A student repeating work, by reason of having failed, must pay the fees connected with that course.

A student who is conditioned in the majority of the subjects given in any year will become a "failed" student and must repeat the whole work of that year.

Students who carry failures into a succeeding year may find a resultant conflict of study hours; in that event they will give preference to the unfinished studies of the lower conflicting course.

### ADVANCED STANDING

All persons applying for advanced standing must present satisfactory evidence of time spent in medical studies, as well as official credentials, their own records, notes, drawings, and other evidence of work covered and pass examinations in the branches already taken by the class they seek to enter and satisfy all other admission requirements, but any student who has satisfactorily completed the requirements of any department of this college in any other medical college of recognized standing may be excused from repeating such examinations if the instruction which he has received is considered satisfactory by the head of the corresponding department in this college.

No condition of advanced standing will entitle the student to take the two years of any graded study coincidentally.

Seniors in the College of Science, Literature, and the Arts, or in other recognized colleges, who contemplate entering the department of medicine,

are permitted to elect courses in anatomy, histology, embryology, neurology, physiology and chemistry in this department in lieu of equivalent science courses in the College of Science, Literature, and the Arts or in other colleges.

### REQUIREMENTS FOR GRADUATION

The degree of doctor of medicine is conferred by the Board of Regents upon the students who are recommended by vote of the faculty for graduation. Candidates for the degree must possess the following qualifications:

Every candidate for the degree of doctor of medicine must be at least twenty-one years of age, and of good moral character. He must have satisfied all the requirements for admission to the College of Homeopathic Medicine and Surgery and have completed in a satisfactory manner the full four years' course of study in this college.

The degree of doctor of medicine will also be given to candidates who have completed a portion of their medical work in some other recognized medical school, provided that they have satisfied all entrance requirements and have completed a four years' course of medical study equivalent to the standards maintained here, of which the final year must be spent in this college.

A graduate of another medical school of recognized standing may obtain the degree of doctor of medicine at this University by fulfilling all the requirements for undergraduates, completing in full the final year's work in this college, and passing satisfactory examinations.

### Clinical and Laboratory Facilities

The medical group of buildings is located on the University campus overlooking the Mississippi river and is between the business centers of the Twin Cities and connected therewith by two trunk trolley lines which bring the student in ready connection with all the hospitals of the two cities. The quadrangle contains Millard Hall, Medical Science Building, the Chemistry laboratories, the laboratory of Anatomy and the Institute of Public Health and Pathology, while use is made of the laboratory of Animal Research of the State Board of Health, which immediately adjoins the Institute of Public Health and Pathology.

The University Hospital for the department of Medicine and Surgery, the gift of the late Dr. A. F. and Mrs. Elliott and Mr. Walter J. Trask, of Los Angeles, Cal., is in the process of construction at a cost of about \$120,000. The hospital is being located on a site of ten acres overlooking the river and will form a part of the present medical group of buildings. This hospital site of ten acres was purchased by means of a gift of

\$50,000 from generous citizens of Minneapolis to the college. Provision for the enlargement of the hospital site and for the acquirement of the land which intervenes between it and the medical quadrangle has already been made by the last state legislature's appropriation of \$450,000 for campus extension.

### CLINICS

Every member of the faculty (with two exceptions) is a clinical teacher. Thus each professor demonstrates the application of his didactic work.

### DISPENSARY CLINICS

The dispensary, located at 1808 Washington avenue south, offers unusual facilities to the student for individual examination of patients. The location is within easy access of those whose means compel them to ask dispensary assistance, and presents ample opportunity for the study of all forms of diseases usually met with in practice. Patients present themselves in large numbers daily (more than six thousand prescriptions having been made during the past year), and are assigned to particular departments, according to the nature of their diseases. The classes are so divided and arranged as to afford every student abundant opportunity to familiarize himself with the best methods of diagnosis and treatment of the various maladies, medical and surgical, with which the clinic abounds. Each student is assigned for a definite period as clinical assistant in each department of the clinic. The college clinics are conducted throughout the entire year. Students and practitioners are invited to attend them at all times.

### HOSPITAL CLINICS

The college has unusual advantages in hospital clinics. In addition to calling upon students to assist the various professors in private cases regular clinics are provided in the city hospitals of both St. Paul and Minneapolis, and in St. Luke's and St. Joseph's Hospitals in St. Paul. Each Monday and Tuesday is devoted to clinics held in one of these hospitals by members of the faculty.

#### CITY HOSPITAL, MINNEAPOLIS

The faculty of the college of homeopathic medicine and surgery is largely represented on the staff of this institution, where one-fifth of all the patients admitted are placed under care.

#### CITY HOSPITAL, ST. PAUL

This hospital likewise has a full staff of homeopathic physicians and surgeons which include all the St. Paul members of the college faculty.



Each member of the staff has full charge of all cases coming into his department during his term of service and uses suitable ones for clinical purposes.

#### ST. LUKE'S HOSPITAL, ST. PAUL

This hospital has recently erected a new building thoroughly equipped with all modern facilities for caring for medical and surgical cases. It contains an amphitheatre in which clinical lectures are delivered. A number of the faculty are members of the visiting staff.

#### ST. JOSEPH'S HOSPITAL, ST. PAUL

Through the addition to its staff of members of the college faculty, students have access to both surgical and medical cases upon exactly the same footing as at the other hospitals.

#### GENERAL REMARKS

In all hospital work students are given special bedside instruction in diagnosis, in "taking the case," in prescribing, in surgical dressing, in the after care of patients and all forms of accessory treatment.

#### HOSPITAL APPOINTMENTS

Graduates of this college are eligible for appointment to the position of interne in the Minneapolis City, St. Paul City and County Hospitals and St. Joseph's Hospital, St. Paul. Also to the staff of the State Hospital for Insane at Fergus Falls.

The College hereby acknowledges favors extended by Dr. G. O. Welsh and his assistants at the Fergus Falls Insane Asylum for practical instruction to the Senior Class in Mental Diseases.

All communications pertaining to the College of Homeopathic Medicine and Surgery should be addressed to the Dean, Eugene L. Mann, A. B., M. D., 694 Endicott Arcade, St. Paul, Minn.

#### LIBRARY OF MEDICAL DEPARTMENT

Thomas G. Lee, B.S., M.D., Librarian

The medical library consists of the following collections: The general clinical library, the libraries of the colleges of Dentistry and Pharmacy, the departmental libraries of pathology and bacteriology, histology and embryology, anatomy, and physiology. These contain nearly 10,000 bound volumes, 14,000 unbound volumes, monographs, reprints, dissertations, etc., and about 175 current periodicals. In addition to the above, the libraries of the State Board of Health, of Hennepin County Medical Society, containing 4,000 volumes and 50 journals, and of the Ramsey County Medical

Society with some 7,000 volumes and 150 journals, give the student additional opportunity to consult all the more important medical publications.

The general University library contains some 115,000 bound volumes, 30,000 unbound volumes and pamphlets, and several hundred current periodicals. The public libraries of Minneapolis, with 160,000 volumes, and of St. Paul, with some 90,000 volumes, the State Historical Library of 85,000 volumes, and the State Library of 59,000 volumes, the Library of the Minnesota Academy of Natural Sciences of some 12,000 titles, place before the student the greater part of the important literature relating to all branches of the physical and natural sciences as well as works of general culture and those pertaining particularly to medicine. All of these collections are readily accessible to the student.

A noteworthy addition to the medical library is the recent acquisition by the department of histology and embryology, through the generosity of Alfred F., John S. and Charles C. Pillsbury, of a large portion of the working library of the late Professor William His, of Leipzig, containing about 8,500 titles and representing some 2,500 authors.

#### LABORATORY BUILDINGS AND EQUIPMENT

Over \$500,000.00 is invested in the laboratories and equipment of this college exclusive of site.

The location of the medical buildings in a central portion of the campus offers all the advantages to student and staff which come from a close association with the other University departments, such as general library, laboratories of physics, chemistry, biology, botany, geology, etc.

Millard Hall, a large, four story, brown stone, and cream brick building, (65x125 ft.) the oldest of any in the group, contains a faculty room, a large amphitheatre and lecture rooms, library and reading rooms of the department together with the laboratory of pharmacology and materia medica.

The Medical Science Building, a large, four-story, brick building, (75x150 ft.), is especially designed for laboratories. This building houses the department of histology and embryology and the department of physiology of this college. A portion of the south wing is temporarily occupied by the College of Pharmacy.

The department of histology and embryology occupies the four floors of the north wing and a part of the center of the building and the department of physiology occupies the greater part of the south wing and the center of the building.

Chemistry is taught in two buildings. The main, four-story, brick building (198x78 ft.) constitutes the headquarters of the School of Chemistry. The laboratory of medical chemistry is a one-story, brick building

devoted to the use of this department and is included as a part of the Medical Quadrangle. It is equipped with an amphitheatre, two teaching laboratories (3,800 sq. ft.), preparation rooms, balance room, storage rooms and private offices of the staff of this department.

The laboratory of anatomy is a two-story, basement building.

The Institute of Public Health and Pathology is the newest of any in the Medical Quadrangle.

SIX-YEAR COURSE IN SCIENCE AND MEDICINE LEADING TO  
THE DEGREES OF BACHELOR OF SCIENCE  
AND DOCTOR OF MEDICINE

In the year 1903-04 the University established a six-year course of study arranged especially for students of medicine. The first two years of the course are given in the College of Science, Literature and the Arts, and the last four years are given in the medical department. It leads to the degree of bachelor of science at the end of the first four years, and to the degree of doctor of medicine at the end of the six-year course.

In the College of Science, Literature, and the Arts the year is divided into two semesters. In the medical department the year is divided into four quarters (half semesters). In the College of Homeopathic Medicine and Surgery the work is given on a concentration plan, but two subjects being carried on at a time, and consequently a greater number of hours per week.

Students who enter without French or German are required to take Beginning German, Course 1, ten credits, and Scientific German, Course 3, six credits.

Students entering with two years of German may take Beginning French, Course 1, ten credits, in either first or second year, and German, Course 3, six credits, in the other year.

Page references refer to the bulletins of the College of Science, Literature, and the Arts, and of the College of Homeopathic Medicine and Surgery for more detailed information.





## HISTOLOGY AND EMBRYOLOGY (See pp. 46-48)

- GENERAL VERTEBRATE MORPHOLOGY AND HISTOLOGY PROFESSOR LEE  
ASSOCIATE PROFESSOR NICKERSON  
Four and one-half credits (six lectures and recitations, three laboratory periods) First quarter
- MICROSCOPIC ANATOMY OF MAN AND VERTEBRATES PROFESSOR LEE,  
ASSOCIATE PROFESSOR NICKERSON  
Four and one-half credits (six lectures and recitations, three laboratory periods) Second quarter
- ELEMENTS OF VERTEBRATE EMBRYOLOGY PROFESSOR LEE, ASSOCIATE  
PROFESSOR JOHNSTON  
Four and one-half credits (six lectures and recitations, three laboratory periods) First quarter
- ADVANCED VERTEBRATE EMBRYOLOGY PROFESSOR LEE, ASSOCIATE  
PROFESSOR JOHNSTON  
Three credits (two lectures and recitations, one laboratory period) Second quarter
- ELEMENTS OF MAMMALIAN NEUROLOGY ASSOCIATE PROFESSOR  
JOHNSTON, DR. INGBERT  
Three credits (two lectures and recitations, one laboratory period) Second quarter

## PHYSIOLOGY (See pp. 51-52)

- GENERAL CELLULAR PHYSIOLOGY PROFESSOR BEARD, ASSISTANT  
PROFESSOR WILCOX, DR. SEDGWICK  
Four and one-half credits (twelve lectures and recitations, six laboratory periods) Third quarter
- PHYSIOLOGY OF MUSCULO-NERVOUS MECHANISMS PROFESSOR BEARD,  
ASSISTANT PROFESSOR WILCOX, DR. SEDGWICK  
Four and one-half credits (twelve lectures and recitations, six laboratory periods) Third quarter
- SYSTEMIC PHYSIOLOGY PROFESSOR BEARD, ASSISTANT PROFESSOR  
WILCOX, DR. SEDGWICK  
Four and one-half credits (twelve lectures and recitations, six laboratory periods) Fourth quarter
- SYSTEMIC PHYSIOLOGY (Continued) PROFESSOR BEARD, ASSISTANT  
PROFESSOR WILCOX, DR. SEDGWICK  
Four and one-half credits (twelve lectures and recitations, six laboratory periods) Fourth quarter

## FOURTH YEAR

## ANATOMY (See p. 45)

- DISSECTIONS ASSISTANT PROFESSOR MEYER, DR. HARE AND TYRELL  
Nine credits (twenty-four hours per week for nine weeks) Third quarter

## CHEMISTRY (See p. 50)

- TOXICOLOGY, WATER AND FOOD ANALYSIS PROFESSOR FRANKFORTER,  
ASSISTANT PROFESSORS HARDING AND DERBY  
Three and three-quarter credits (three lectures, three laboratory periods) Second quarter

## HISTOLOGY AND EMBRYOLOGY (See pp. 46-48)

- MICRO-TECHNIQUE AND THE MORPHOLOGY OF THE SPECIAL SENSE  
ORGANS PROFESSOR LEE  
Four and one-half credits (six lectures and recitations, three laboratory periods) Third quarter

13. SPECIAL EMBRYOLOGY OF MAN AND VERTEBRATES PROFESSOR LEE  
Four and one-half credits (six lectures and recitations, three laboratory periods) Third quarter
22. THE HUMAN NERVOUS SYSTEM ASSOCIATE PROFESSOR JOHNSTON, DR. INGBERT  
Four and one-half credits (six lectures and recitations, three laboratory periods) First quarter

PATHOLOGY AND BACTERIOLOGY (See pp. 56-57)

1. GENERAL PATHOLOGY PROFESSOR WESBROOK  
Three credits (six lectures, recitations and demonstrations) Fourth quarter
2. GENERAL PATHOLOGY DRs. MULLIN AND ROBERTSON  
Three credits (six lectures, recitations and demonstrations) Fourth quarter
3. GENERAL PATHOLOGY PROFESSOR WESBROOK, DRs. MULLIN AND ROBERTSON  
Three credits (twelve hours laboratory) Fourth quarter
4. GENERAL BACTERIOLOGY ASSISTANT PROFESSOR HILL, DR. PRATT  
Three credits (six lectures, recitations and demonstrations) Fourth quarter
5. GENERAL BACTERIOLOGY PROFESSOR WESBROOK, ASSISTANT PROFESSOR HILL, DR. PRATT  
Four and one-half credits (eighteen hours laboratory) Fourth quarter

PHARMACOLOGY (See p. 53)

1. ELEMENTARY PHARMACY ADOLPH JOHNSON  
1 credit (1 hour per week) First semester

PHYSIOLOGY (See p. 52)

5. METABOLISM AND NUTRITION PROFESSOR BEARD, ASSISTANT PROFESSOR WILCOX, DR. SEDGWICK  
Four and one-half credits (twelve lectures and recitations, six laboratory periods) First quarter
6. PHENOMENA OF STIMULATION PROFESSOR BEARD, ASSISTANT PROFESSOR WILCOX, DR. SEDGWICK  
Four and one-half credits (twelve lectures and recitations, six laboratory periods) First quarter
7. PHYSIOLOGY OF SPECIAL SENSE ORGANS PROFESSOR BEARD, ASSISTANT PROFESSOR WILCOX, DR. SEDGWICK  
Four and one-half credits (twelve lectures and recitations, six laboratory periods) Second quarter
8. PHYSIOLOGY OF CENTRAL NERVOUS SYSTEM PROFESSOR BEARD, ASSISTANT PROFESSOR WILCOX, DR. SEDGWICK  
Four and one-half credits (twelve lectures and recitations, six laboratory periods) Second quarter

## FIFTH YEAR

## First Semester

CLINICS 6	PROFESSORS LUFKIN, HAMMOND, OGDEN, COMSTOCK, ROBERTS, LEAVITT, HAMLIN, LEONARD, ALDRICH, TUNSTEAD, NEILL, BOOTH, RICHARDSON, MATCHAN; DRs. BECK, COBB, HAYWOOD, SKINNER, DAWSON.	
I. GYNAECOLOGY 1		PROFESSOR ALDRICH
III. MATERIA MEDICA 2		PROFESSOR LEONARD
NOSE, THROAT AND EAR 1		PROFESSOR MANN
I. OBSTETRICS 1		PROFESSOR TUNSTEAD
PHYSICAL DIAGNOSIS 1		PROFESSOR HAMMOND
I. PRACTICE OF MEDICINE 3		PROFESSOR LUFKIN
SPECIAL PATHOLOGY		
III. SURGERY 1		PROFESSOR ROBERTS
V. SURGERY 2		PROFESSOR COMSTOCK

## Second Semester

CLINICS 6		(as first semester)
I. GYNAECOLOGY ½		PROFESSOR ALDRICH
III. MATERIA MEDICA 2		PROFESSOR LEONARD
NOSE, THROAT AND EAR 1		PROFESSOR MANN
I. OBSTETRICS ½		PROFESSOR TUNSTEAD
PHYSICAL DIAGNOSIS ½		PROFESSOR HAMMOND
I. PRACTICE OF MEDICINE 3		PROFESSOR LUFKIN
V. and VI. SURGERY 3		PROFESSORS COMSTOCK, MATCHAN
I. SURGICAL ANATOMY 1		PROFESSOR BOOTH
MEDICAL JURISPRUDENCE ½		MR. A. W. SELOVER

## SIXTH YEAR

## First Semester

CLINICS 6		(as first semester, fifth year)
DERMATOLOGY AND GENITO URINARY 1		PROFESSOR NEILL
ELECTRO THERAPEUTICS 1		ASSOCIATE PROFESSOR E. E. HURD
II. GYNAECOLOGY ½		PROFESSOR AUSTIN
IV. MATERIA MEDICA 2		PROFESSOR LEONARD
MEDICAL ECONOMICS 1		PROFESSOR RICHARDSON
MENTAL DISEASES 2		DR. G. O. WELSH
II. OBSTETRICS 1		PROFESSOR OGDEN
OPHTHALMOLOGY 1		PROFESSOR LEAVITT
ORTHOPAEDIA 1		PROFESSOR BOOTH
PAEDOLOGY 1		PROFESSOR HAMLIN
I. PRACTICE OF MEDICINE 3		PROFESSOR LUFKIN
V. SURGERY 2		PROFESSOR COMSTOCK

## Second Semester

CLINICS 6		(same as first semester, fifth year)
III. GYNAECOLOGY 1		PROFESSOR ROME
IV. MATERIA MEDICA 2		PROFESSOR LEONARD
II. OBSTETRICS 1		PROFESSOR OGDEN
OPHTHALMOLOGY 1		PROFESSOR LEAVITT
ORTHOPAEDIA 1		PROFESSOR BOOTH
I. PRACTICE OF MEDICINE 3		PROFESSOR LUFKIN
II. PRACTICE OF MEDICINE ½		ASSOCIATE PROFESSOR ANNA HURD
III. PRACTICE OF MEDICINE ½		PROFESSOR HALL
V. SURGERY 2		PROFESSOR COMSTOCK
VI. SURGERY 1		PROFESSOR MATCHAN
IV. SURGICAL PATHOLOGY 1		PROFESSOR ROBERTS



## Seven-Year Course Leading to the Degree of A. B. and M. D.

Seniors in the College of Science, Literature and the Arts and in other colleges, who contemplate entering the College of Homeopathic Medicine and Surgery, are permitted to elect courses in anatomy, histology and embryology, physiology and chemistry in this college in lieu of similar science courses in the College of Science, Literature and the Arts or in other colleges.

### AFFILIATION WITH OTHER COLLEGES

Carleton College has entered into an arrangement with the University of Minnesota whereby students from Carleton who have completed three full years' work without conditions and who have also met all the requirements for admission to the College of Homeopathic Medicine and Surgery may elect as the work of their senior year the first year's work in the College of Homeopathic Medicine and Surgery, upon the satisfactory completion of which they will receive a bachelor's degree from Carleton College.

By this arrangement students from this college, having satisfactorily completed their four years' work in the College of Homeopathic Medicine and Surgery, will have received both degrees in a period of seven years.

Opportunity is offered to other colleges meeting the University requirements to enter into similar relations of affiliation for the purpose of shortening the time whereby a student can secure both degrees.

### CURRICULUM

The course in the College of Homeopathic Medicine and Surgery leads to the degree of doctor of medicine. It covers a period of four years of collegiate study, each year representing nine months in actual residence.

The studies are graded, so far as practicable, throughout the four years and this grading is arranged with careful reference to the relation which the subjects naturally bear to each other.

The work of the first two years deals with the so-called scientific or laboratory branches; while that of the last two years includes the principles and practice of medicine and surgery, their associated specialties and the application of scientific or laboratory methods to clinical experience.

### COLLEGE YEAR

The twenty-first annual course of study in this college will begin on Tuesday, September 14, 1908, and will continue nine months, or thirty-six weeks, exclusive of holidays, closing upon Saturday, June 5, 1909. The college year is divided into two semesters; each semester is further divided into two quarters of nine weeks each; the first semester ends January 30, 1909. The last week is devoted mainly to mid-year examinations, which will be conducted in many of the departments. The second semester will begin February 2, 1909, and will close June 5, 1909. Certain of the courses of study terminate on November 14th, and April 3d. Commencement exercises will occur in common with the other departments of the University, during the week ending June 11, 1909.

# Course of Instruction

## DEPARTMENT OF ANATOMY

THOMAS G. LEE, B. S., M. D. <i>Professor of Histology and Embryology</i>	CHARLES A. ERDMANN, M. D., <i>Professor of Anatomy</i>
JOHN BLACK JOHNSTON, Ph. D., <i>Associate Professor in Comparative Neurology</i>	ARTHUR W. MEYERS, B.S., M.D., <i>Assistant Professor of Anatomy</i>
WINFIELD S. NICKERSON, Sc.D., M.D. <i>Assistant Professor of Histology and Embryology</i>	EARLE R. HARE, B.A., M.D., <i>Instructor in Anatomy</i>
JARL FERDINAND LEMSTROM, M.D., <i>Assistant in Micro-Technique</i>	C. C. TYRELL, B.A., M.D., <i>Prosector in Anatomy</i>
CHARLES E. INGBERT, Ph.D., M.D., <i>Associate in Neurology</i>	E. E. HEMINGWAY, Ph. D., <i>Assistant in Anatomy</i>
E. M. WATSON, B.A., <i>Departmental Laboratory Assistant</i>	
KATE WYMAN, B.A., <i>Departmental Laboratory Assistant</i>	

The department of anatomy is located in two separate buildings, adapted to its work, and equipped with the best modern appliances. The building devoted to gross anatomy includes one large students' dissecting room, the general laboratories of anatomy, a bone laboratory for osteological research work, the offices of the professor and assistants in anatomy, preparation rooms and morgue. An ample supply of dissecting material is provided.

In the first year the subjects of osteology and syndesmology are pursued by means of lectures, laboratory demonstrations and recitations from the specimen.

The bones of a human skeleton are loaned to the student for purposes of study and recitation.

Myology, angiology, splanchnology and neurology are studied in connection with the dissection and laboratory demonstrations of the thoracic, abdominal and pelvic viscera upon the lower animal. This is followed by the dissection of the human body and a comparative brain.

In the second year the alimentary canal, respiratory tract, genito-urinary system, organs of special sense and the cerebro-spinal nervous system are pursued by means of lectures, recitations and laboratory demon-

strations. The dissection of the human body is repeated and followed by a series of lectures and demonstrations on descriptive and surgical anatomy. The student dissects in the first semester of the first year and in the first half of the second semester of the second year, recites upon the subject and observes demonstrations made by a corps of assistants under the direction of the professor of anatomy.

Dissection is supplemented by drawings from dissections made upon outlines of the human skeleton, which are furnished to the student.

In the third year the student takes up the study of the human body from a topographical and surgical standpoint and is given a thorough review of the surgical regions, emphasizing the practical points in relation to their clinical application.

The work in microscopic anatomy, histology, embryology, neurology and micro-technique occupies all four floors of the entire north wing and center of the Medical Science Building, amounting to about 17,000 square feet. The main laboratory on the first floor measures 44x72 feet, lighted by windows on three sides and a part of the fourth. Each student is provided with a sink, gas, electric light, copper heating table, microscope locker and microscope, and a locker for the storage of apparatus and material. On the other floors there are to be found a lecture room and well equipped laboratories for courses in neurology, micro-technique, experimental work in histology and embryology, private rooms for investigators, various storage and preparation rooms, and rooms for reconstruction, chemical, photographic and photomicrographic work. These various laboratories and rooms are very well equipped with microscopes, microtomes, thermostats, a great variety of technical glassware, and other apparatus.

The departmental library contains a carefully selected collection of reference literature, both standard and periodical. There has been recently added to the library a large part of the working anatomical library of the late Professor William His of Leipzig, amounting to about 8,500 titles by 2,500 authors. In addition to this collection the other libraries of the University, together with the public libraries of Minneapolis and St. Paul, give the students access to practically all of the important literature relating to the work of this department.

The courses are made as practicable as possible, the student making a large number of permanent preparations for his own use. In addition each student is loaned a number of complete embryological series of mammalian and other vertebrate embryos cut in different planes and illustrative of different stages of development.

The lecture courses are illustrated by charts and lantern slides made from histological and embryological specimens. Demonstrations are given

under the projection or compound microscope of typical sections of tissues and organs accompanied by camera lucida drawings or photo-micrographs with explanatory text.

All students are recommended to purchase a microscope at the beginning of the course. This instrument is an indispensable part of the outfit of a well trained physician. Suitable microscopes can be purchased for from \$50 to \$75 which may be fitted with such other parts as may be desired. Students not owning microscopes will be furnished with instruments at a rental fee.

#### GROSS ANATOMY

1. **HUMAN OSTEOLOGY** PROFESSOR ERDMANN AND DR. HARE  
Six credits (eighteen lectures and recitations per week for six weeks) First quarter  
Required of freshmen.  
Lectures and recitations upon the human skeleton and supplementary work on the osteology of domestic animals. A practical study of the skeleton, followed by recitation from the specimen.
2. **SYNDESMOLOGY** PROFESSOR ERDMANN AND DR. HARE  
Three credits (eighteen lectures and recitations per week for three weeks) First quarter  
Required of freshmen.  
Lectures and recitations upon the articulations, their structure and function.
3. **DISSECTION** ASSISTANT PROFESSOR MEYER, DRs. HARE AND TYRRELL  
Seven and one-half credits (twenty-one hours each week for nine weeks) Second quarter  
Required of freshmen. Open to students who have completed course 2.  
The student makes a complete dissection of all the structures of either the upper or lower half of the human body, using text-books, atlases and models as guides. The work is largely independent, and a dissection must be completed in the quarter in which it was undertaken.
4. **DISSECTION** ASSISTANT PROFESSOR MEYER, DRs. HARE AND TYRELL  
Nine credits (twenty-four hours each week for nine weeks) Third quarter  
Required of sophomores.  
In this course the student completes the dissection of the other half of the human body.
5. **TOPOGRAPHICAL AND SURGICAL ANATOMY** PROFESSOR ERDMANN  
One and one-half credits (three hours, lectures and recitations each week for nine weeks) Third quarter  
Required of juniors. Open to students who have completed courses 1, 2, 3 and 4.  
A comprehensive review of the relations of structures composing the surgical regions of the human body; demonstrations with dissections, lantern, and upon the living model, showing the anatomical and surgical landmarks, and their applications.
6. **THE LYMPHATIC SYSTEM** ASSISTANT PROFESSOR MEYER  
A comprehensive review of the human lymphatic system including the tonsils, adenoids and hemolymph glands. This course will consist of a series of lectures incorporating the results of recent research, and demonstrations on specially prepared dissections and injections, supplemented by a consideration of the lymphatic system of some of the lower vertebrates.  
Students who have completed their dissections are eligible. This and the following course will be given at an hour which is most convenient for those electing it.

7. **THE GENITO-URINARY ORGANS** ASSISTANT PROFESSOR MEYER  
The scope of this course is similar to the above, but students will be expected to do actual laboratory work on gross sections made in various planes, of the cadavers of foetuses near term, of infants, adolescents and adults. An opportunity will also be afforded to study specially prepared dissections and preparations, and the aim will be to consider the human reproductive organs in their broadest relations as well as in their minute anatomical details. The development history will be referred to only as required. This course will be given under the same conditions as the above.
8. **TOPOGRAPHICAL ANATOMY OF CROSS SECTIONS** PROFESSOR ERDMANN AND DR. TYRELL  
Open to third and fourth year students.  
A series of lectures and demonstrations, supplemented by the individual study of frozen and specially prepared cross sections of the human body, and a series of lantern slides representing actual sections.
9. **RESEARCH WORK** PROFESSOR ERDMANN  
The laboratory is equipped for the original investigation of anatomical problems. Students suitably fitted who have the time to do such work are encouraged to undertake it.
10. **ADVANCED PRACTICAL ANATOMY** PROFESSOR ERDMANN  
Opportunity is afforded for advanced work in practical anatomy to suitably trained students and practitioners, at any time during the college year.

**HISTOLOGY, EMBRYOLOGY AND NEUROLOGY**

1. **GENERAL VERTEBRATE MORPHOLOGY AND HISTOLOGY** PROFESSOR LEE, ASSISTANT PROFESSOR NICKERSON  
Four and one-half credits (six lectures and recitations, and six hours laboratory work per week) First quarter  
Open to freshmen.  
The structure and properties of protoplasm; the cell, its structure; the phenomena of cell division. A comparative study of the histology of the epithelial, connective and muscular tissues, the blood, and the vascular and lymphatic systems of man and vertebrates.
2. **MICROSCOPIC ANATOMY OF MAN AND VERTEBRATES** PROFESSOR LEE, ASSISTANT PROFESSOR NICKERSON  
Four and one-half credits (six hours lecture and recitation, and six hours laboratory work per week) Second quarter  
Open to freshmen who have completed course 1 or equivalent.  
A comparative study of the morphology, microscopic anatomy, origin and development of the various organs of the alimentary, respiratory, and uro-genital systems.
3. **MICRO-TECHNIQUE AND THE MORPHOLOGY OF THE SPECIAL SENSE ORGANS** PROFESSOR LEE  
Four and one-half credits (six hours lecture and recitation and six hours laboratory work per week) Third quarter  
Open to sophomores or those who have completed courses 2 and 12, or equivalent.  
A detailed study of the structure of the organs of special sense, together with practical exercises in micro-technique, methods of fixation embedding, sectioning, staining, reconstruction etc.
5. **DENTAL HISTOLOGY AND EMBRYOLOGY** ASSISTANT PROFESSOR NICKERSON  
Three credits (four lectures, four recitations, eight hours laboratory per week) Fourth quarter  
Open to first-year students. A modified course specially arranged and open only to dental students.  
The structure and histogenesis of the organs and tissues, the structure and development of the teeth and jaws, the mouth, cavity and glands.

7. **CYTOLOGY AND HISTOGENESIS** PROFESSOR LEE  
 Three credits (lectures and laboratory) Third quarter  
 Elective course open to students who have had course 3 or 13, or  
 equivalent.
10. **RESEARCH WORK IN HUMAN AND VERTEBRATE MORPHOLOGY** PROFESSOR LEE  
 Properly qualified students will be provided every facility for  
 original investigation of anatomical problems.
11. **ELEMENTS OF VERTEBRATE EMBRYOLOGY** PROFESSOR LEE, ASSOCIATE  
 PROFESSOR JOHNSTON  
 Four and one-half credits (six lectures and recitations, and six  
 laboratory hours per week) First quarter  
 Open to first-year students.  
 A comparative study of reproduction; the ovum, the sperma-  
 tozoan, fertilization, cleavage, formation of the blastodermic  
 layers, the formation of the embryo and foetal envelopes, with  
 practical work on mammalian and other vertebrate embryos.
12. **ADVANCED VERTEBRATE EMBRYOLOGY** PROFESSOR LEE, ASSOCIATE  
 PROFESSOR JOHNSTON  
 Three credits (six lectures and recitations, and six hours lab-  
 oratory per week) Second quarter  
 Open to first-year students who have completed course 11 or  
 equivalent.  
 A comparative study of human and mammalian embryos, includ-  
 ing impregnation, segmentation and implantation of the ovum,  
 the formation, structure and relationships of the placenta and  
 the foetal envelope, and the details of organogenesis studied  
 in a practical manner upon a very large collection of serial  
 sections of human and mammalian embryos cut in various  
 planes, and representing all phases of development.
13. **SPECIAL EMBRYOLOGY OF MAN AND VERTEBRATES** PROFESSOR LEE  
 Four and one-half credits (six lectures and recitations, and six  
 hours laboratory per week) Third quarter  
 Open to second-year students who have completed courses 2  
 and 12.  
 A study of assigned problems including the elements of tera-  
 tology.
17. **EXPERIMENTAL EMBRYOLOGY**  
 Three credits (lectures and laboratory) Fourth quarter  
 Special course for advanced students.
20. **THE ANIMAL PARASITES OF MAN** ASSISTANT PROFESSOR NICKERSON  
 Three credits (six hours per week lectures and laboratory) Third quarter  
 An elective course in Medical Zoology. The general outlines of  
 the morphology and classification of the different groups which  
 contain members parasitic upon man, with special considera-  
 tion of each species of medical importance, including its  
 distribution, life history, methods of infection, means of diag-  
 nosis, and the chief symptoms produced by it.
21. **ELEMENTS OF MAMMALIAN NEUROLOGY** ASSOCIATE PROFESSOR  
 JOHNSTON AND DR. INGBERT  
 Three credits (six lectures and recitations, and six hours labora-  
 tory per week) Second quarter  
 Open to first-year students who have completed courses 1 and 11,  
 or equivalent.  
 A study of the structure and relations of the nerve elements and  
 of the general morphology of the central nervous system.
22. **THE HUMAN NERVOUS SYSTEM** ASSOCIATE PROFESSOR JOHNSTON  
 AND DR. INGBERT  
 Four and one-half credits (six lectures and recitations, and six  
 hours laboratory) First quarter  
 Open to second-year students who have completed courses 11,  
 12 and 21, or equivalent.  
 A detailed study of the internal structure and functional or-  
 ganization of the central nervous system by means of sections  
 of the human brain, with comparison of mammals and lower  
 vertebrates.

23. **SPECIAL AND APPLIED NEUROLOGY**      ASSOCIATE PROFESSOR JOHNSTON  
 AND DR. INGBERT  
 One and one-half credits (two lectures and recitations, and two  
 hours demonstrations per week)      Fourth quarter  
 Open to third year students.  
 Special studies in preparation for the work of the fourth year in  
 pathology and diseases of the nervous system.
24. **NEUROLOGICAL TECHNIQUE**      ASSOCIATE PROFESSOR JOHNSTON  
 Three credits      Fourth quarter  
 Elective course for qualified students.  
 Practical work in the preparation of the nervous system for  
 gross and microscopic study.
26. **THE NERVOUS SYSTEM AND MENTAL LIFE**      ASSOCIATE PROFESSOR  
 JOHNSTON  
 Two credits (two lectures, two demonstrations and reading with  
 reports and discussions per week)      Second quarter  
 Open to a limited number of students by special permission.  
 The course will include an analysis of nervous mechanisms on  
 the basis of function, followed by a study of the mechanisms  
 of correlation, the growth and education of the nervous  
 system, cerebral functions and localization, and the neural  
 basis of elementary phenomena of consciousness.
27. **COMPARATIVE NEUROLOGY OF VERTEBRATES**      ASSOCIATE PROFESSOR  
 JOHNSTON  
 Six credits (six hours lecture and recitations, and four hours labo-  
 ratory per week)      Second quarter  
 Intended for graduates; open by special permission to seniors  
 who meet the requirements. Prerequisite courses 1 and 2, or  
 3. in Animal Biology, or courses 2 and 12 in Histology and  
 Embryology.
30. **RESEARCH IN NEUROLOGY**      ASSOCIATE PROFESSOR JOHNSTON  
 Open only to those who are qualified to carry on investigation.  
 Problems and special work in vertebrate neurology.
40. **ANATOMICAL JOURNAL CLUB AND SEMINAR**  
 Weekly meetings during year for reviews of the current literature  
 and discussion of special topics in anatomy, histology, em-  
 bryology, and neurology, and of the research work being  
 carried on in the department. The department library, which  
 is large and rapidly growing, receives all the leading anatom-  
 ical journals.

The following text-books should be consulted

*Anatomy.* Cunningham, Piersol, Morris, Gray, Spalteholtz Atlas, Barker's Laboratory Manual., Cunningham's Manual of Dissection, Treve's Applied Anatomy, Barker's Anatomy of the Nervous System.

*Collateral Readings.* Quain's Anatomy, Flower's Osteology of Mammals, Gegenbauer's Elements of Comparative Anatomy, Chauveau's Comparative Anatomy, Wiedershelm's Elements of Comparative Anatomy, McClellan's Regional Anatomy, Deaver's Surgical Anatomy, Edinger's Anatomy of the Nervous System, Hildebrans's Chirurgisch Topographische Anatomie, Schultze's Applied Anatomy, Eisendrath Clinical Anatomy, Box and Eccles' Applied Clinical Anatomy.

*Histology.* Wilson's The Cell; Bohm-Davidoff-Huber's Histology; Stöhr-Lewis' Histology; Bailey's Histology; Piersol's Histology; Ferguson's Histology; Szymonowicz-MacCullum's Histology; Sobotta-Huber's Atlas; Klein's Histology; Mann's Histology; Lee's Vade Mecum; Kolliker's Gewebelehre; Oppel's Mikroskopischen Anatomie; Duval's Histologie; Ranvier's Histologie.

*Embryology.* Minot's Human Embryology; Minot's Laboratory text books; Hertwig-Mark's Embryology; McMurrich's Embryology; Heisler's Embryology; Marchall's Embryology; Kolliker's Embryologie; Schultze's Embryologie; Kollman's Embryologie; Schenk's Embryologie; Reese's Embryology.

*Neurology.* Johnston's Nervous System of the Vertebrates; Barker's Nervous System; Edinger's Lectures Nervous System; Gordinier's Nervous System; Van Gehuchten's Systeme Nerveux; Kolliker's Gewebelehre; Obersteiner; Sabin's Atlas.

## DEPARTMENT OF CHEMISTRY

GEORGE B. FRANKFORDER, M.A., Ph.D., *Professor of Chemistry*  
 CHAS. F. SIDENER, B.S., *Professor of Chemistry*  
 EDWARD E. NICHOLSON, M.A., *Assistant Professor of Chemistry*  
 EVERHART P. HARDING, M.S., Ph.D., *Assistant Professor of Chemistry*  
 IRA HARRIS DERRY, B.S., *Assistant Professor of Chemistry*  
 LILLIAN COHEN, M.S., *Instructor in Chemistry*  
 FRANCIS C. FRARY, M.S., *Instructor in Chemistry*  
 JOHN A. HANDY, Ph.C., *Instructor in Chemistry*  
 JAMES ZIMMERMAN, B.A., *Instructor in Chemistry*  
 WALTER L. BADGER, B.A., *Instructor in Chemistry*

## CHEMISTRY

1. GENERAL CHEMISTRY MISS COHEN AND MR. BADGER  
 Six credits (six hours per week) Both semesters  
 Open to all who do not present any entrance credits in chemistry;  
 but juniors and seniors receive only half credit; both semesters  
 must be completed before credit is given for the first semester;  
 the laboratory fee is five dollars per semester.  
 Recitations and laboratory work; the course includes a study of  
 the common elements and their compounds, with an introduc-  
 tion to the modern theories of chemistry.
2. ADVANCED GENERAL CHEMISTRY PROFESSOR FRANKFORDER  
 Six credits (six hours per week) Both semesters  
 Open to all who have completed a satisfactory course in general  
 chemistry; both semesters must be completed before credit is  
 given for the first semester; the laboratory fee is five dollars  
 per semester.  
 Lectures and laboratory work; the ground covered includes an  
 introduction to physical and technological chemistry, with an  
 exhaustive study of the chemical elements.
3. QUALITATIVE ANALYSIS PROFESSOR NICHOLSON AND MR. FRARY  
 Six credits (six hours per week) Both semesters  
 Open to those who have completed course 2; the laboratory fee  
 is five dollars per semester.  
 Lectures and laboratory work, with recitations and collateral  
 reading. The course includes the general reactions of the  
 metals and the acids, with their qualitative separation. Besides  
 this mechanical work, the ionic theory and the law of mass  
 action are discussed with special reference to common quali-  
 tative reactions.
6. ORGANIC CHEMISTRY PROFESSOR FRANKFORDER  
 Six credits (six hours per week) Second semester  
 Open to those who have completed course 3; the laboratory fee  
 is ten dollars.  
 Lectures and laboratory work. The course includes an exhaustive  
 study of the theories of organic chemistry, with one or more  
 important preparations in each of the advanced series and  
 groups of compounds.
7. TOXICOLOGY AND HYGIENE PROFESSOR FRANKFORDER, ASSISTANT  
PROFESSORS HARDING AND DERRY  
Second semester  
 Open to first-year students  
 TOXICOLOGY.—This course includes the general methods for the  
 separation and identification of the poisons both organic and  
 inorganic. Attention will be given to the identification of  
 poisons associated with medicines and with vegetable and ani-  
 mal matter. Besides this qualitative and quantitative work,  
 attention is given to the structure of those organic groups of



compounds which have poisonous properties.

**HYGIENE.**—Chemistry lectures and laboratory work. This course includes the chemical analysis of air, water, and some of the common foods, milk, sugar and fruit products. Special attention is given to food adulteration and to food preservations.

For work in other special or technical lines in chemistry, numerous courses are offered (see Bulletin of the School of Chemistry). Facilities for research work are also afforded in a large number of lines.

The analysis of the urine is dealt with under physiological chemistry in the department of physiology, in the pathology of the urinary system in the department of pathology, and in the clinical laboratories in connection with the microscopy of the urine.

## DEPARTMENT OF PHYSIOLOGY

RICHARD O. BEARD, M.D., *Professor of Physiology*

M. R. WILCOX, M.D., *Assistant Professor of Physiology*

F. H. SCOTT, M.A., M.D., Ph.D., *Assistant Professor of Physiology*

JULIUS PARKER SEDGWICK, B.S., M. D., *Instructor in Physiological Chemistry*

## COURSES OF INSTRUCTION

The department of physiology occupies rooms in the medical science building, including a laboratory of experimental physiology, a laboratory of physiological chemistry, demonstration and recitation rooms, the laboratory library and the office of the chief of the department. A large amphitheatre adapted to the demonstration of major experiments adjoins the laboratories and is used by the department for lecture purposes.

In the basement of the medical science building is a well-equipped workshop for the manufacture and repair of apparatus. Here, also, are animal rooms, furnished with enclosures, breeding cages, frog-tanks and aquarium. From the animal room supplies of animals and materials are obtained for the work in physiological chemistry and experimental physiology. The hygienic conditions of the room are carefully studied, with a view to maintaining the physiological and structural integrity of its animal occupants as perfectly as possible.

The physiological laboratories are equipped with a full supply of apparatus, instruments, etc., for experimental purposes, including artificial respiratory machines, batteries, Du Bois Reymond coils, galvanometers, rheostats, Desprez signals, chronographs, moist muscle-chambers, kymographions, spring myographs, stethoscopes, phonendoscopes, stethometers, sphygmographs, cardiographs, sphygmometers, Gaskell's clamps, oncometers, oncographs, hemometers, hematocrits, ergograph, plethysmograph and microscopes. Electric motor power is provided for driving apparatus.

The course in physiology is graded in the first and second years. Under the concentration system in vogue, something more than one-half of the student's time is occupied with this study during one semester of each of these years.

Each phase of the subject is treated as a unit: i. e., the laboratory courses in physiological chemistry, experimental physiology, physical chemistry, etc., are correlated and interwoven with the lecture courses throughout. The work is essentially practical and is individualized as much as possible.

In the first year, the student takes up the study, first, of the physiologic components of the animal body; next, the physiological and physical properties of tissue-cells in general; the nutritive media; and the neuromuscular mechanisms. He then enters upon the study of systematic physiology, taking, in turn, the circulation, digestion, secretion, respiration and excretion. Urinalysis is made a special feature of the work in physiological chemistry. The student is thoroughly drilled in the technique of analytical and estimative methods in the study of the body-fluids.

In the second year, the same methods are applied to the problems of metabolism and nutrition. The student makes a complete nutritive balance, based upon a series of actual feeding experiments, including the analysis

of a standard dietary, the qualitative and quantitative examination of the feces and urine, the estimation of the total and differential nitrogens and the determination of respiratory quotients.

In relation to the question of nutrition the distinctive physiologic conditions of successive ages of human life are discussed.

The last three-quarters of the year are occupied with the discussion and laboratory study of the physiology of the nervous system, special attention being paid to the observation and testing of special sense phenomena, cerebral localization, etc.

A laboratory reference library is accessible to the students for purposes of collateral reading.

#### COURSES OF STUDY (See p. 28).

##### *First Year*

1. GENERAL CELLULAR PHYSIOLOGY      PROFESSORS BEARD AND WILCOX,  
AND DR. SEDGWICK  
Four and one-half credits (twelve lecture and recitations periods,  
six laboratory periods)      First quarter  
The study of the physiologic components of the animal body; the  
physiologic and physical properties of the tissue-cells in gen-  
eral; the specializations of function; the nutritive media,  
including methods of blood examination.
2. THE MUSCULO-NERVOUS MECHANISMS      PROFESSORS BEARD AND WILCOX  
Four and one-half credits (twelve lecture and recitation periods,  
six laboratory periods)      First quarter  
The study of the phenomena of muscle and nerve action, including  
the principles of nerve control in general. The student is  
introduced in this course to the technique of experimental  
study.
3. SYSTEMATIC PHYSIOLOGY      PROFESSORS BEARD AND WILCOX, AND DR.  
SEDGWICK  
Four and one-half credits (twelve lecture and recitation periods,  
six laboratory periods)      Second quarter  
The vascular mechanism, including the estimation of blood-  
pressure, the mapping of cardiac areas, the study of heart  
sounds, and the making of sphygmograms.  
The digestive system, including the process of secretion, the  
analysis of the digestive fluids, the examination of the normal  
stomach contents and the conduct of digestions.
4. SYSTEMIC PHYSIOLOGY (Continued)      PROFESSORS BEARD AND WILCOX,  
AND DR. SEDGWICK  
Four and one-half credits (twelve lecture and recitation periods,  
six laboratory periods)      Second quarter  
The respiratory mechanism; the mechanics, physics, chemistry  
and nerve control of respiration.  
The excretory system, including the study of excretion by the  
air-passages, the intestinal tract, the skin and the kid-  
ney. Analysis of the physiological urine is addressed both to  
the determination of functional facts and to the attainment of  
the technique of clinical diagnosis in this field.

##### *Second Year*

5. METABOLISM AND NUTRITION      PROFESSOR BEARD AND DR. SEDGWICK  
Four and one-half credits (twelve lecture and recitation periods,  
six laboratory periods)      Third quarter  
A study of metabolic and nutritional problems for the determina-  
tion of nutritive balance, nitrogenous and body equilibrium, and  
dietaries and the further examination of the normal stomach  
contents and the fecal debris, the estimation of nitrogen ex-  
cretion in total and in differential forms, the relation of fat  
splitting and fat-absorption, and the determination of respira-  
tory quotients, etc.  
A study, also, of the distinctive physiologic features of foetal  
and infantile life, of childhood, puberty, pregnancy, parturition,  
the climacteric and old age.

6. PHENOMENA OF STIMULATION PROFESSORS BEARD AND WILCOX  
Four and one-half credits (twelve lecture and recitation periods,  
six laboratory periods) Third quarter  
A study of the conditions of stimulation, the nature of stimuli  
and their effects upon the nervous mechanism, including the  
phenomena of absence, section, and the reactions of degen-  
eration.
7. PHYSIOLOGY OF SPECIAL SENSE ORGANS PROFESSORS BEARD AND WILCOX  
Four and one-half credits (twelve lecture and recitation periods,  
six laboratory periods) Fourth quarter  
A study of special sense phenomena and of the means of de-  
termining the acuity of, and the influences which condition,  
special sense function in all its fields.
8. THE PHYSIOLOGY OF THE CENTRAL NERVOUS SYSTEM PROFESSORS  
BEARD AND WILCOX  
Four and one-half credits (twelve lecture and recitation periods,  
and six laboratory periods) Fourth quarter  
A study of the functions of the nervous system in general, in-  
cluding the functional relations of nerve tracts, association  
paths, and central localization.

*Text-Books:*

First and second years—

The American Text-Book of Physiology.

Howell's Text-Book of Physiology.

Foster's Physiology, Sixth English edition.

Hammarstein's Physiologic Chemistry.

Collateral Reading—Landois and Sterling's Handbook of Physi-  
ology; VanNoorden's Text-book of Metabolism; Stewart's  
Practical Physiology; Tigerstedt's Physiology; Blyth's Foods  
and their Composition; Hutchinson's Dietetics.

DEPARTMENT OF PATHOLOGY AND BACTERIOLOGY

FRANK F. WESBROOK, M.A., M.D., C.M., *Professor of Pathology and Bac-  
teriology*

S. MARX WHITE, B.S., M.D., *Associate Professor of Pathology and Bac-  
teriology*

H. W. HILL, M.D., *Assistant Professor of Bacteriology*

LOUIS B. WILSON, M.D., *Assistant Professor of Clinical Pathology*

J. FRANK CORBETT, B.S., M.D., *Assistant Professor of Surgical Pathology*

R. H. MULLIN, B.A., M.B., *Senior Demonstrator in Pathology and Bac-  
teriology*

H. E. ROBERTSON, A.B., M.D., *Demonstrator in Pathology*

CHELSEA C. PRATT, M.D., *Junior Demonstrator in Pathology and Bac-  
teriology*

J. L. ROTHROCK, A.M., M.D., *Clinical Instructor in Pathology*

ARTHUR S. HAMILTON, B.S., M.D., *Instructor in Pathology of the Nervous  
System*

Hospital Laboratory Assistants: Carl O. Estrem, B.A., M.D., and  
Tolbert Watson, A.B.

Departmental Laboratory Assistant: Lee Pollock

The Institute of Public Health and Pathology, to which attention has  
already been directed, provides adequate room and facilities for teaching and  
research in pathology, bacteriology, and public health.

The main laboratory, 56x75 feet, lighted on three sides and by a skylight, is used for the general or required courses. It is divided into twelve loges, each fully and independently equipped in every detail for the use of six students, who are responsible for all equipment therein contained. Supplies are distributed from a supply room opening off the main laboratory. Books and specimens required in teaching are easily procurable from the museum library, which is connected by a special or private passageway with the main laboratory. A combined lecture and autopsy room opens both from the main laboratory and from the hall so that autopsies, lantern demonstrations or lectures may be given during the period devoted to the laboratory exercises without interference with the practical work.

A smaller laboratory, one-half the size of the main laboratory, is provided for special work in graduate and optional courses in the diagnosis of tumors, pathology of the nervous system, practical public health, etc. The same large arrangement obtains as in the main laboratory.

The hospitals of Minneapolis, St. Paul, Duluth, Rochester and St. Peter, Minn., in which members of the staff are working, afford a large supply of material and frequent opportunities for post-mortem examinations. From many institutions and physicians throughout the state, valuable and interesting gross and microscopic materials are received from time to time and are made available in the museum and for macroscopic and microscopic class use.

The State Board of Health laboratories for research and routine investigation are located in the institute as well as a Pasteur Institute for the study and treatment of rabies. This affords an abundance of illustrative material for public health, pathology, and bacteriology.

A full equipment of microscopes permits of the rental of an instrument to each student, if he is not provided with one suitable for his purpose.

#### METHODS OF INSTRUCTION

In this department the center around which all instruction is grouped is constituted by the student's own personal practical experience in the laboratories. This is supplemented and coordinated by lectures, laboratory and lantern demonstrations and recitations as required.

PROFESSOR HILL, DR. MULLIN AND DR. PRATT  
(Twelve lecture and recitation hours and twelve laboratory  
hours per week) Fourth quarter

Required of sophomores.

Lectures and demonstrations. The general scope of bacteriology, the history of its development and the biological and chemical problems involved in the life history of bacteria are dealt with.

#### 1. GENERAL BACTERIOLOGY

PROFESSORS WESBROOK, ASSISTANT  
PROFESSOR HILL, DR. MULLIN AND DR. PRATT  
(Twelve lecture and recitation hours and twelve laboratory  
hours per week) Fourth quarter

Required of sophomores.

Lectures and demonstrations. The general scope of bacteriology, the history of its development and the biological and chemical problems involved in the life history of bacteria are dealt with. The classification of the various bacterial forms, the methods of isolation and culture and the composition and manufacture of culture media are studied until a thorough knowledge of technique is acquired. General and special study of the various antiseptics, disinfectants and bactericidal substances and conditions will be undertaken.

Laboratory work, involving the making of their own culture media by the students, the study of bacteria in cultures and under the microscope, technique of staining and other methods, including observations of chemical and biological peculiarities, is thoroughly carried out. Testing of various germicides, chemical and physical, and the use of bacteriological methods in the examination of drinking water form an important part of the work. Bacterial activities concerned in sewage purification, etc., receive attention.

2. GENERAL PATHOLOGY PROFESSOR WESBROOK, DR. MULLIN, ASSOCIATE PROFESSOR WHITE, DR. ROBERTSON, DR. PRATT  
Nine credits (twelve lecture and recitation hours, and twelve laboratory hours per week) Fourth quarter  
Required of sophomores.  
Lectures, demonstrations and laboratory work on the general processes involved in disease, which includes
- (a) Inflammation. The cell reaction to various irritants is carefully studied throughout a variety of tissues and animals so as to be comparative. As soon as familiarity with cell reaction is insured, the inflammatory processes in the various organs and systems are studied.
  - (b) Regeneration not already dealt with under inflammation is illustrated by specimens especially prepared from experimental animals and clinical and autopsy material.
  - (c) Inflammatory reactions and pathological processes dependent upon the activities of the circulatory system, including metastasis, thrombosis, embolism, infarction, etc., are systematically studied.
  - (d) Degeneration. The theories as to causation and the chemical processes involved are presented on the basis afforded by experimental work, together with a large amount of illustrative clinical material.
  - (e) The general physical, chemical and biological processes involved in immunity are presented together with practical and illustrative work on precipitins, agglutinins, opsonins, etc. The pathology of fever is also fully given.
  - (f) The theories of causation, the general principles involved and classification of tumors are illustrated by a carefully selected assortment of the various types.
3. PATHOLOGY OF SPECIAL DISEASES (includes Bacteriology) PROFESSOR WESBROOK, ASSOCIATE PROFESSOR WHITE, DR. MULLIN, DR. ROBERTSON AND DR. PRATT  
Ten credits (four lecture or recitation hours and twelve laboratory hours per week, eighteen weeks) First semester  
Required of juniors.  
Disease processes will be grouped, so far as practicable, according to their etiology. Instruction will be afforded by means of lectures, demonstrations of museum specimens and preparations, and laboratory work on materials secured from clinical cases and at autopsy.  
The course will consist of instruction in
1. Pathology of infectious diseases.
    - (a) Special bacteriology of the infectious diseases with the cultivation on the various media of all the important pathogenic bacteria, sown and kept under observation by each student. Fluids and tissues from clinical cases and autopsies (human and animal) will be supplied for microscopic and cultural examination and an intimate relationship with clinical pathological work maintained.
    - (b) Special pathology of the infectious diseases. Concurrently with the bacteriology and parasitology of each of the diseases, the pathology of each infection will be studied.
  - The important gross and microscopic lesions in all the organs will be illustrated from clinical and autopsy material, fresh and preserved, and supplemented by experimental work. Each student will be required to prepare and examine under the microscope selected fresh and stained specimens of morbid tissues, fluids, etc.
  2. Pathology of toxic and obscure origin. Under this are included the special degenerations, inflammations and other pathological conditions not already included under infectious diseases.
4. AUTOPSIES AND POST-MORTEM TECHNIQUE ASSOCIATE PROFESSOR WHITE, DR. ROTHROCK, DR. MULLIN, DR. ROBERTSON AND DR. PRATT  
Students will have an opportunity of personally taking part in this work, under the direction of the pathologists in charge, in the hospitals of Minneapolis and St. Paul. A knowledge of

the technique of post-mortem work and of morbid anatomy will be thus afforded. Throughout the third and fourth years.

5. **SPECIAL PATHOLOGY OF THE NERVOUS SYSTEM** DR. HAMILTON AND DR. ROBERTSON  
Two credits (twelve hours per week, first four weeks) Second semester

Required of juniors.

So far as possible, the clinical history, autopsy notes, gross specimens and sections stained by various special methods will be presented of individual cases representing the principal organic diseases of the nervous system.

6. **PRACTICAL PATHOLOGY OF TUMORS** ASSOCIATE PROFESSOR WHITE AND DR. R. H. MULLIN  
(Twelve hours per week, four weeks) Second semester  
(Elective for a limited number of students in fourth year.)

Laboratory course on the microscopic study and diagnosis of tumors.

This course includes the comprehensive study of tumors, with the view of giving the student a knowledge of the methods employed in the laboratory diagnosis of this class of pathological conditions and familiarizing him with the characters of the commoner as well as the rarer types, special attention, however, being given to the latter. It is intended to supplement the course on the surgical pathology of tumors by Professor Stewart.

7. **RESEARCH WORK IN ONE OF THE FOLLOWING LINES:** Second semester of third and throughout the fourth year, hours assigned.

- (a) General pathology.  
(b) Special pathology and bacteriology and technique.

8. **SURGICAL PATHOLOGY** PROFESSOR STEWART  
(Two hours lecture and one hour recitation a week, first semester third year, and two hours per week, second semester, fourth year.)

(See Principles of Surgery and Tumors.) This course will consist of lectures and laboratory demonstrations and will cover the general subject of the pathological and bacteriological basis of surgery. The lectures will be illustrated by charts and diagrams, by fresh and preserved specimens, and, so far as practicable, demonstrations will be given of the various processes of the bacteria concerned. Especial attention will be given to inflammation and its complications to the infectious diseases of surgical importance and to tumors.

#### **PATHOLOGICAL SOCIETY**

The medical men of the State who are especially interested and are actually working in pathology and bacteriology formed a society in the autumn of 1901, which meets monthly from October to June, in the laboratories of the department. Papers embodying original work with illustrative specimens are presented at each meeting and once a year the society invites a special guest of honor to give an address in pathology or some allied subject.

#### **TEXT-BOOKS:**

##### **Pathology—**

Delafield and Prudden's Handbook of Pathological Anatomy and Histology.

American Text-Book of Pathology.

Ziegler's General and Special Pathology.

Schmaus-Ewing: Pathology and Pathological Anatomy.

Coplin's Manual of Pathology.

Cattell's Post-Mortem Pathology.

Durck-Hektoen: Special Pathologic Histology.

Jakob: Nervous System.

Mallory and Wright's Pathological Technique.

**Collateral Reading—**Hamilton's Text-Book of Pathology; Woodhead's Practical Pathology; von Kahliden's u Anatomie; Orth, Histology; Thoma's Text-Book of General Pathology; Lubarch Ostertag, Ergebnisse der Pathologie u Anatomie; Orth,

Pathologische Anatomie; Birch-Hirschfeld, Pathologische Anatomie; Osler's System of Medicine; Clifford Allbutt's System of Medicine; Leukhart's die Thierische Parasiten des Menschen; Bouchard, Traite de Pathologie Generale; Eichorst, Pathologie du Therapie; Gaylord and Aschoff, Pathological Histology; Nothnagel, Encyclopedia of Practical Medicine; Wood, Chemical and Microscopical Diagnosis.

Surgical Pathology.—

Bland-Sutton, Tumors, Innocent and Malignant.  
 Lexer's Handbook of Surgery.

DEPARTMENT OF MATERIA MEDICA AND THERAPEUTICS

WILLIAM EDWIN LEONARD, A. B., M.D., *Senior Professor*

H. O. SKINNER, M.D., *Lecturer on Pharmacology*

ADOLPH W. JOHNSON, *Lecturer on Pharmacy*

The work of this, the essential chair in the College curriculum, is arranged so that the student is gradually led up from the elementary work of the first and second years to the fuller instruction of the third and fourth, when his more complete knowledge of general and special branches enables him to understand the intimate relation of therapeutics to the whole and especially to pathology and the clinical pictures of disease.

1. PHARMACY

One credit (one hour per week)  
 Open to third year students.

MR. JOHNSON  
 First semester

Mr. Johnson will lecture upon the peculiar methods of Homeopathic Pharmacy, personally instructing each student in the technique of the more common preparations, and in writing and filling prescriptions, using for these purposes the material and apparatus in Prof. Leonard's laboratory, which is abundantly supplied with the crude and perfected drugs for illustration and demonstration.

2. PHARMACOLOGY

Two credits (one hour per week)  
 Open to fourth year students.

DR. SKINNER  
 Second semester

Two hours each week in lectures and quizzes, the toxicological and physiological action of a few typical drugs will be studied especial reference being had to the difference in the action of small and large doses, the alkaloids, etc., with the idea of thus laying a broad foundation for the comprehension of the symptomatology of the latter years.

When practicable, actual experiments in the effects of drugs upon individual members of the class will be made, thus giving personal training in observation, the blanks and methods used being those authorized by the American Institute of Homeopathy, and under Professor Leonard's supervision.

3. MATERIA MEDICA

Four credits (two hours per week)  
 Open to fifth year students.

PROFESSOR LEONARD

Routine lectures and quizzes, three hours each week, will be given upon the Vegetable Remedies, some thirty major and seventy-five minor drugs, arranged according to their natural groups and their clinical relationships to disease, and studied in their origin, history, preparation, physiology and symptomatology, full practical comparisons being made with other allied remedies only such usage being presented as has been fully corroborated.

4. MATERIA MEDICA

Four credits (two hours per week)  
 Open to sixth year students.

PROFESSOR LEONARD

The animal, mineral and nosological remedies of the materia medica, some forty major and twenty minor drugs grouped and studied as these of the previous year, will be taken up.

special attention being given to the usage of this class in chronic as well as acute disease.  
Examinations will be held from time to time, or at the end of the term, in the form of written quizzes, the students final standing being made up of these and his daily quiz records.

## COLLATERAL READING:

First Year—Pharmacopea of the American Institute of Homeopathy.  
Second Year—Hughes' Pharmacodynamics.  
Third and Fourth Years—Farrington's, Hering's Condensed, or Cowperthwaite's *Materia Medica*; Dunham's *Lectures upon Materia Medica*, Allen's *Hand-Book*.

DEPARTMENT OF PRACTICE OF MEDICINE, CLINICAL.  
MEDICINE AND PHYSICAL DIAGNOSIS

H. M. LUFKIN, M. D., *Professor*  
ASA H. HAMMOND, M. D., *Professor*  
O. H. HALL, M. D., *Professor*  
ANNA M. HURD, Phm. D., M. D., *Associate Professor*  
H. O. SKINNER, M. D., *Assistant*  
A. E. AHRENS, M. D., *Assistant*  
G. B. HAMLIN, M. D., *Assistant*  
O. K. RICHARLSON, A. B., M. D., *Assistant*

## PRACTICE OF MEDICINE

PROFESSOR LUFKIN

Twelve credits (three hours per week)  
This course of lectures occupies three hours a week throughout the junior and senior years; the object aimed at is to acquaint the student with the pathological basis of the various diseases, their symptomatic course and the findings derived from the various methods of physical macro- and microscopical examinations, so that with the complete picture of its diseased process and its possibilities, he may intelligently apply all known methods of relief, hydro-therapy, electrical reaction, dietetics, physiological and palliative medication, and above all may scientifically select the homeopathic remedy curative of the diseased process as conditioned by the peculiar susceptibility and idiosyncrasy of the individual to be treated.

## TEXT-BOOKS AND COLLATERAL READING

## PRACTICE OF MEDICINE:

Goodno's *Practice*.  
Raue's *Therapeutics*.  
Lippe's *Repertory*.  
Knerr's *Repertory*.  
Pepper's *System of Medicine*.  
DaCosta's *Diagnosis*.  
Ander's *Practice of Medicine*.

2. BLOOD AND DUCTLESS GLANDS PROFESSOR ANNA HURD  
One-half credit (one hour per week) One quarter  
A course of nine didactic lectures on the blood and ductless glands is delivered each year to the senior students.
3. RENAL DISEASES PROFESSOR HALL  
One-half credit (one hour per week) One quarter  
A course of didactic lectures on renal diseases is delivered each year to the senior students.



CLINICAL MEDICINE

Abundant material is furnished by the daily clinics at the University free dispensary and at the Hospitals of St. Paul and Minneapolis where clinics are held each Monday and Tuesday morning.

This course is one of the most important to the student, for it is here that he sees the practical application of not only his didactic course on physical diagnosis, but also the subject of internal medicine and diagnosis or practice is fully illustrated by the ambulatory or clinical patient, as well as by the hospital patient.

Professor Lufkin conducts a clinical lecture each Saturday afternoon from one to three. One hour is devoted to examination of patients, one or two cases being selected for special instruction the following hour.

The important field of homeopathic prescribing (therapeutics) is fully illustrated. All forms of acute and chronic diseases come up for demonstration during the year.

PHYSICAL DIAGNOSIS

PROFESSOR HAMMOND

One-half credit (one hour per week)

Twenty-seven weeks

The course on physical diagnosis is embraced in twenty-seven didactic lectures, and teaches the methods of investigating both the normal and abnormal sounds, feeling and appearance of the human subject. The lectures are divided into an introductory portion dealing with the general technique of physical examinations followed by the special methods of investigating the normal and abnormal heart and lungs, the abdominal organs, the stomach, liver and kidneys.

These lectures are supplemented for the junior student, by especial exercises in the dispensary, where abundant material is at hand for putting such methods as are taught in the didactic course, to practical application upon the living subject.

Physical Diagnosis, Clinical Medicine.

Lillenthal's Therapeutics.

Lippe's Reperatory.

Farrington's Clinical Materia Medica.

Vierodt's Medical Diagnosis.

Abram's Manual of Clinical Diagnosis.

DaCosta's Diagnosis.

DEPARTMENT OF SURGERY

- R. D. MATCHAN, M. D., *Senior Professor*
- W. S. BRIGGS, B. S., M. D., *Professor*
- A. E. COMSTOCK, M. Sc., M. D., *Professor*
- W. B. ROBERTS, A. B., M. D., *Professor*
- A. E. BOOTH, A. B., M. D., *Professor, Orthopaedia*
- A. E. AHRENS, M. D., *Assistant*
- C. A. DAWSON, M. D., *Assistant*

SURGERY

The course in surgery is so graded to extend through sophomore, junior, and senior years. It consists of didactic lectures, clinical demonstration and actual work by the students of the senior and junior classes, as they are given one month's work each or more in dispensary clinics every day under charge of attending professor, and are held responsible by him for all emergencies and dressings. They also give all anæsthetics and attend to the post operative treatment. These advantages given our students cannot be excelled, and gives each member that opportunity of gaining for himself that valued knowledge and confidence which comes only by actual experience.

1. SURGICAL ANATOMY

PROFESSOR BOOTH

One credit (one hour per week)

First semester

The instruction consists of dissections, demonstrating the relations of structures composing the surgical regions of the body; demonstrations, upon the living subject, showing the an-

- atomical and surgical landmarks and their applications; also the location, by surface tracings, of the viscera contained in the various cavities and of the important arteries, veins and nerves.
2. **EMERGENCIES AND BANDAGING** PROFESSOR BOOTH  
 One credit (one hour per week) First semester  
 A course of lectures on surgical emergencies and bandaging is given the students of the sophomore or fourth year in consideration of the means in administering first aid to the injured, also laboratory instructions of how to apply dressings, bandages, splints and the materials used.
  3. **PRINCIPLES OF SURGERY** PROFESSOR ROBERTS  
 One and one-half credit (one hour a week) Twenty-seven weeks  
 A course of lectures upon inflammation; traumatic fevers, suppurations; acute inflammations of joints; ulceration, gangrene; thrombosis and embolism; septicemia; pyaemia; erysipelas; tetanus; surgical tuberculosis; actinomycosis, anthrax and glanders.
  4. **TUMORS** PROFESSOR ROBERTS  
 One credit (two hours per week) Nine weeks  
 A special course upon tumors, taking up the general pathology and the general principles of the treatment of tumors. Each variety of tumor is then discussed, together with its histology, life-history, diagnosis and treatment. The course is illustrated by charts and museum specimens and lantern slide demonstrations.
  5. **GENERAL AND SPECIAL SURGERY** PROFESSOR COMSTOCK  
 Eight credits (two hours per week) Two years  
 The juniors and seniors or fifth or sixth year are given two lectures each week on general and special surgery, during the entire two years, covering all the surgical diseases, and special technique in operative surgery, especial attention being paid to pathology, diagnosis and treatment of each disease from a surgical standpoint in conjunction with the valued homeopathic application of remedies.
  6. **SURGERY OF VASCULAR SYSTEM, ETC.** PROFESSOR MATCHAN  
 One credit (one hour per week) First semester  
 A course of lectures on the surgery of the vascular system: ligations, etc. Fractures and dislocations, amputations and the surgery of the nerves.
  7. **OPERATIVE SURGERY** PROFESSOR MATCHAN  
 One credit (one hour per week) First semester  
 During the senior or sixth year, the class will be instructed in the surgical laboratory in operations in the cadaver, in which the student is called upon to do the work under the special criticism of the professor in charge, thus perfecting themselves by actual practice with operations they will be called upon to perform in later years.

#### CLINICAL SURGERY

The work in clinical surgery consists in operations before the class in connection with the clinical lectures given upon the cases presented. These occupy each Monday of the fourth year which is set apart as the day for clinics. The third year class is required to attend the clinics, unless their regular class work interferes.

At the clinics which are held at the City and County Hospital, St. Luke's and St. Joseph's Hospitals, of St. Paul, and the City Hospital and Free Dispensary, Minneapolis, are demonstrated the value of antiseptic treatment of wounds, the minute details of the application of surgical appliances and dressings and operative technique. Post-operative care for reaction, shock, etc., are considered.

Senior students are instructed in the practical use of anesthetics and are required to attend a number of surgical patients at their homes, carrying out post-operative detail under the direction of the professor.

The surgical department aims to give a complete and thorough course on the subject and its collateral branches.

It should be distinctly understood that examinations on the clinical and laboratory work, both sectional and at the end of the term, no matter by whom the teaching is done, are counted with the didactic course, the average of all combined constituting the student's standing in surgery for each year. The marks for the four years go to make up his graduation average.

#### TEXT-BOOKS

Park's Surgery.  
Trene's Operative Surgery.  
Wyeth's General and Operative Surgery.  
Surgical Technique, by Von Esomarch and Kowalzig.

#### DIDACTIC COURSE

The didactic course covers the entire field of the principles and practice of surgery. The lectures will occupy the third year class two hours and the fourth year class three hours each week. Demonstrations will be made upon the cadaver, aided by models and charts.

The lectures to the third class will include surgical pathology, inflammation, hemorrhage, surgical appliances, surgical emergencies, minor surgical operations ligation of arteries, burns and scalds, surgical treatment of the anus and rectum, antiseptics, anæsthetics, abscesses, ulcers, gangrene, hernia and the elements of the treatment of wounds, fractures, dislocations and amputation.

The lectures of the fourth year class will include the surgery of the bones, joints, genito-urinary organs, tumors, cysts, fractures, dislocations, amputations, syphilis, together with the operative surgery of the head, face, chest, abdomen, pelvis, skin, nerves, and extremities.

All the lectures will aim to be comprehensive, practical, and in keeping with the best standards of advanced surgery.

#### TEXT-BOOKS, DIDACTIC COURSE

Parke's Surgery.  
Homeopathic Text-Book of Surgery.  
Hamline's American Text-Book of Surgery.  
Bradford & Lovett's Orthopædic Surgery.  
Pye's Surgical Handicraft.  
Modern Surgery, J. C. DeCosta.

#### ORTHOPAEDIA

#### PROFESSOR BOOTH

Two credits (one hour per week)

One year

The course on this subject is both didactic and clinical. It consists of one lecture a week during the fourth year.

The whole subject of deformities, their etiology, pathology, course and treatment is carefully considered in detail. Charts and drawings are used to illustrate the work. The mechanical apparatus used in the treatment of such cases is exhibited and rules laid down for the improvising and applying temporary means and instruments. Recent progress in the knowledge of the underlying causes of bony, muscular and habit deformities and their serious reflex effects, has led to great changes in the methods pursued to overcome them. The early recognition and treatment of such cases are of the utmost importance, and, hence, as they are usually first presented to the general practitioner, a full knowledge of this branch of surgery becomes exceedingly valuable. In the dispensary clinics the student sees carried out the teachings of the didactic course.

The subjects discussed include functional and organic diseases of the bony spine, the several forms of club foot, joint inflammations and deformities, both simple and tuberculous and their sequelae, cleft-palate, hare-lip, etc.

## DEPARTMENT OF OBSTETRICS.

B. H. OGDEN, A. M., M. D., *Senior Professor*HUGH J. TUNSTEAD, M. D., *Professor*

## OBSTETRICS

This subject is taught by lectures and recitations, thoroughly illustrated with charts, manikins and specimens. The course will be graded and divided between the fifth and sixth years.

1. FIFTH YEAR OBSTETRICS PROFESSOR TUNSTEAD  
 One and one-half credits (one hour per week) Twenty-seven weeks  
 During the fifth year subjects covered will embrace the anatomy and physiology of the female generative organs and the pelvis, the development of the embryo, the maternal changes of pregnancy, the diagnosis of pregnancy, the physiology, pathology and hygiene of pregnancy, the physiology and the course of normal labor, the physiology of normal labor and the management of the puerperium.
  
2. SIXTH YEAR OBSTETRICS PROFESSOR OGDEN  
 Two credits (one hour per week) One year  
 During the sixth year the following subjects are taught; the mechanism of labor, diagnosis and management of the various presentations, dystocia, complications of labor, physiology, pathology and the management of the puerperium, and obstetric surgery.

## CLINICAL OBSTETRICS

This department instructs the fourth year students and applies practically the teachings of the department of obstetrics. An abundance of material is supplied by the dispensary and city hospitals of St. Paul and Minneapolis.

The student will be thoroughly educated to locate accurately the position and condition of the internal parts both in health and disease, the obstetric points of the pelvis as well as the diameters, planes and curves, the presentation and position of the child and the methods of diagnosis, the stages and mechanism of labor, the management of normal and abnormal labors, the application of the forceps and the necessary steps in performing version.

Each member of the class will be assigned at least three cases of pregnancy, which he will be required to attend under immediate direction of the professor of the chair.

During the last month of pregnancy of a case as assigned, the student in charge will report to the professor the patient's name, address, age, number of previous labors, date of first birth and last labors, date of quickening, condition of uterus, heart, lungs, bowels, kidneys, etc., and a detailed statement regarding the appearance of the patient, location of the foetal heart, position of the child, character and size of the pelvis.

At the time of labor the student will be required to keep a record of the following facts:

Number of the case, date, name, address, condition of the osuteris, height of presenting part, pulse rate and quality (ante and post partum), rapidity of foetal heart beats and where heard most clearly, presentations, position and duration of the first, second and third stage.

Also the sex of the child, the diameter of its head, weight, and length. The post partum condition of the uterus, cervix and perineum.

An operative course on the female cadaver will also be given, demonstrating the operative technique in symphysiotomy and Cæsarean section.

## TEXT-BOOKS AND COLLATERAL READINGS

Leavitt.  
 Lusk's Midwifery.  
 American Text-Book of Obstetrics.  
 Hirst's Text-Book of Obstetrics.  
 Grandin & Jarman's Midwifery.  
 Playfair's Midwifery.  
 Boisliniere, Obstetric Accidents.  
 Davis' Obstetrics.

DEPARTMENT OF DISEASES OF WOMEN

- R. R. ROME, M. D., *Senior Professor*  
E. E. AUSTIN, M. D., *Professor*  
H. C. ALDRICH, M. D., *Professor*  
S. G. COBB, M. D., *Associate*

DISEASES OF WOMEN

This course will consist of one didactic lecture during the fifth and sixth years and two clinics a week during the sixth year.

1. FIFTH YEAR DISEASES OF WOMEN PROFESSOR ALDRICH  
One and one-half credits (one hour per week) Twenty-seven weeks  
In the fifth year, both semesters, the anatomy, physiology and pathology of the pelvic contents and perineum are carefully described. The preparation of the patient for surgical operation, together with the necessary steps taken, the various surgical procedure as well as the medical treatment of all pelvic diseases, will receive minute attention both semesters of the fourth year.
2. FIFTH YEAR DISEASES OF WOMEN PROFESSOR AUSTIN  
One-half credit (one hour per week) One-half semester  
This course treats of tumors of the uterus and annexæ.
3. SIXTH YEAR DISEASES OF WOMEN PROFESSOR ROME  
One credit (one hour per week) First semester  
The medical and surgical diseases of women will be treated in didactic lectures and recitations. The entire field of gynecology will be covered in the lecture room. As cases present themselves in the city hospitals of St. Paul and Minneapolis, the subject thus described will be demonstrated on the living subjects.

*Gynecology.*

Wood, Text-Book of Gynecology.

DEPARTMENT OF MENTAL AND NERVOUS DISEASES

PROFESSOR LUFKIN AND DR. WELSH

One credit (one hour per week) First semester  
The didactic and clinical work on nervous diseases is obtained from the department of practice and clinical medicine.

The didactic and practical work in mental diseases is obtained at the Fergus Falls Insane Hospital, each senior student spends two weeks at the asylum in practical work among the insane.

- Talcott's Mental Diseases.
- Clouston's Mental Diseases.
- Edinger's Anatomy of Central Nervous System.
- Martin's Nervous Diseases.
- Dana Text-Book Nervous Diseases.
- Bigelow's System of Electro-Therapeutics.
- Oppenheim's Diseases of the Nervous System.
- Collateral Reading—Hack Tuke's Dictionary of Psychological Medicine; Bevan Lewis, Mental Diseases; Kirchoff's Handbook of Insanity; Ferrier's Localization of Cerebral Diseases; Strumpell's Text-Book of Medicine; Hirt's Diseases of the Nervous System; Horsley's Brain and Spinal Cord.

DEPARTMENT OF DISEASES OF CHILDREN

PROFESSOR HAMLIN

One credit (one hour per week) First semester  
The course on this subject will consist of one lecture each week and three clinics to the sixth year students, and extending over two semesters. The clinics are full and afford an exceptional opportunity to study the com-

mon diseases of childhood. In the out door department many cases of exanthematous diseases are treated by the members of the class.

The didactic course embraces a description of the normal development of infancy and childhood, natural and artificial infant feeding, signs and symptoms of hereditary syphilis, contagious and infectious diseases, tuberculosis, erysipelas, and the diseases of the respiratory and urinary organs; those of the circulatory, nervous and digestive systems, rachitis and diseases of the skin.

#### TEXT-BOOKS AND COLLATERAL READING

Tooker's Diseases of Children.  
Holt's Diseases of Children.  
Fisher's American Text-Book of Diseases of Children.  
Collateral reading—Cyclopedia of Diseases of Children.

#### DEPARTMENT OF ELECTRO-THERAPEUTICS

##### ELECTRO-THERAPEUTICS

One credit (one hour per week)

ASSISTANT PROFESSOR HURD

One semester

It is intended to make the didactic work in this department commensurate with its growing importance. The physics of electricity will be sufficiently considered to enable the student to understand the mechanical construction, and the currents emanating from the galvanic and faradic batteries, the static machine X-Ray coil, the Oudin Resinator, as well as other apparatus used for the production of high frequency currents.

The technique of the various modalities with their physiological effects and the pathological conditions to which they are applicable are carefully and practically demonstrated.

Light energy will be considered in the same manner and demonstrated with the therapeutic arc light.

Books for reference:

Electro-Therapeutic Practice, C. S. Neiswanger, M. D.  
Elements of General Radio-Therapeutics, Dr. Leopold Freund.  
The Roentgen Ray in Medicine and Surgery, F. H. Williams, M. D.

#### DEPARTMENT OF OPHTHALMOLOGY

##### OPHTHALMOLOGY

Two credits (one hour per week)

PROFESSOR LEAVITT

One year

In the department of ophthalmology the endeavor is to give thorough instruction in those parts of the work which will ordinarily come into the hands of the general practitioner.

The course is supplemented by as much practical work as time allows in the use of the ophthalmoscope for the study of intraocular troubles, whose recognition would aid in the diagnosis of various conditional affections; and following a short didactic course given early in the year on the subject, practical work in the correction of the refraction is carried on at the dispensary during both semesters.

The clinical material provided in the department is very abundant, interesting and instructive cases, embracing all varieties of eye troubles calling for medical and surgical aid being presented to the students bi-weekly throughout the entire year.

The following schedule shows the subjects considered in the present course of lectures:

Anatomy and physiology of the eye; refractions and use of the lenses for the correction of its errors; diseases of the lids; conjunctiva; cornea; sclera; lachrymal apparatus; iris and ciliary body; lens choroid; retina and optic nerve; affections of the muscular apparatus of the eye and the general relationship between eye-strain and reflex and nervous disorders.

The didactic course consists of thirty-two lectures during the fourth year and ten during the third year.

##### *Ophthalmology.*

Norton, Buffum. Swanzy, Noyes.

Collateral reading—Fuch's Diseases of the Eye.

DEPARTMENT OF OTOTOLOGY, RHINOLOGY AND  
LARYNGOLOGY

EUGENE L. MANN, A. B., M. D., *Professor*  
GEO. M. HAYWOOD, M. D., *Clinical Professor*

DISEASES OF THE NOSE, THROAT AND EAR

DISEASES OF THE NOSE, THROAT AND EAR

PROFESSOR MANN

One credit (one hour per week) One year  
The course will consist of didactic lectures and clinical demonstrations. One didactic lecture a week will be given to students of the third year. An understanding of the anatomy and physiology of the organs is presupposed, and but little time will be devoted to the review of the more important points in their bearing upon diseases of these organs. The lectures will enter upon the diseased processes in the nose—the various forms of acute and chronic catarrhal inflammation, their courses, developments, symptoms, consequences and treatment, both general and local, abnormal growth, affections of the septum and diseases of the accessory sinuses, finishing the course on the nasal cavities with the neuroses, functional and organic.

The diseases of the naso-pharynx are treated with special reference to their dependence upon nasal conditions and their influence upon the organ of hearing. The course includes acute and chronic catarrhal processes, adenoid vegetations and morbid growth.

Diseases of the pharynx are considered in their dependence upon alimentary disorders, acute and chronic inflammatory conditions, morbid growths and neurosis, together with the pharyngeal and tonsillar conditions incident to the exanthamata, diphtheria, typhoid fever, etc.

In the laryngeal disorders we become more closely associated with respiratory diseases; the various forms of laryngeal inflammation, morbid growths and nervous affections will be discussed—special stress being put upon the early laryngeal manifestations of tuberculosis and the laryngeal disorders of voice users with the importance of proper vocalization and respiration upon all diseases of this organ.

Ear diseases resolve themselves into: Diseases of external canal and pinna, dermoid inflammation; diseases of the middle ear, mucoid inflammation, diseases of the internal ear—serous and nerve inflammation.

The course to the fourth year students will be entirely clinical, the class being divided into sections for dispensary work; the aim will be to familiarize the students with the use of the various diagnostic means at their disposal and the appearance of the various abnormal conditions, together with the technique of the numerous operative procedures. The material for clinical demonstrations is abundant.

*Ear: Barr.*

*Nose and Throats* Kyle, Bosworth, Ivins, McDonald.

*Nose, Throat and Ear:* Veshlaget & Hallett; McBride, Burnett.

DEPARTMENT OF SKIN AND GENITO-URINARY DISEASES

SKIN AND GENITO-URINARY DISEASES

PROFESSOR NEILL

One credit (one hour per week) One semester  
This course will consist of one didactic lecture and one clinic each week for students of the fourth year. It will include the diseases of the skin, syphilis and all genito-urinary affections.

The first semester will be devoted to a study of the diseases of the skin, the second to syphilis and venereal surgery. The dispensary clinics will be especially valuable in supplementing the work of the professor in the lecture room by familiarizing students with the appearance of the various forms of skin and venereal diseases. Each student is required to diagnose cases and treat patients under the supervision of the professor, thus giving him actual experience in administering remedies and using instruments. During the course of the year each student has personal charge of about fifty patients in this department.

## TEXT AND REFERENCE BOOKS

*Dermatology*: Kippax, Stelwagon, Durhing, Dearborn.  
*Genito-Urinary*: Carlton, Hoyne, Franklin, American Text-Book, Bumstead and Taylor.

## MEDICAL ECONOMICS

## MEDICAL ECONOMICS

(One hour per week)

PROFESSOR RICHARDSON

One semester

The lecture course on this subject will embrace all that pertains to the social and business side of the practice of medicine.

Under the social head will be treated: The manner of meeting patients in their homes and at the office; a physician's standing in the social community in which he lives, in fact, the doctor's deportment toward the laity.

Under the business head will be treated: The choosing of a location for practice, the location of a home and office in the community, the bookkeeping and collection of accounts.

Lectures will also be given on the advantages of and necessity for organization of medical men.

The code of medical ethics will be explained fully and the reasons given for its existence.

DEPARTMENT OF HISTORY AND METHODOLOGY  
OF MEDICINE

## HISTORY AND METHODOLOGY OF MEDICINE

(One hour per week)

PROFESSOR HALL

One semester

The lectures given in this chair are an exposition of the philosophy and art of medicine by the historical method. The student is taught to see how in each age practice of medicine has been the outgrowth of the beliefs current regarding the nature of man. Give to a student the theories held by a people regarding the constitution of matter, the nature of mind and force, and he can accurately foresee the medical science such as people will accept. The unfolding of the world's thought in medicine sets homeopathy in its high place and gives the student an outlook much needed in the profession. The tendency of medicine has always been to over-estimate the material side of man's nature and to make innumerable hypotheses to explain disease. The conflicts in medicine have been clashing, not of opposite sets, but of antagonistic systems of thought, and reconciliation is possible only on the grounds of higher science than that of mere sense knowledge. This ground is revealed in the history of the philosophy of medicine.

The course includes the medicine of the Egyptians, Persians, Indo-Chinese, Hebrews, Greeks, Arabians and of Europe down to the present.

One lesson each week during the freshman year.

## DEPARTMENT OF MEDICAL JURISPRUDENCE

## MEDICAL JURISPRUDENCE

One-half credit (one hour per week)

MR. SELOVER

One-half semester

The object of this chair is to familiarize the student with his duties, rights and responsibilities from a legal standpoint. The law on each subject discussed is carefully explained and illustrated, as far as possible, with adjudicated cases.

## THE ALUMNI ASSOCIATION

The Alumni Association of the College of Homeopathic Medicine and Surgery endeavors to keep in touch with the College work and needs and is ever alert to assist the Faculty in all ways possible. It has been a potent effort for good in the past and its work is appreciated by the Faculty.



Officers for the present year: H. J. Tunstead, M. D., President, 829 Sixteenth Ave. N., Minneapolis; G. G. Balcom, M. D., Vice President, Lake Wilson, Minn.; Annah Hurd, M. D., Secretary-Treasurer, Pillsbury Bldg., Minneapolis.

University Committee: Ida Mackeen, M. D., Masonic Temple, Minneapolis; J. F. Beck, M. D., 1551 Franklin Ave., Minneapolis; C. Arthur Dawson, M. D., 2½ West Lake St., Minneapolis.



The  
University of Minnesota  
Bulletin

The College of Agriculture

1908-1909

Volume XI

May 5, 1908

No. 10

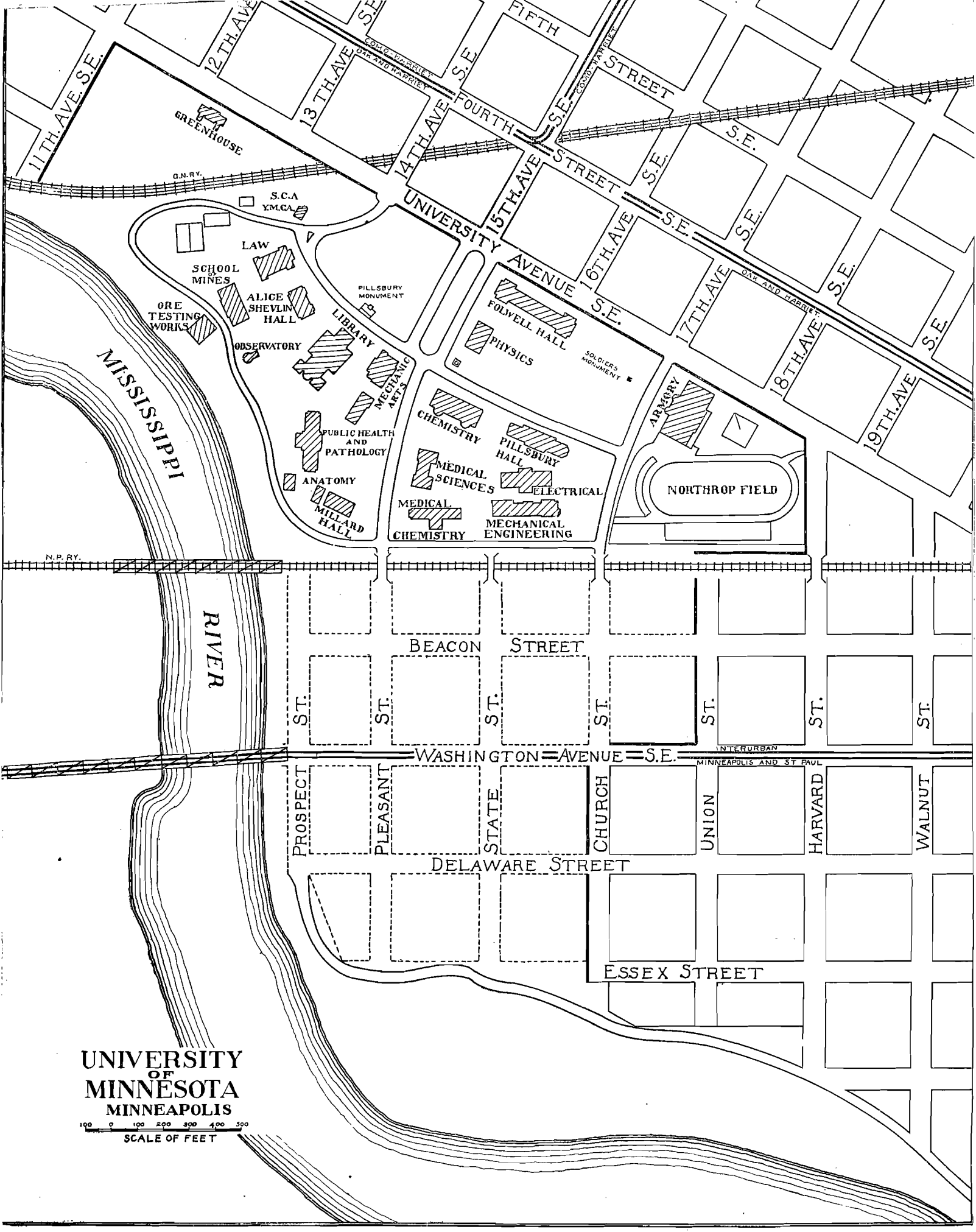
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The University catalogues are published by authority of the Board of Regents, as a regular series of bulletins. One bulletin for each college is published every year, and in addition a bulletin of general information outlining the entrance requirements of all colleges of the University, and embodying such items as University equipment, organizations and publications, expenses of students, loan and trust funds, scholarships, prizes, etc. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them. In calling for bulletins, please state the college or school of the University concerning which information is desired. Address,

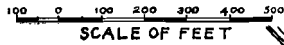
THE REGISTRAR,

The University of Minnesota,

Minneapolis, Minnesota



**UNIVERSITY  
OF  
MINNESOTA  
MINNEAPOLIS**



# CALENDAR FOR 1908-1909

1908

1909

## MAY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	<b>30</b>
31	..	..	..	..	..	..

## JUNE

..	1	2	3	4	5	6
<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..

## SEPTEMBER

..	..	1	2	3	4	5
6	<b>7</b>	8	9	10	11	12
13	14	<b>15</b>	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..

## OCTOBER

..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

## NOVEMBER

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	<b>26</b>	<b>27</b>	<b>28</b>
29	30	..	..	..	..	..

## DECEMBER

..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	<b>19</b>
20	21	22	23	24	25	26
27	28	29	30	31	..	..

## JANUARY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	4	<b>5</b>	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

## FEBRUARY

..	1	<b>2</b>	3	4	5	6
7	8	9	10	11	<b>12</b>	13
14	15	16	17	18	19	20
21	<b>22</b>	23	24	25	26	27
28	..	..	..	..	..	..

## MARCH

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..

## APRIL

..	..	..	..	1	2	3
4	5	6	7	8	<b>9</b>	<b>10</b>
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	..

## MAY

..	..	..	..	..	..	1
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9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	<b>31</b>	..	..	..	..	..

## JUNE

..	..	1	2	3	4	5
<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..

# University Calendar

1907-1908

## THE UNIVERSITY YEAR

The University year covers a period of thirty-eight weeks beginning on the second Tuesday in September. Commencement day is always the second Thursday in June.

FEBRUARY	4 T	Second semester begins—classes called for regular work
	12 W	Lincoln's birthday—legal holiday
	22 S	Washington's birthday—legal holiday
APRIL	17 F	Good Friday. Recess two days
MAY	2 Th	Regular meeting Board of Regents
	25 M	Senior examinations begin
	30 S	Decoration Day—legal holiday
JUNE	1 M	Semester examinations begin
	6 S	Semester examinations close

## COMMENCEMENT WEEK, 1908

SUNDAY	June 7	Baccalaureate service
MONDAY	June 8	Senior class exercises
TUESDAY	June 9	Phi Beta Kappa address. Senior promenade
WEDNESDAY	June 10	Alumni Day. Regular meeting Board of Regents
THURSDAY	June 11	Commencement Day. The thirty-sixth annual commencement
FRIDAY	June 12	Summer vacation begins

## 1908-1909

SEPTEMBER	7-14	Entrance examinations, condition * examinations and registration
	15 T	Classes called for regular work. Seventeenth annual session
OCTOBER	1 Th	Regular meeting Board of Regents
	5 M	Regular meeting University Council. Opening day, School of Agriculture
NOVEMBER	26 Th	Thanksgiving Day. Recess three days
DECEMBER	7 M	Regular meeting University Council
	8 T	Annual meeting Board of Regents
	19 S	Holiday recess begins (no classes)
JANUARY	5 T	Work resumed in all departments
	23 S	Semester examinations begin
	30 S	Semester examinations close
FEBRUARY	2 T	Second semester begins—classes called for regular work
	12 F	Lincoln's birthday—legal holiday
	22 M	Washington's birthday—legal holiday
APRIL	5 M	Regular meeting University Council
	9 F	Good Friday. Recess two days

The College of Agriculture

3

MAY	6 Th	Regular meeting Board of Regents
	24 M	Senior examinations begin
	31 M	Decoration Day—legal holiday
JUNE	1 T	Semester examinations begin
	5 S	Semester examinations close
	7 M	Regular meeting University Council

COMMENCEMENT WEEK, 1909

SUNDAY	June 6	Baccalaureate service
MONDAY	June 7	Senior class exercises
TUESDAY	June 8	Sigma Xi address. Senior promenade
WEDNESDAY	June 9	Alumni Day. Regular meeting Board of Regents
THURSDAY	June 10	Commencement Day. The thirty-seventh annual commencement
FRIDAY	June 11	Summer vacation begins

PROGRAM—ENTRANCE EXAMINATIONS

MONDAY,	September 7, 9	A. M.	3 Botany
			3 Zoology
			1 Astronomy
			3 Geology
		2 P. M.	2 American Government
			2 Political Economy
TUESDAY,	September 8, 9	A. M.	2 History
			5 Physics
		2 P. M.	4 Chemistry
			3 Physiography
WEDNESDAY,	September 9, 9	A. M.	1 English
		2 P. M.	1 German
			1 French
			1 Latin
			1 Scandinavian
THURSDAY,	September 10, 9	A. M.	1 Elementary Algebra
			2 Commercial Geography
		2 P. M.	1 Higher Algebra
FRIDAY,	September 11, 9	A. M.	1 Plane Geometry
		2 P. M.	1 Solid Geometry

1 Folwell Hall, 2 Library Building, 3 Pillsbury Hall, 4 Chemical Laboratory, 5 Physics Building, 6 Mechanic Arts Building.

# The University

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THE UNIVERSITY OF MINNESOTA comprises the following named schools, colleges and departments:

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

THE DEPARTMENT OF AGRICULTURE, including—

*The College of Agriculture*

*The School of Agriculture*

*Short Course for Farmers*

*The Dairy School*

*The Crookston School of Agriculture*

THE COLLEGE OF LAW

THE COLLEGE OF MEDICINE AND SURGERY

THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE SCHOOL OF MINES

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

The Regents of the University have entrusted to their charge:

THE EXPERIMENT STATIONS, including—

*The Main Station at St. Anthony Park*

*The Sub-Station at Crookston*

*The Sub-Station at Grand Rapids*

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

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Bulletins of these schools, colleges and departments may be obtained upon application to the University Registrar.



# The Board of Regents

CYRUS NORTHPROP, LL. D., MINNEAPOLIS . . . . .	<i>Ex-Officio</i>
The President of the University	
The HON. JOHN LIND, MINNEAPOLIS . . . . .	1914
The President of the Board	
The HON. JOHN A. JOHNSON, ST. PETER . . . . .	<i>Ex-Officio</i>
The Governor of the State	
The HON. JOHN W. OLSEN, ALBERT LEA . . . . .	<i>Ex-Officio</i>
The State Superintendent of Public Instruction	
The HON. THOMAS WILSON, ST. PAUL . . . . .	1909
The HON. A. E. RICE, WILLMAR . . . . .	1909
The HON. B. F. NELSON, MINNEAPOLIS . . . . .	1910
The HON. PIERCE BUTLER, ST. PAUL . . . . .	1910
The HON. CHARLES A. SMITH, MINNEAPOLIS . . . . .	1910
The HON. S. M. OWEN, MINNEAPOLIS . . . . .	1913
The HON. W. J. MAYO, ROCHESTER . . . . .	1913
The HON. HENRY B. HOVLAND, DULUTH . . . . .	1914

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C. D. DECKER, MINNEAPOLIS  
Secretary of the Board.

# Executive Officers

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## THE UNIVERSITY

CYRUS NORTHROP, LL. D., *President*

ERNEST B. PIERCE, B. A., *Registrar*

JAMES T. GEROULD, B. A., *Librarian*

C. D. DECKER, *Purchasing Agent*

J. D. BREN, *Cashier*

## THE COLLEGES

JOHN F. DOWNEY, M. A., C. E., *Dean of the College of Science, Literature,  
and the Arts*

FREDERICK S. JONES, M. A., *Dean of the College of Engineering and the  
Mechanic Arts*

EUGENE W. RANDALL, *Dean and Director of the Department of Agriculture*

WILLIAM S. PATTEE, LL. D., *Dean of the College of Law*

FRANK FAIRCHILD WESBROOK, M. A., M. D., C. M., *Dean of the College of  
Medicine and Surgery*

EUGENE L. MANN, B. A., M. D., *Dean of the College of Homeopathic  
Medicine and Surgery*

ALFRED OWRE, D. M. D., M. D., *Dean of the College of Dentistry*

FREDERICK J. WULLING, Phm.D., LL.M., *Dean of the College of Pharmacy*

WILLIAM R. APPLEBY, M. A., *Dean of the School of Mines*

GEORGE B. FRANKFORTER, Ph. D., *Dean of the School of Chemistry*

GEORGE F. JAMES, Ph. D., *Dean of the School of Education*

HENRY T. EDDY, C.E., Ph. D., LL. D., *Dean of the Graduate School*

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ADA L. COMSTOCK, M. A., *Dean of Women*

# The University Council

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At the regular meeting of the Board of Regents of the University, May 31st, 1905, a University Council was established according to the following plan:

I. The name of the body shall be The University Council. It shall consist of the President of the University, the deans of the various colleges and schools, one elected representative from each college or school for each 400 students or major fraction thereof, and one representative of the general alumni association.

II. The elected members shall serve for a period of one year. They shall be chosen from the various faculties at the time of the selection of standing committees. The representative of the general alumni association shall be chosen by that body at its annual meeting from among the alumni who are not members of the University.

III. The Council shall be authorized to—

a) Appoint the following committees or the faculty representation thereon:

The University auditing committee

The University press committee

The committee on athletics

The committee on University relations to other institutions of higher learning

The committee on health and sanitation

The committee on commencement and other University functions

The committee on catalogue, programs and courses of study

The committee on student entertainments and social affairs

And such other committees as the general University interests may require

b) Receive reports from such committees and to make such recommendations as may be required.

c) Consider and act upon any matter of general University interest beyond the province of a single faculty which may be referred to it by the President of the University or any faculty.

IV. The Council shall hold stated meetings upon the first Monday of October, December, April and June, and such other meetings as the President of the University may call

# Representatives to the Council

## **The University**

PRESIDENT CYRUS NORTHROP

## **The College of Science, Literature and the Arts**

DEAN JOHN F. DOWNEY

PROFESSOR JOHN H. GRAY

PROFESSOR J. C. HUTCHINSON

PROFESSOR H. F. NACHTRIEB

PROFESSOR NORMAN WILDE

## **The College of Engineering and the Mechanic Arts**

DEAN FREDERICK S. JONES

PROFESSOR GEORGE D. SHEPARDSON

## **The College and School of Agriculture**

DEAN EUGENE W. RANDALL

PROFESSOR HARRY SNYDER

PROFESSOR SAMUEL B. GREEN

## **The College of Law**

DEAN WILLIAM S. PATTEE

PROFESSOR HENRY J. FLETCHER

## **The College of Medicine and Surgery**

DEAN F. F. WESBROOK

PROFESSOR THOMAS G. LEE

## **The College of Homeopathic Medicine and Surgery**

DEAN EUGENE L. MANN

## **The College of Dentistry**

DEAN ALFRED OWRE

## **The College of Pharmacy**

DEAN FREDERICK JOHN WULLING

## **The School of Mines**

DEAN WILLIAM R. APPLEBY

## **The School of Chemistry**

DEAN GEORGE B. FRANKFORTER

## **The College of Education**

DEAN GEORGE F. JAMES

## **The Graduate School**

DEAN HENRY T. EDDY

## **General Alumni Association**

DAVID P. JONES

## **The Dean of Women**

ADA L. COMSTOCK

# University Council Committees

## **The University Auditing Committee**

PROFESSORS ANDERSON, FLETCHER, OWRE, SIGERFOOS, SPRINGER

## **The Committee on Athletics**

PROFESSORS PAIGE, BROOKE, HARDING, D. P. JONES, LITZENBERG

## **The Committee on Grounds and Sanitation**

PROFESSORS FLATHER, BASS, BRACKEN, HICKMAN, RANDALL, SIDENER,  
WESBROOK

## **The Committee on Catalogue, Programs and Course of Study**

DEANS APPLEBY, EDDY, FRANKFORTER, JAMES, JONES, MANN, OWRE,  
WULLING; PROFESSORS FLETCHER, JOHNSTON, SCHLENKER, SNYDER,  
E. B. PIERCE

## **The Press Committee**

PROFESSORS SCHAPER, BAUER, CONSTANT, ERDMANN, JAMES

## **The Committee on Commencement and other University Functions**

PROFESSORS NACHTRIEB, JENKS, OWRE, PATTEE, RANDALL, SCHLENKER,  
WASHBURN

## **The Committee on Student Entertainments and Social Affairs**

PROFESSORS FRANKFORTER, BASS, COMSTOCK, COOKE, MULLEN, PIKE

## **The Committee on University Relations to other Institutions of Higher Learning**

PROFESSORS DOWNEY, BOTHNE, EDDY, GRAY, GREEN, JAMES, LEE

## **The Committee on University Extension and University Lectures**

PROFESSORS WEST, HAECKER, RANKIN, SCHLENKER, SHEPARDSON

## **The Committee on the Library**

PROFESSORS EDDY, FLETCHER, F. S. JONES, LEE, REYNOLDS,  
VAN BARNEVELD, WEST

# The College of Agriculture

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## FACULTY

- CYRUS NORTROP, LL. D., *President.*  
E. W. RANDALL, *Dean.*  
SAMUEL B. GREEN, B. S., *Professor of Horticulture and Forestry.*  
HARRY SNYDER, B. S., *Professor of Agricultural Chemistry and Soils.*  
T. L. HAECKER, *Professor of Dairy Husbandry and Animal Nutrition*  
M. H. REYNOLDS, M. D., V. M., *Professor of Veterinary Medicine and Surgery.*  
ANDREW BOSS, *Professor of Agriculture and Animal Husbandry.*  
FREDERICK WASHBURN, M. A., *Professor of Entomology*  
WILLIAM BOSS, *Professor of Farm Structures and Farm Mechanics.*  
E. M. FREEMAN, M. S., *Professor of Vegetable Pathology and Botany.*  
JOHN STEWART, B.S., *Professor of Agricultural Engineering*  
R. C. LANSING, M.A., *Professor of English*  
D. D. MAYNE, *Principal of School of Agriculture*  
JOHN A. HUMMEL, B. Agr., *Assistant Professor of Agricultural Chemistry.*  
C. P. BULL, B. Agr., *Assistant Professor of Agriculture.*  
D. A. GAUMNITZ, M. Agr., *Assistant Professor of Animal Husbandry.*  
C. C. LIPP, D.V.M., *Assistant Professor of Veterinary Medicine and Surgery*  
E. G. CHEYNEY, B. S., *Assistant Professor of Forestry.*  
S. B. DETWILER, B. S., *Assistant Professor of Forestry.*  
EDWARD SIGERFOOS, Ph.S., *Military Instruction*

## INSTRUCTORS

- J. A. VYE, *Farm Accounts.*  
J. M. DREW, *Blacksmithing, Poultry.*  
JUNIATA SHEPPERD, M. A., *Domestic Science.*  
MARGARET BLAIR, *Domestic Art.*  
FANNIE C. BOUTELLE, *Domestic Economics*  
MARY BULL, *Domestic Science*  
A. D. WILSON, B. Agr., *Agriculture.*  
LE ROY CADY, B. S. A., *Horticulture*

- GRACE B. WHITRIDGE, *Physical Culture*  
A. G. RUGGLES, M. A., *Entomology*.  
E. C. PARKER, B. Agr., *Agriculture*.  
L. B. BASSETT, *Agriculture*  
A. M. BULL, *Drawing*  
W. L. BEEBE, D. V. M., *Bacteriology*.  
W. H. FRAZIER, B. S., *Agricultural Chemistry and Soils*  
A. E. WILHOIT, M. A., *Agricultural Chemistry and Soils*  
H. B. WHITE, B. S. A., *Farm Structures and Farm Mechanics*  
JOSEPHINE CRAIG, *Agricultural Chemistry*  
A. R. KOHLER, B. S. A., *Horticulture*  
C. SCHROEDER, B. S., *Animal Husbandry*  
HENRIETTA CLOPATH, *Drawing*  
H. B. ROE, *Mathematics*  
MARTHA B. MOORHEAD, M. D., *Lecturer in Domestic Hygiene*

# General Information

## REQUIREMENTS FOR ADMISSION TO ALL COURSES IN THE COLLEGE OF AGRICULTURE

*Graduates of the School of Agriculture*, who have completed the studies prescribed in the intermediate course or fourth year, and *graduates of approved high and normal schools*, as approved by the committee on entrance requirements and course of study, are admitted to the freshman class in the courses in the College of Agriculture; the former to Division "A," and the latter to Division "B."

*Agricultural students taking courses in the College of Science, Literature, and the Arts*, or in other colleges of the University, are required to conform to rules published in the bulletins of the respective colleges.

*Students from other colleges and universities*: Graduates from other colleges and universities may be admitted upon presentation of certificates, and will receive credit from the several professors for all work satisfactorily completed of similar character and grade to that given in this course.

*Special Students*: Graduates of the School of Agriculture may be admitted as special students and be allowed to pursue such studies in the course offered in the College of Agriculture as are approved by the faculty.

*All students in the College of Agriculture* must advise with the dean or the committee on college and graduate work concerning all electives. No student is allowed to enter any course until such course is properly entered upon the student's registration card by the registrar of the University, and no credit shall be given for subjects in which the student has not been previously registered.

## REQUIREMENTS FOR GRADUATION AND DEGREES

After the completion of the prescribed course of study, including all of the required work and the requisite amount of elective work equivalent to 144 credit hours (all the work required in the Freshman B year being counted as 35 credits), together with such practical experience as may be required by the committee on college course, students in the course in agriculture will be recommended for graduation with the degree of Bachelor of Science in Agriculture and students in the course in home economics with the degree of Bachelor of Science in Home Economics.

Students in the course in Forestry after completing the prescribed course of study, equivalent to 158 credit hours, will be recommended for graduation with the degree of Bachelor of Science in Forestry.

The elective studies designed as academic are to be chosen from the printed semester programs of work offered in the colleges of Science,



Literature and the Arts; Law; Medicine; and Engineering; no student to take more than two semesters in either of the three last named colleges. The elective studies designated as agricultural are to be chosen from the printed program of work offered in the College of Agriculture.

### GRADUATE WORK

Special facilities are offered to graduate students from this and other agricultural colleges who wish to become familiar with methods employed in experiment station work, and to pursue their collegiate studies further. Courses for major and minor subjects may be arranged by consulting the professors in the different divisions. Students who enter for advanced degrees, register with the committee on registration of the College of Agriculture and also within the Graduate School. They must take their major subjects in the College of Agriculture, but they may take one or both of their two minor subjects in the College of Science, Literature and the Arts or in the College of Engineering and Mechanic Arts. Graduate students registered in the Graduate School may take one or both of their minor subjects in the College of Agriculture.

I. The degree of Master of Science in Agriculture will be conferred on a bachelor of this or any other agricultural college of equal grade who, not sooner than one year after graduation, if a resident graduate student at this agricultural college, shall pass an examination in certain prescribed lines of study and present a satisfactory thesis in accordance with the requirements of the Graduate School.

II. All general regulations of the Graduate School governing candidates for the master's degree, method of selecting work, amount of work required, degree of proficiency expected, and the time and manner of conducting the examinations, apply to candidates for master's degrees in the College of Agriculture.

III. The degree of Doctor of Science will be conferred by the Graduate School for study in the College of Agriculture on bachelors of this or any other agricultural college of equal grade within not less than three years after graduation therefrom under conditions prescribed by the faculty of the graduate school.

### FEEES

All students in the college, who are residents of the state of Minnesota, are charged an incidental fee of ten dollars a semester. Non-residents are charged double the fee required of residents of the state, or twenty dollars a semester. No reduction is made for late entrance or for leaving before the end of the semester. In addition to this fee, students who take work in laboratories are charged a sum sufficient to cover the cost of material and breakage.

### DAILY ROUTINE

The daily session is divided into eight recitation periods of fifty minutes each, four in the morning and four in the afternoon. The morning session begins at 8:15 and closes at 11:30 o'clock. A general assembly of the faculty and students is held at 11:30 o'clock. The noon hour extends from 12:15 to 1:15 o'clock. The afternoon session begins at 1:15 o'clock and continues until 4:30. With the exception of Saturday afternoon work extends through six days of the week.

### ORGANIZATIONS

*The Grange* is comprised of the members of the faculty and others connected with the institution and interested in its welfare. Meetings are held on the first and third Monday evenings of each month. The order is intended to bring those connected with the College and Station in closer touch with one another and with the many lines of work carried on in the several divisions. Its further purpose is to keep in closer touch with the scientific world and the grange work of the state and nation.

*Philonthian Literary Society* is an organization of the students of the College of Agriculture, its object being to train its members in the art of public speaking, debating and parliamentary practice. The society meets once a week and presents a program including readings, recitations, debates, etc. The membership is limited to forty and is only for students in the College of Agriculture.

### PUBLICATIONS

*The Forestry Club* was organized by the Forestry students for the promotion of good fellowship and mutual interests. The specific object of the club is to keep the members up to date on Forestry Literature and current affairs in the lumber world.

*Forestry Publication.*—The "Minnesota Forester" is the official organ of the Minnesota State Forestry Association. It is edited by the Forestry Department of the University and is devoted to the advancement of the forestry movement with special emphasis on farm forestry.

*Farm Student's Review.*—This is a paper published and managed by the Alumni Association of the School of Agriculture. It is the official organ of the Alumni Association and the Farmer's Club. The *Review* is intended to be a medium through which former students may keep in touch with the Agricultural School and with one another. It also endeavors to bring the farmers of the State into closer touch with the school, the college, and the Experiment Station. To this end, the paper strives to present the latest progress in the experimental work of the various stations and to call attention to the most practical farm practices.

## ARMOUR SCHOLARSHIPS

Through the exhibits of live stock at the International Exposition in 1907, the College of Agriculture has been awarded two of the J. Ogden Armour scholarships. Each scholarship amounts to \$250.00 and is to be awarded to a worthy student in the Agricultural College. These scholarships will be available during the next college year.

## LIBRARY

The library of the College of Agriculture contains between 10,000 and 11,000 carefully selected volumes and a large number of pamphlets, bulletins, and reports which are unbound.

Each department connected with the school and college aids in bringing together all valuable material, and students will find every inducement to pursue an extended reading course in connection with their class work. The library also contains a small but well selected number of the standard works in English and American literature, and is well provided with general reference books and general technical periodicals. The card catalogue of author and subject aids greatly in the use of the books which are all classified by the Dewey Decimal Classification. Those in charge are always pleased to assist students and aim to make the library a center for all agricultural research study.

## COURSE IN AGRICULTURE

The course in agriculture is designed to give the student a broad education in the sciences and arts relating to agriculture and to fit him for the work of the agricultural specialist. The physical and biological sciences are made prominent. The work in these subjects is begun in the first or second year and may be continued throughout the course. For the first two years, the lines of study are prescribed, the subjects being chosen with a view of giving a good foundation for the work which follows. For the last two years, the work is mostly elective and gives the student an opportunity to take work along certain lines for which he has a special aptitude and liking.

In the College of Agriculture a portion of the work is taken in the College of Science, Literature, and the Arts. All academic electives and the prescribed work in geology, German, French, botany, zoology, psychology, English literature, economics and education are taken in the College of Science, Literature, and the Arts. The agricultural electives and the prescribed subjects not mentioned above are taken at University Farm.

The classes in the College of Agriculture begin with the opening of the regular University year (for which see calendar).

## AGRICULTURE

*Equipment.* The equipment for instruction in agriculture consists of the following: Special laboratories and class rooms with modern apparatus for all courses, collections of classes and varieties of all field and weed seeds; herbariums of weeds and grasses indigenous to the state; a germinating room which affords opportunity for a study of the vitality and strength of seeds; charts and models of various details of crops together with bulletins on farm management, the cost of crop production, and other pertinent topics supplement the daily lectures; machinery used on University farm and generously loaned by the firms of the Twin Cities afford valuable subjects for instruction work. The fields and plots of the Experiment grounds offer additional "laboratories" and studies for use in class work. The student's home and farm is at all times made the basis of his particular study.

The State Grain Inspection department, elevators, mills and adjoining farms of the Twin Cities and vicinity furnish a study for the merchandizing of grains and the planning of farms. An agricultural museum, now being equipped, will contain much material that will be instructive and historic, and serve to show the close relations of agriculture and the modern industries.

Standard references upon agriculture are provided for an exhaustive study of any branch of this subject and original research is a prominent factor of the agricultural course.

## AGRICULTURAL CHEMISTRY AND SOILS

*Nature of Courses.* All students are required to take courses 1 to 5 inclusive. Courses 7 and 8 are general lecture courses required in the agricultural course. These courses can be taken either with or without the laboratory courses, Nos. 9 and 10. Course 6 is required of all students before taking any of the more advanced laboratory work.

*Equipment.* A special laboratory with modern apparatus for the analysis of soils, foods and agricultural products is provided. The equipment contains an experiment mill for the production of wheat flour, a Berthelot-Atwater calorimeter for the determination of the caloric value of foods, vacuum ovens, apparatus for the chemical and physical analysis of soils, an electrical apparatus for determining the resistance of soils to soluble salts, and the necessary facilities for human and animal food investigations. Special facilities are offered in soil investigations and in the analysis and testing of wheat, flour and cereal products for commercial purposes. Nutrition investigations, including the digestibility of foods, the chemical changes which take place in cooking, and the losses in the

preparation of foods form a part of the Experiment Station work. This offers an opportunity for students to study methods of investigation relating to human food problems. Laboratory practice is also offered to advanced students in the study of household problems in which chemistry is involved. Special classes are also formed for the study of dietary problems. Standard reference books and journals, including *Jahresbericht der Agrikultur Chemie*, *Comptes Rendus*, *Biedermann's Centralblatt*, *Annales de la Science Agronomique* and *Veruschs-Stationen* are provided for the advanced work in agricultural chemistry.

*Fees.* In all of the laboratory courses in agricultural chemistry, a fee is charged to cover the cost of material used, and breakage. The student is assigned a certain amount of apparatus and material for which he gives a receipt, and deposits \$3 with the accountant before beginning work. All apparatus returned in good condition at the close of the term is credited to the student's account upon settlement.

#### ANIMAL HUSBANDRY

*Equipment.* Representatives of some of the leading breeds of cattle, sheep and swine are kept at University farm and herds of blooded stock near the institution and the annual show of live stock at the state fair serve for extended observation of breeds and methods of management. Each year a number of experiments are under way in the feeding of these classes of animals. Breeding experiments are also undertaken with sheep and swine, and theoretical experiments with the smaller animals. Experiments in summer feeding cattle, sheep and swine wholly or in part on pasture are carried on each year. The new live stock building affords excellent accommodations for class work in stock judging.

#### DAIRY HUSBANDRY

*Equipment.* Students in the college course have the advantages of the equipment of the dairy school. The feeding and breeding experiments in the dairy division of the experiment station serve a most useful purpose in the collegiate instruction. The cordial relations existing between the department of agriculture and the other state institutions are often advantageous to college students well advanced in dairy work.

Representatives of several breeds of cattle are kept for class use. Herds in the vicinity and those shown at the state fair are useful to students in this course.

#### ENTOMOLOGY

*Equipment.* Well lighted laboratories with modern equipment are at the disposal of college students for both undergraduate and graduate

work. Instruction is further aided by an excellent series of charts and lantern slides. The department is well equipped with museum specimens convenient to the lecture room, showing not only a large series of insects injurious and otherwise, but also over 10,000 specimens, birds and other animals which have a direct bearing upon agriculture. A good museum is also a valuable auxiliary in instruction and friends of the institution are urged to contribute specimens which illustrate the animal resources of the state. Excellent facilities for the installing and caring for museums are offered.

In economic work the student is brought into direct contact with spraying apparatus and insecticides. Practical work in bee keeping is offered in our apiary, and experiments in insect life can be carried on by advanced students in the insectary at nearly all seasons of the year.

### FARM STRUCTURES AND FARM MECHANICS

Lectures and practicums in designing and construction of farm houses, farm barns, silos, out-buildings and conveniences; cement floors, walls, troughs; farm water systems, wells, cisterns, tanks, house heating and plumbing systems, and in painting farm buildings.

*Equipment.* Students taking this subject have the advantage of many practical examples in designing and construction of farm buildings.

The buildings on the campus, such as farm house, barns, dairy buildings, greenhouses, live stock pavilion, sheep barns, swine barns, silos, the water, sewer and heating systems are available for this work.

Many new residence buildings being erected in the vicinity of the campus afford excellent opportunities for special studies in modern house construction.

The aim is to fit the student to be able to design, estimate the cost of and construct such buildings as are best adapted to meet farm conditions.

### HORTICULTURE

*Equipment.* The work in the division of horticulture is mainly carried on at University farm. About twenty acres is here used for the field work in this line. The horticulture building furnishes excellent facilities for classroom and laboratory exercises. The special work in breeding and testing fruits is carried on at Zumbra Heights, Carver county, where one hundred acres of land is devoted to this purpose and equipped with suitable greenhouse, storage cellar, barns, etc., affording excellent facilities for this line of investigation.

The campus of the School of Agriculture is planted out with a collection of trees, shrubs and herbaceous plants suitable for this section, the specimens of which are labeled with their common and botanical

names. The parks, greenhouses, orchards and nurseries of the near vicinity afford convenient and satisfactory illustrations of the best commercial methods and ornamental planting. Our facilities in this line are unexcelled perhaps by any other college in this country.

The greenhouses, laboratories and class rooms of the division of horticulture are well equipped with modern apparatus. The division library contains a large number of horticultural works and is further supplemented by a card index to all its literature.

### VETERINARY MEDICINE AND SURGERY

*Equipment.* The veterinary building gives ample facilities for good work. The hospital furnishes cases for study and demonstration and the dissecting room affords material and opportunity for studying the digestive organs and locomotor apparatus. A large and well stocked museum contains ample material for illustration.

Instruction is given by text-books, lectures, collateral reading and by practice work. The lectures are illustrated by means of skeletons, manikins, charts and by the living animal. Anatomy of locomotion, conformation, the digestive organs, and the higher physiology of digestion are given prominence.

Infectious diseases of domestic animals are studied with reference to causes, recognition, prevention and methods of control. Certain medicines which the intelligent stockman should understand are studied with reference to uses and methods of administration.

### COURSE IN FORESTRY

The course in forestry is a four years course intended to prepare men to take charge of private forest properties, for the Government Service, or for positions as teachers. It leads to the degree of Bachelor of Science in Forestry.

Although a course leading to a technical degree in a specialized science, it is nevertheless based on broad enough lines to afford a good general scientific education. The forester in his lonely life in the woods is very frequently thrown largely upon his own resources and should be capable of obtaining pleasure and interest out of all his surroundings. For this reason an attempt is made to give the student in addition to a thorough training in technical forestry, a good working knowledge of all the sciences and other lines of study which touch upon his life in any way.

Special emphasis is laid on the value of field work and excursions. Every student is required before graduation to take four weeks work in some lumber camp, so as to become familiar with common lumbering operations. There will also be excursions to near-by forests, to lumber

camps, saw mills, wood manufacturing and paper mills; to the Boom Company's work on the Mississippi river; to near-by nurseries; and it is expected that arrangements will be made which will afford an opportunity for students to visit some of the forests of Montana, Idaho and Washington at a very low rate.

*Equipment.* The vast lumbering operations in the northern part of the state offer the best opportunities for a study of that branch. The establishment of the Chippewa Forest Reserve and its management by the Forest Service give opportunities which few other sections possess to study the best methods of forest management. The State has twenty-one thousand acres of timber to be used as a forest and game preserve, on which student help will be largely used. Itasca State Park, 22,000 acres in extent, is used by the Forestry School as a demonstration forest and experiment station. Every student spends about twelve months in the park during his course and does practical work in all branches. The use of this park gives the Minnesota Forestry School a forest equipment which is unsurpassed anywhere.

Throughout the year, special lectures will be given by the State Forestry Commissioner, the State Game Warden, the State Fish Commissioner and prominent lumbermen and lumber manufacturers of Minneapolis and St. Paul. This touch with the commercial side of the lumber business is very important and the situation of the school makes it possible to offer a great deal of it. Other special lectures will be presented as opportunity offers.

#### COURSE IN HOME ECONOMICS

The work in home economics offered in the College of Agriculture is a four years course leading to the Degree of Bachelor of Science in Home Economics and is open to graduates from the School of Agriculture who have taken the work of the intermediate year, and to graduates of approved high and normal schools. It is intended to bring to the vocation of home making the same kind of help which the course in agriculture brings to the business of farming. Aside from the universal need of education of this character, there is a marked and increasing demand for trained women to fill institutional positions and administrative positions as competent supervisors of supplies and of hygiene where large numbers are cared for in collective housekeeping, as well as for special teachers in the several divisions of home economics.

#### NORMAL COURSE

In addition a short two years normal course is offered in home economics, which includes all the special technical subjects given in the four years



course in the College of Agriculture at the University Farm, but does not include the required general cultural studies which are given in the College of Science, Literature, and the Arts. Those who complete this course receive a certificate only.

Graduates of other reputable colleges can here secure a Bachelor's degree by devoting two years to the subject of Home Economics. The major work must be done in Home Economics and one or both of two minors must be completed under the advice of the college committee in one of the other divisions of the College of Agriculture, or in the College of Science, Literature, and the Arts. When approved by the dean and college committee, other subjects given in these colleges may be substituted for the prescribed subjects in the course in home economics.

Women who are sufficiently advanced may study music or art during the junior or senior years, provided that no student may receive more than two semesters' credit in music and art together.

OUTLINE OF COURSE IN AGRICULTURE

(Numbers after subjects indicate number of courses)

FRESHMAN YEAR

Division A.

For graduates of the School of Agriculture

*First Semester*

*Mathematics* 1, three hours, Mr. Roe  
*Geology* 1, three hours, Professor Hall  
*German* 1, five hours, Professor Schlenker and Assistants  
*Rhetoric* 1, three hours, Professor Lansing  
*Botany* 1, six hours, Professor Clements and Assistants

*Second Semester*

*Mathematics* 3, half semester, three hours, Mr. Roe  
*Drawing* 2, half semester, four hours, Miss Clopath  
*German* 1, five hours, Professor Schlenker and Assistants  
*Rhetoric* 1, three hours, Professor Lansing  
*Botany* 1, six hours, Professor Clements and Assistants  
*Agricultural Chemistry* 4, six hours, Mr. Willhoit

FRESHMAN YEAR

Division B

For graduates of approved High Schools or others of equal standing.

*First Semester*

*Rhetoric* 1, three hours, Professor Lansing  
*Farm Mechanics* 1, four hours, Professor Wm. Boss and Assistants  
*Agricultural Chemistry* 1, five hours, Professor Snyder and Assistants  
*Animal Husbandry* 1, three hours, Mr. Schroeder  
*Entomology* 1, half semester, three hours, Professor Washburn  
*Horticulture* 1, two hours, Mr. Cady  
*Agriculture* 2, half semester, three hours, Mr. Parker  
*Drawing* 1, four hours, Mr. A. Bull  
*Veterinary* 1, three hours, Professor Reynolds  
*Agriculture* 1, three hours, Assistant Professor Bull  
*Military Drill*, three hours, Captain Sigerfoos, U. S. A.  
*Gymnasium*, one hour

*Second Semester*

*Animal Husbandry* 3, three hours, Professor A. Boss  
*Farm Mechanics* 2, four hours, Mr. Drew  
*Agricultural Chemistry* 2, three hours, Professor Snyder and Assistants  
*Animal Husbandry* 2, half semester, four hours, Mr. Schroeder  
*Horticulture* 2, half semester, three hours, Professor Green and Assistants  
*Animal Husbandry* 4, half semester, three hours, Mr. Drew  
*Drawing* 2, half semester, four hours, Miss Clopath  
*Rhetoric* 1, three hours, Professor Lansing  
*Mathematics* 3, half semester, three hours, Mr. Roe  
*Horticulture* 3, half semester, four hours, Mr. Cady  
*Dairy Husbandry* 2, half semester, four hours, Professor Haecker and Assistants  
*Military Drill*, three hours, Captain Sigerfoos, U. S. A.  
*Gymnasium*, one hour

## SOPHOMORE YEAR

*First Semester*

*Botany (B)* 1, six hours, Professor Clements and Assistants  
*Zoology* 1, six hours, Professor Sigerfoos and Assistants  
*German or French* 3, three hours, Professor Schlenker and Assistants, or Professor Benton and Assistants  
*Agricultural Chemistry* 5, six hours, Professor Snyder and Assistants  
*Rhetore* 2, three hours, Professor Lansing  
*Agricultural Physics* 1, three hours, Professor Stewart  
*Horticulture* 1, or *Animal Husbandry* 6, half semester, four hours, Professor Green, or Professor A. Boss  
*Military Drill (B)*, three hours, Captain Sigerfoos, U. S. A.

*Second Semester*

*Botany (B)* 1, six hours, Professor Clements and Assistants  
*Zoology* 1, six hours, Professor Sigerfoos and Assistants  
*German or French* 3, three hours, Professor Schlenker and Assistants, or Professor Benton and Assistants  
*Agricultural Chemistry* 5, six hours, Professor Snyder and Assistants  
*Rhetoric* 2, three hours, Professor Lansing  
*Economics* 1, three hours, Professor Robinson  
*Agriculture* 10, half semester, four hours, Professor A. Boss and Assistants  
*Military Drill (B)*, three hours, Captain Sigerfoos, U. S. A.

JUNIOR YEAR

*First Semester*

*Agricultural Chemistry* 7, three hours, Professor Snyder and Assistants  
*Agriculture* 5, three hours, Assistant Professor Bull  
*Dairy Husbandry* 3, three hours, Professor Haecker  
*Botany* 3, six hours, Professor Clements and Assistants  
*Economics* 1, three hours, Professor Robinson  
*Vegetable Pathology* 1, six hours, Professor Freeman

*Second Semester*

*Agricultural Chemistry* 8, three hours, Professor Snyder and Assistants  
*Farm Structures* 4, three hours, Professor Wm. Boss  
*Agriculture* 8 and 9, three hours, Mr. Wilson and Mr. Parker  
*Botany* 3, six hours, Professor Clements and Assistants  
*Economics*, elective, three hours, Professor Gray and Assistants  
*Animal Husbandry* 9, three hours, Professor A. Boss and Assistants

SENIOR YEAR

*First Semester*

*Agriculture* 4, three hours, Assistant Professor Bull  
*Farm Structures* 5, three hours, Professor Wm. Boss  
*Animal Husbandry* 7, three hours, Professor A. Boss and Assistants  
*Comparative Physiology*, six hours, Professor Sigerfoos  
*Elective*, three hours  
*Elective*, three hours

*Second Semester*

*Horticultural Elective*, three hours, Professor Green and Assistants  
*Veterinary Elective*, three hours, Professor Reynolds  
*Agricultural Elective*, three hours, Professor A. Boss and Assistants  
*Elective*, three hours  
*Elective*, three hours  
*Elective*, three hours

SENIOR ELECTIVES

*Greenhouse Management and Floriculture*, three hours, Professor Green and Assistants  
*Landscape Gardening*, three hours, Professor Green  
*Plant Breeding—Horticulture*, three hours, Professor Green  
*Plant Breeding—Agriculture*, three hours, Assistant Professor Bull

*Systematic Pomology*, three hours, Mr. Kohler  
*Agricultural Engineering*, three hours, Professor Stewart  
*Chemistry Laboratory Courses*, six hours, Professor Snyder and Assistants  
*Economic Entomology*, three hours, Professor Washburn  
*Comparative Anatomy and Histology of Insects*, six hours, Professor Washburn and Assistants  
*Elements of Bee Keeping*, one hour, Professor Washburn  
*Anatomy and Body Nutrition*, three hours, Professor Reynolds  
*Anatomy of Conformation of Type*, three hours, Professor Reynolds  
*Discases of Animals*, three hours, Professor Reynolds  
*Advanced Meats and Judging*, three hours, Professor A. Boss and Assistants.  
*Bacteriology*, one hour, Dr. Beebe  
*Dairy Stock and Dairy Farm Management*, three hours, Professor Haecker  
*Factory Dairying*, three hours, Professor Haecker and Assistants  
*Farm Accounts*, four hours, Mr. Vye  
*Farm Machinery*, three hours, Mr. Bassett  
*General Forestry*, three hours, Assistant Professor Cheyney  
*Research Work—Dairy Husbandry, Agriculture, Horticulture, Animal Husbandry, Veterinary*

## ACADEMIC ELECTIVES

Botany	Psychology
Economics	History
Literature	Education
Geology	Rhetoric
Zoology	

## OUTLINE OF COURSE IN ANIMAL HUSBANDRY

Students who wish to specialize in Animal Husbandry are recommended to arrange their courses in the junior and senior years as follows:

## JUNIOR YEAR

*First Semester*

*Zoology 2*, six hours, Professor Sigerfoos and Assistants  
*Animal Husbandry 12*, three hours, Assistant Professor Gaumnitz  
*Agriculture 5*, three hours, Assistant Professor Bull  
*Economics, elective*, three hours  
*Dairy Husbandry 2*, three hours, Professor Haecker  
*Animal Husbandry, elective*, three hours, Professor Boss and Assistants

*Second Semester*

*Zoology 2*, six hours, Professor Sigerfoos and Assistants  
*Animal Husbandry 8*, three hours, Professor A. Boss and Assistants  
*Farm Structures 9*, three hours, Professor Wm. Boss  
*Economics, elective*, three hours  
*Animal Husbandry 10*, three hours, Professor A. Boss and Assistants  
*Elective*, three hours

SENIOR YEAR

*First Semester*

*Farm Structures 10*, three hours, Professor Wm. Boss  
*Comparative Physiology*, six hours, Professor Sigerfoos  
*Animal Husbandry 7*, six hours, Professor A. Boss and Assistants  
*Animal Husbandry 11*, three hours, Professor A. Boss or Professor  
Haecker  
*Elective*, three hours  
*Elective*, three hours

*Second Semester*

*Veterinary Elective*, three hours, Professor Reynolds  
*Animal Husbandry 14*, three hours, Professor A. Boss and Assistants  
*Animal Husbandry 13*, three hours, Professor A. Boss  
*Animal Husbandry 16*, three hours, Professor A. Boss  
*Elective*, three hours  
*Elective*, three hours

JUNIOR AND SENIOR ELECTIVES FOR ANIMAL HUSBANDRY  
COURSE

*Anatomy*, three hours, Professor Reynolds  
*Dissection*, three hours, Professor Reynolds  
*Agricultural Economics*, three hours, Mr. Parker  
*Foods*, three hours, Professor Snyder  
*Stock Farm Management*, three hours, Mr. Wilson  
*Animal Taxonomy*, three hours, Professor Reynolds  
*Home Dairying*, four hours, Professor Haecker  
*Dairy Stock and Dairy Farm Management*, three hours, Professor Haecker  
*Diseases of Animals*, three hours, Professor Reynolds  
*Animal Mechanics*, three hours, Assistant Professor Gaumnitz  
*Bibliography of Agricultural Literature*  
*Field Crops and Seeds*, three hours, Assistant Professor Bull

*Animal By-Products*, three hours, Professor A. Boss

*Advanced Meats and Judging*, three hours, Professor A. Boss

### OUTLINE OF COURSE IN FORESTRY

(Numbers after subjects indicate number of courses).

#### FRESHMAN YEAR

##### *First Semester*

*Mathematics* 1, three hours, half semester, Mr. Roe

*German or French* 1, five hours, Professor Schlenker and Assistants, or  
Professor Benton and Assistants

*Botany* 1, six hours, Professor Clements and Assistants

*Geology* 1, three hours, Professor Hall

*Rhetoric* 1, three hours, Professor Lansing

*Agricultural Chemistry* 1, five hours, Professor Snyder and Assistants

*Forestry* 1, three hours, Assistant Professor Cheyney

*Military Drill*, three hours, Captain Sigerfoos, U. S. A.

##### *Second Semester*

*Mathematics* 3, half semester, three hours, Mr. Roe

*German or French* 1, five hours, Professor Schlenker and Assistants, or  
Professor Benton and Assistants

*Botany* 1, six hours, Professor Clements and Assistants

*Physiography*, three hours, Mr. E. M. Lehnerts

*Rhetoric* 1, three hours, Professor Lansing

*Agricultural Chemistry* 2, three hours, Professor Snyder and Assistants

*Military Drill*, three hours, Captain Sigerfoos, U. S. A.

#### SOPHOMORE YEAR

##### *First Semester*

*German or French* 3, three hours, Professor Schlenker and Assistants, or  
Professor Benton and Assistants

*Rhetoric* 2, three hours, Professor Lansing

*Mineralogy* 1, three hours, Professor Hall and Mr. Grout

*Botany* 2, six hours, Professor Clements and Assistants

*Zoology* 1, six hours, Professor Sigerfoos and Assistants

*Drawing* 1, four hours, Mr. A. Bull

*Agricultural Chemistry* 5, six hours, Professor Snyder and Assistants

*Forestry* 11, one hour, Assistant Professor Detwiler

*Military Drill*, three hours, Captain Sigerfoos, U. S. A.

*Second Semester*

- German or French* 3, three hours, Professor Schlenker and Assistants. or  
Professor Benton and Assistants  
*Rhetoric* 2, three hours, Professor Lansing  
*Forestry* 24, three hours, Professor Green  
*Botany* 2, six hours, Professor Clements and Assistants  
*Zoology* 1, six hours, Professor Sigerfoos and Assistants  
*Drawing* 4, six hours, Mr. A. M. Bull  
*Agricultural Chemistry* 5, six hours, Professor Snyder and Assistants  
*Vegetable Pathology* 2, six hours, Professor Freeman  
*Military Drill*, three hours, Captain Sigerfoos, U. S. A.

JUNIOR YEAR

*First Semester*

- Entomology* 3, six hours, Professor Washburn  
*Botany* 3, six hours, Professor Clements and Assistants  
*Agriculture* 1, three hours, Assistant Professor Bull  
*Economics* 1, three hours, Professor Robinson and Mr. Phelan  
*Forestry* 3, three hours, Assistant Professor Detwiler  
*Forestry* 7, three hours, Assistant Professor Cheyney

*Second Semester*

First Half

- Animal Husbandry*, Professor A. Boss and Assistants  
*Forestry* 12, Assistant Professor Cheyney  
*Horticulture* 3, Professor Green and Assistants  
*Farm Structures* 3, Professor Wm. Boss  
*Farm Mechanics* 2, Mr. Drew  
*Veterinary* 5, Professor Reynolds  
*Farm Mechanics*, Professor Wm. Boss  
*Entomology* 3, Professor Washburn  
*Botany* 3, half semester, Professor Clements and Mr. Huff  
*Dairy Husbandry*, Professor Haecker and Assistants

Last Half at Itasca Park

April 15 to September 1.

- Forestry* 3, Assistant Professor Detwiler  
*Forestry* 5, Assistant Professor Cheyney  
*Forestry* 6, Professor Stewart  
*Forestry* 18, Assistant Professor Detwiler  
*Forestry* 20, Professor Stewart  
*Forestry* 19, Assistant Professor Detwiler



## SENIOR YEAR

*First Semester*

*Forestry* 10, three hours, Assistant Professor Cheyney  
*Forestry* 9, three hours, Assistant Professor Cheyney  
*Vegetable Pathology* 1, six hours, Professor Freeman  
*Agricultural Chemistry* 12, three hours, Assistant Professor Hummel  
*Economics, elective*, three hours, Professor Gray and Assistants

*Second Semester*

## First Half

*Forestry* 8, Mr. Fullerton  
*Forestry* 23, Assistant Professor Cheyney  
*Forestry* 22, Assistant Professor Cheyney  
*Forestry* 16, Assistant Professors Cheyney and Detwiler

Second Half at Itasca Park.

April 15 to June 1.

*Forestry* 17, Assistant Professor Cheyney  
*Forestry* 4, Assistant Professor Detwiler  
*Forestry* 15, Professor Green  
*Forestry* 14, Professor Green  
*Forestry* 13, Professor Stewart  
*Forestry* 21, Professor Stewart  
*Forestry* 24, Professor Green

## OUTLINE OF COURSE IN HOME ECONOMICS

(Numbers after subjects indicate number of courses.)

## FRESHMAN YEAR

## Division "A"

For graduates of the School of Agriculture

*First Semester*

*Mathematics* 1, three hours, Mr. Roe  
*Geology* 1, three hours, Professor Hall and Mr. Grout  
*German or French* 1, five hours, Professor Schlenker and Assistants or  
 Professor Bentou and Assistants  
*Rhetoric* 1, three hours, Professor Lansing  
*Botany* 1, six hours, Professor Clements and Assistants

*Second Semester*

*Mathematics* 2, half semester, three hours, Mr. Roe  
*Drawing* 2, half semester, four hours, Miss Clopath  
*German or French* 1, five hours, Professor Schlenker and Assistants, or  
Professor Benton and Assistants  
*Rhetoric* 1, three hours, Professor Lansing  
*Botany* 1, six hours, Professor Clements and Assistants  
*Agricultural Chemistry* 4, six hours, Mr. Wilhoit

FRESHMAN YEAR

Division B.

For graduates of approved High Schools or others of equal standing

*First Semester*

*Rhetoric* 1, three hours, Professor Lansing  
*Agriculture* 11, three hours, Professor A. Boss and Assistants  
*Agriculture* 1, three hours, Professor A. Boss and Assistants  
*Agricultural Chemistry* 1, five hours, Professor Snyder  
*Horticulture* 1, two hours, Professor Green and Assistants  
*Entomology* 1, half semester, three hours, Professor Washburn  
*Domestic Science* 1, four hours, Miss Shepperd  
*Domestic Art* 1, four hours, Mrs. Blair  
*Drawing* 1, four hours, Mr. A. Bull  
*Domestic Economics* 1, three hours, Mrs. Boutell  
*Physical Training*, two hours, Miss Whitridge

*Second Semester*

*Agricultural Chemistry* 3, six hours, Miss Craig  
*Horticulture* 3, half semester, three hours, Professor Green and Assistants  
*Animal Husbandry* 4, half semester, three hours, Mr. Drew  
*Domestic Science* 1, four hours, Miss Shepperd  
*Domestic Art* 1, four hours, Mrs. Blair  
*Drawing* 2, half semester, four hours, Miss Clopath  
*Rhetoric* 1, three hours, Professor Lansing  
*Mathematics* 3, half semester, three hours, Mr. Roe  
*Horticulture* 3, half semester, four hours, Mr. Cady  
*Dairy Husbandry* 1, half semester, four hours, Professor Haecker and  
Assistants  
*Domestic Economics*, 3, three hours, Dr. Moorhead  
*Animal Husbandry* 5, half semester, one hour, Professor A. Boss  
*Physical Training*, two hours, Miss Whitridge

## SOPHOMORE YEAR

*First Semester*

*Botany* 1 (B), six hours, Professor Clements and Assistants  
*Zoology* 1, six hours, Professor Sigerfoos and Assistants  
*German or French* 3, three hours, Professor Schlenker and Assistants, or  
 Professor Benton and Assistants  
*Agricultural Chemistry* 5, six hours, Professor Snyder and Assistants  
*Rhetoric* 3, three hours, Professor Lansing  
*Domestic Art* 2, four hours, Mrs. Blair  
*Domestic Science* 2, four hours, Miss Shepperd

*Second Semester*

*Botany* (B) 1, six hours, Professor Clements and Assistants  
*Zoology* 1, six hours, Professor Sigerfoos and Assistants  
*German or French* 3, three hours, Professor Schlenker and Assistants, or  
 Professor Benton and Assistants  
*Agricultural Chemistry* 5, six hours, Professor Snyder and Assistants  
*Rhetoric* 3, three hours, Professor Lansing  
*Domestic Art* 2, four hours, Mrs. Blair  
*Domestic Science* 3, one hour, Miss Shepperd  
*Domestic Science* 4, one hour, Dr. Beebe

## JUNIOR YEAR

*First Semester*

*Domestic Economics* 2, three hours, Mrs. Boutell  
*Domestic Art* 4, four hours, Mrs. Blair  
*Domestic Science* 5, four hours, Miss Shepperd  
*Education* 1, three hours, Assistant Professor Swift  
*Agricultural Chemistry* 6, six hours, Professor Snyder and Assistants  
*Agricultural Chemistry* 7, three hours, Professor Snyder and Assistants  
*Psychology* 1, three hours, Professor Wilde and Assistants

*Second Semester*

*Domestic Science* 5, four hours, Miss Shepperd  
*Domestic Art* 4, four hours, Mrs. Blair  
*Education* 2, three hours, Assistant Professor Swift  
*Agricultural Chemistry* 9, six hours, Professor Snyder and Assistants  
*Farm Structures* 6, three hours, Professor Wm. Boss  
*Drawing* 3, four hours, Miss Clopath  
*Domestic Art* 3, three hours, Mrs. Blair

SENIOR YEAR

*First Semester*

*Domestic Art* 5, three hours, Mrs. Blair  
*Domestic Science* 6, six hours, Miss Shepperd  
*Psychology* 2, three hours, Professor Wilde and Assistants  
*Farm Structures* 7, three hours, Professor Wm. Boss  
*English, elective*, three hours, Professor Burton and Assistants  
*Elective*, three hours

*Second Semester*

*Domestic Science* 6, six hours, Miss Shepperd  
*Domestic Art* 6, six hours, Mrs. Blair  
*Agricultural Chemistry* 13, three hours, Miss Craig  
*Horticulture, elective*, three hours, Professor Green and Assistants  
*Elective*, three hours  
*Elective*, three hours

NORMAL COURSE

FIRST YEAR

Same as Freshman Year in course of Home Economics

SECOND YEAR

*First Semester*

*Domestic Economics* 2, three hours, Mrs. Boutelle  
*Domestic Science* 5, six hours, Miss Shepperd  
*Domestic Art* 2, four hours, Mrs. Blair  
Rhetoric 2, three hours, Professor Lansing  
*Agricultural Chemistry* 7, three hours, Professor Snyder  
*Psychology* 1, three hours, Professor Wilde and Assistants  
*Botany* 1, six hours, Professor Clements and Assistants  
*Domestic Art* 3, three hours, Mrs. Blair

*Second Semester*

*Domestic Science* 5, six hours, Miss Shepperd  
*Domestic Art* 2, four hours, Mrs. Blair  
Rhetoric 2, three hours, Professor Lansing  
*Agricultural Chemistry* 13, three hours, Miss Craig  
*Child Psychology*, three hours, Professor Wilde and Assistants  
*Botany* 1, six hours, Professor Clements and Assistants  
*Domestic Science* 3, one hour, Miss Shepperd  
*Domestic Science* 4, one hour, Dr. Beche  
*Drawing* 3, four hours, Miss Clopath

# Courses of Study

## AGRICULTURE

1. **AGRONOMY** ASSISTANT PROFESSOR BULL  
Three credits (three hours per week) First semester  
Open to freshmen registered in division B.  
An elementary course in the study of farm management, crop rotation and the planning and plating of farms; the production and care of manures; the relation of weeds to crop production and profits; the planting, cultivating, harvesting, storing, seed-selection and marketing of grains, roots, fiber, sugar, hay and other forage crops; meadows and pastures; treatment of field crop diseases; plant selection and breeding methods.
2. **FARM DEVELOPMENT** MR. PARKER  
Three credits (three hours per week) Second semester  
Open to freshmen registered in division B.  
It is proposed in teaching this subject to cover the elementary principles governing the science of agriculture. The work covers the origin, formation and cultivation of soils; the movement and control of soil moisture; subduing fields; a study of drainage, roads, fences, water supply; the relation of science to agriculture and farm life; a general consideration of farm practices and farming as a business.
3. **FARM MACHINERY** MR. BASSETT  
Two credits, elective (four hours per week) Second semester  
Open to freshmen registered in division B.  
Practical suggestions and practice work are given in connection with the best methods of adjustment, handling and adaptation of the various kinds of machinery to the soil, weeds and seasons. Durability and convenience in manipulation are chief among the points considered.
4. **FIELD CROPS AND SEEDS** ASSISTANT PROFESSOR BULL  
Three credits (three hours per week) First semester  
Open to seniors.  
Students registering for the course must have had at least one year's work in University botany. The course is outlined to occupy two lecture periods and two laboratory periods per week.
  - (a) **Seeds:** their identity and value.  
In this course the students are made acquainted with the physical botany, the uses, identification, vitality, testing, grading and judging of all classes of field seeds. Special attention is given to the reproducing value of seeds of various grades of grains and to the importance of testing. A thesis upon some phase of the subject of seeds is required for full credit.
  - (b) **Field Crops:** their structure and use.  
In this course are considered the botany, cultivation, and economic value of the various cereal, forage, root, fiber, sugar and miscellaneous crops. Special attention is given to the subjects of meadows, pastures, soilage crops, and to the production and preservation of all kinds of dry cured and ensilaged crops.
5. **THREMMATOLOGY** ASSISTANT PROFESSOR BULL  
Three credits (three hours per week) First semester  
Open to juniors. Given in alternate years.  
Heredity, variation, law of breeding, the art of breeding, im-

provement by nature and under scientific experimentation, securing foundation stocks, value of using very large numbers, immense value of the occasional individual which can transmit qualities of peculiar value, use of an ideal, use and misuse of the score card, both numerical and graphic, intrinsic qualities, fancy points and distinguishing marks, statistical methods in breeding pedigree records of efficiency, fundamental principles underlying the arrangement of the record books, bibliography and terminology, study of the literature of breeding.

6. **PLANT BREEDING** ASSISTANT PROFESSOR BULL  
 Three credits, elective (three hours per week) First semester  
 Open to juniors. Given in alternate years.  
 Botany of the reproductive organs of field crops, field crop nursery management, producing new qualities by hybridizing and by change of environment, hybridizing versus cross-breeding, in-breeding and self fertilization, originating varieties and improving standard varieties by selection and by hybridizing, followed by selection, methods of disseminating new varieties, seed and plant introduction, experimentation in the theories relating to heredity, variation and practical breeding, seed growing as a farm business, seed merchandising and the breeding of each of the various field crops grown in Minnesota.
7. **AGRICULTURAL ENGINEERING** PROFESSOR STUART  
 Three credits, elective (six hours per week) Second semester  
 Open as an elective to juniors and seniors.  
 Subduing prairie and timber soils, land drainage, farm land mensuration and surveying; irrigation and irrigation works; roads, their location, maintenance, laws and construction, financial support; farm fences, buildings, implements and machinery.
8. **AGRICULTURAL ECONOMICS** MR. PARKER  
 One and one-half credits, elective (three hours per week for nine weeks) Second semester  
 Open to juniors.  
 Labor, farm finances, markets, rentals, agricultural statistics, production, exports, wages, land laws, ownership, taxes, organizations.
9. **FARM MANAGEMENT** MR. WILSON  
 One and one-half credits (three hours per week for nine weeks) Second semester  
 Open to juniors.  
 In this course are considered the planning of farms, crop rotation, tillage, and systems of farming. Special attention is given to revising and drafting farm plans and to arranging economic crop rotations, and application of business methods to farm operations.
10. **AGRICULTURAL PRACTICUMS**  
 (Four hours per week)  
 Opportunities to gain practical experience, to acquire greater manual dexterity in doing farm work, to secure practice in conducting experiments and to get experience in teaching agricultural subjects, are offered to college and graduate students when practicable. Students should arrange early in their course for this work, as the opportunities in plant breeding, in rural engineering, in field crops, in agricultural statistics and in assisting instructors in the various courses are available only at irregular intervals and must be arranged for in advance.
7. **AGRICULTURAL ENGINEERING** PROFESSOR STEWART  
 Opportunities to gain practical experience, to acquire greater
11. **FIELD AGRICULTURE** PROFESSOR A. BOSS AND ASSISTANTS  
 (Three hours per week) First semester  
 Open to Freshman girls in Div. B.  
 A study of the soil origin and types of soil as affecting crop production in Minnesota; soil conditions as affecting moisture and crop growth; planning of fields and farms in consideration of classes of field crops, and the relation of crops to each other in rotation and the business of farming.

## AGRICULTURAL CHEMISTRY AND SOILS

1. **AGRICULTURAL CHEMISTRY** PROFESSOR SNYDER  
 (Five hours per week) First semester  
 Open to freshmen registered in division B.  
 In agricultural chemistry, one term is given to the study of the elements and compounds which are of most importance in agriculture. This work is planned to prepare the student for intelligent study of the subject of the chemistry of foods, soils and fertilizers, and at the same time to familiarize him with the more important chemical changes which take place in every-day life. Laboratory practice forms a prominent feature of the work in agricultural chemistry. In the chemistry of foods, the composition of plant and animal bodies, the chemistry of the plant and of its food and growth, the chemistry of animal nutrition, digestibility and value of foods, and the laws governing the economic uses of foods, are some of the subjects considered. The composition and the utilization of farm crops for food purposes, and the application of the principles of chemistry to plant and animal life, form the basis of this work.  
 In dairy chemistry, the chemical and allied changes which take place in the handling of milk and its manufacture into butter and cheese and the application of these principles to the production of milk and its products form the basis of this work.
  
2. **SOILS AND FERTILIZERS** PROFESSOR SNYDER  
 (Six hours per week) Second semester  
 Open to freshmen registered in division B.  
 Some of the topics studied are: The formation of soils, adaptability of crops to different kinds of soils, chemical composition of soils, physical analysis of soils, interpretation of soil analysis, the judging, rating and scaling of soils, alkali soils, acid soils, humus and other relations to soil fertility, the factors governing the increase and decrease of the nitrogen of the soil, farm manures, their composition and uses, and their action upon soils; green manures, commercial fertilizers, special purpose fertilizers and their use; the influence of different methods of cultivation upon the fertility of the soil, the food requirements of farm crops, the rotation of crops as affecting the fertility of the soil, the income and outgo of fertility from farms where different systems of farming are followed, the general principles of soil exhaustion and soil improvement and the various factors which affect the fertility of soils. The class room work is supplemented by laboratory practice.
  
3. **DOMESTIC CHEMISTRY** MISS CRAIG  
 (Six hours per week) Second semester  
 Open to freshmen registered in division B.  
 The combination of human foods to form balanced rations, dietary studies of families, cost and value of foods, losses in the cooking and preparation of foods, cereal food products, animal food products, adulterations of foods and their detection, fuels, soaps, dye stuffs and colors, composition of common household utensils, the household water supply, preparation of home-made baking powders, bakers' chemicals, the composition, food value and characteristics of tea, coffee, chocolate, cocoa, molasses, honey, vinegar and spices, the grading and testing of wheat flour and the chemistry of bread making, form the essential parts of this work.
  
4. **GENERAL CHEMISTRY** MR. WILHOIT  
 Three credits (three hours per week) Second semester  
 Open to freshmen registered in division A.  
 Recitations, lectures, and laboratory practice. Particular attention is given to the study of the elements and compounds which are of the most importance in agriculture. The laws governing the combination of the elements by weight and volume are illustrated by numerous problems. The writing of equations, chemical nomenclature, and the periodic system of classifying

the elements are prominent features of the work. In the laboratory experiments are performed illustrating the general laws of chemistry which have a bearing upon animal and plant life.

5. **AGRICULTURAL QUALITATIVE ANALYSIS** MR. WILHOIT  
Six credits (six hours per week) First and second semesters  
Open to sophomores.
- This course is arranged to meet the wants of agricultural students. Six hours per week are given to the laboratory work and one period to a lecture and recitation. The writing of equations and the study of principles involved in the separation of the various groups and individual compounds of elements are characteristic features of this work. It is the object of this course to familiarize the student with the processes employed in qualitative analysis, so that he may be able to determine the composition of all ordinary substances, particularly of those that are of the most importance in agriculture.
6. **AGRICULTURAL QUANTITATIVE ANALYSIS** PROFESSOR SNYDER  
Three credits (six hours per week) First semester  
Open to juniors and seniors.
- An elementary course in quantitative analysis. The principles involved in gravimetric and volumetric analysis are studied. Two periods per week are given to laboratory work and one period to a recitation and lecture. The work includes the gravimetric and volumetric determinations of iron, acidimetry and alkalimetry, the gravimetric determination of phosphorus pentoxide, the volumetric determination of calcium oxide, and the determination of nitrogen and potassium oxide. The object of this course is to prepare the student for special work in agricultural chemistry, and is required of all students who elect either course 10 or 11.
7. **HUMAN AND ANIMAL FOODS** PROFESSOR SNYDER  
Three credits (three hours per week) First semester  
Open to juniors. Given in alternate years.
- Lectures. This course treats of the composition, digestibility and nutritive value of human and animal foods. The chemistry of plant growth particularly the factors which influence their composition and nutritive value, forms an essential part of this course. The processes employed in the preparation of foods, as the milling of wheat and other cereals, the economic uses of human and animal foods, the comparative value of foods, and the chemical methods employed in human nutrition investigations, particularly in proteid and carbohydrate metabolism, and the losses of energy from the body, are studied. Dietary studies, including the cost of nutrients, and influence of different methods of preparation upon their nutritive value, are also included in the work. It is the object of this course to familiarize the student with the fundamental principles of nutrition and the use of the literature upon the subject. Special attention is given to the economic production of foods and their utilization for human and animal food purposes.
8. **SOILS AND FERTILIZERS** PROFESSOR SNYDER  
Three credits (three hours per week) Second semester  
Open to juniors. Given in alternate years.
- Lectures. This course treats of the relation of soils and their fertility to the production of crops, and includes a study of the sources of plant food and the influence of tillage and manures upon the chemical and allied physical and biological changes which take place in the soil in rendering plant food available. Rock disintegration and soil production, the various types of soil formed from different kinds of rocks and their agricultural value, and the inherent fertility of soils, form an essential part of the work. The control of the water in the soil, soil solutions and leachings, the presence of injurious acid compounds and alkaline salts, the various methods employed for the improvement of soils, soil organisms and their



influence upon fertility, the organic compounds of the soil and the part which they take in soil fertility the increase and decrease of the organic matter and the nitrogen of the soil as influenced by different methods of farming, manures, and the causes of soil exhaustion and means employed, the analyses of soils, and the application and interpretation of the results, uses of commercial fertilizers and green and farm fertilizers for conservation of fertility, adaptability of crops to soils and rotation of crops as affecting the fertility of the soil are some of the topics discussed. Soil judging, rating and scaling form a part of the work.

9. **THE ANALYSIS OF FOODS** (elective) PROFESSOR SNYDER  
 Three credits (six hours per week) First or second semester  
 Open to juniors and seniors.  
 This work includes the determination of water, ash, starch, sugar, cellulose, pentosans, fats, proteids, and the different forms of nitrogen in food stuffs, the use of the calorimeter, and the polariscope in food analysis. Before completing the work, each student makes a complete proximate analysis of some food material. This course is planned to meet the wants of those who desire to become familiar with the methods employed in the analysis of foods and in nutrition investigations.  
 This course includes, also, the analysis of dairy and animal products, as fodders, milk, butter, cheese, and animal feces. Special features of the course are the determinations of volatile fatty acids, iodine absorption, specific gravity, and the saponification equivalent of fats. The object of this course is to meet the wants of those who desire to become familiar with the methods of investigations employed in research in dairy chemistry.
10. **THE ANALYSIS OF SOILS AND FERTILIZERS** (elective) PROFESSOR SNYDER AND MR. WILHOIT  
 Three credits (six hours per week)  
 Open to juniors and seniors.
- (a) The chemical analysis of soils.  
 Laboratory practice in the chemical analysis of soils and the study of the chemical methods employed in soil investigations. Particular attention is given to the study of the organic compounds of soil, and an opportunity is offered for the study of experimental soil work applied to field investigations.
- (b) The physical analysis of soils.  
 Laboratory practice in the physical analysis of soils by means of Hilgard's elutriator, and the sedimentation methods as modified by the use of centrifugal apparatus.  
 Course 10 is intended for students who desire to make a specialty of the subject of soils.
11. **SPECIAL PROBLEMS** (elective) PROFESSOR SNYDER, ASSISTANT  
PROFESSOR HUMMEL AND MR. WILHOIT  
 Seminar and laboratory work in the study of special problems in agricultural chemistry, as the analysis of water for irrigation purposes, the adulteration of foods, dietetics, and problems in agricultural technology.
12. **CHEMISTRY OF FOREST PRODUCTS** ASSISTANT PROFESSOR HUMMEL  
 Three credits (three hours per week) First semester  
 Open to seniors.  
 In this course a special study is made of the products of the forest other than for timber and fuel. The products studied include cellulose for the manufacture of paper, sugar, tanning materials, turpentine, tar, oils, resin, waxes, gums, creosote, wood alcohol, acetic acid, acetone, essential oils, charcoal, camphor, and medicinal products. The subjects of paint and methods for the preservation of wood are also taken up. At

the beginning of the course a short time is devoted to a review of organic chemistry, special attention being given to those compounds found in wood or closely related to it. A thesis on some subject relating to the chemistry of forest products is required in this course.

13. DOMESTIC CHEMISTRY AND DIETETICS MISS CRAIG  
Three credits (six hours per week) Second semester  
Open to seniors.  
Lectures and laboratory practice. Advanced course. Courses 7 and 9 required as preliminary preparation.

### ANIMAL HUSBANDRY

1. STUDY OF BREEDS MR. SCHROEDER  
(Three hours per week) First semester  
Open to freshmen registered in division B.  
The market classes of horses, cattle, sheep, and swine are taken up briefly to bring out the form, quality, and condition desirable and common to the different classes. This is followed in each class of stock with the most common and valuable breeds for the state. These are studied carefully as regards their characteristics and origination, and as to their adaptability to the different Minnesota conditions. This work is illustrated with stock from herds and flocks maintained at the University farm for this purpose.

2. STOCK JUDGING MR. SCHROEDER  
(Four hours per week) Second semester  
Open to freshmen registered in division B.  
Score cards are used to an extent sufficient to familiarize students with that method of judging, and special efforts are made to do systematic and closely critical work in the selection of animals representative of the market classes of stock. Living specimens are used and rings made up for the student contests in stock judging. In connection with the work in dressing and curing meats, the judgment passed on live animals for the block is verified by score cards, judgment of the dressed carcasses, and by actual block tests. These tests are made by the students and bring out the percentage of meat in each commercial cut of the carcass. The quality of meat is passed upon in this connection by experts, and a careful report made to ascertain the type of animals best calculated for the production of the most meat of the best quality.

3. FEEDING AND BREEDING PROFESSOR BOSS AND ASSISTANT  
PROFESSOR GAUMNITZ  
(Three hours per week) Second semester  
Open to freshmen registered in division B.  
Feeding, first nine weeks.  
The principles of feeding as applied to the production of horses, cattle, sheep and swine, are taught. Special attention is given to the choice and preparation of food for animals during different periods of growth and during the time they are used for breeding purposes and to summer feeding and pasturage. Practice is given in compounding rations that will include in the best manner the food stuffs commonly produced on the farm.

ANIMAL BREEDING, last nine weeks  
Open to freshmen registered in division B.  
Students receive instruction in the principles that govern breeding; in the influences that affect heredity and in the care and management of breeding stock. Pedigree receives careful consideration and each student is required to make out pedigrees of two or more pure-bred animals. They are also required to become familiar with methods of keeping live stock records of all kinds.

4. **POULTRY** MR. DREW  
 (Three hours per week) Second semester  
 Open to freshmen registered in division B.  
 The instruction in this subject will include the following topics:  
 History and characteristics of the leading breeds of poultry;  
 breeding, rearing and management of fowls for eggs and for  
 the market; planning, building and arrangement of poultry  
 houses; managing incubators and brooders. A model poultry  
 house, containing pens of the most improved breeds, incu-  
 bator cellar, work-room, etc., has been provided, where ex-  
 perimental work and practical instruction are carried on.
5. **MEATS** ASSISTANT PROFESSOR GAUMNITZ  
 (One hour per week) Second semester  
 Open to freshmen girls registered in division B.  
 The instruction given to the students in home economics in the  
 subject of meats pertains to the selection and value of dif-  
 ferent classes of meat and to the best methods of curing and  
 preserving.
6. **STOCK JUDGING (elective)** ASSISTANT PROFESSOR GAUMNITZ  
 Three credits (six hours per week) First semester  
 Open to sophomores.  
 This course is calculated to meet the needs of students desiring to  
 become expert stock judges and of those who wish to study  
 animal form with a view of becoming breeders of superior  
 animals.  
 Score card work in combination with the presence of living speci-  
 mens is a feature of this course. Students are drilled in judg-  
 ing from the standpoint of breed, type, form, stamina, quality,  
 breeding, capacity, suitability for feeding and for general and  
 specific production.
7. **STOCK JUDGING** PROFESSOR BOSS AND ASSISTANT PROFESSOR GAUMNITZ  
 Three credits (six hours per week) First semester  
 Open to seniors.  
 An advanced course consisting of practice in judging market  
 classes of fat stock and special work with breeding stock.  
 Trips of inspection to neighboring stock farms will be made  
 and work given in county fair judging where suitable arrange-  
 ments can be made.
8. **STOCK BREEDING** PROFESSOR BOSS  
 Three credits (three hours per week) Second semester  
 Open to juniors.  
 Discussion of the principles of stock breeding as affecting  
 breed maintenance and breed formation; standards of excellence  
 and comparison of standards of breeds; heredity and the  
 influences affecting it; prepotency, fecundity and their rela-  
 tion to successful breeding; the influence of nutrition on animal  
 growth and form, and the effect of artificial conditions, early  
 maturity, selection and pedigree, and a study of the early history  
 of breeds of live stock and of methods of breeders famous in  
 live stock improvement.
9. **LIVE STOCK FEEDING AND MANAGEMENT** PROFESSOR BOSS  
 Three credits (three hours per week) Second semester  
 Open to sophomores.  
 The principles of feeding as applied to economical production;  
 feeding rations, feed stuffs, methods of feeding, care and man-  
 agement of breeding and fattening stock, management of ani-  
 mals during pasture, yard and stall feeding for the block, selec-  
 tion of animals for the feed lot, and stabling and stable  
 management suitable for the various classes of live stock. The  
 work is based on the investigations of the experiment stations  
 and a careful review of station bulletins and publications will  
 be made.

10. **STOCK FARM MANAGEMENT** MR. WILSON  
 Three credits (three hours per week) Second semester  
 Open to juniors.  
 In this course special attention is given to the crops and rotations that fit in with live stock farming, economy of feeds and pasture production, and solution of confronting problems is made the leading feature.
11. **ANIMAL NUTRITION STUDIES** PROFESSOR BOSS  
 Three credits (three hours per week) First semester  
 Open to seniors.  
 Original work in special live stock problems related to meat production followed by a thesis; sufficient original work must be done to form a reliable basis for conclusions.
12. **MEATS** ASSISTANT PROFESSOR GAUMNITZ  
 Three credits (three hours per week) First semester  
 Open to juniors.  
 A continuation of studies in meats as outlined in the school course. Supplemented by dissection and studies of muscular structure of various kinds of meat.  
 This course is designed especially for studying meat making animals and their products. Under general guidance each student makes up rings of animals which he studies in detail, at every step from the live state until the different parts are cooked and tested at the table. Full records and conclusions, as well as illustrations, are required in thesis form.
13. **LIVE STOCK RECORDS AND RESEARCH** PROFESSOR BOSS  
 Three credits (six hours per week) Second semester  
 Open to seniors.  
 This course will consist of reviewing literature upon different phases of live stock production. The Experiment Station records and other sources of information will be used largely. This together with original work will form the basis of extended compilation of material on live stock husbandry, and a thorough study of systems of keeping and compiling stock records upon stock farms and at experiment stations. Sufficient actual practice will be required to become familiar with live stock records and herd books.
14. **ANIMAL BY-PRODUCTS** PROFESSOR BOSS AND MR. PATERSON  
 Three credits (three hours per week) Second semester  
 Open to seniors.  
 Individual study of the by-products manufactured at the large packing houses will be required of each student. The value and place that each has in economic use is considered.
15. **ADVANCED MEATS AND JUDGING** PROFESSOR BOSS AND ASSISTANT  
PROFESSOR GAUMNITZ  
 Three credits, elective (six hours per week) Second semester  
 Open to juniors and seniors.  
 Work along this line is a continuation of that begun in course 12. More attention is given the more important details concerning meat and a minute study of its physical and chemical composition is required.
16. **ANIMAL MECHANICS** PROFESSOR REYNOLDS AND ASSISTANT  
PROFESSOR GAUMNITZ  
 Three credits (three hours per week) Second semester  
 Open to seniors.  
 A study of the mechanical effects of different relationships of bone and muscle in the animal body. This applies particularly to horses. The entire feet and legs as well as the body will be studied and made clear by apparatus and original illustrations.
17. **LIVE STOCK PRACTICUMS** MR. SCHROEDER  
 Feeding and stable management of cattle, horses, sheep and swine, recording and calculating amounts of pasturage ob-

tained from different forage crops, keeping herd records, writing pedigrees and recording animals, calculating feeding records and cost of production, mechanical analysis of carcasses of animals to determine total amount of meat, and proportionate amounts of fat and lean, determinations of fat and lean meat with specially designed apparatus; calculating percentage of different parts of the carcass.

## BOTANY

1. **GENERAL BOTANY**                      PROFESSOR CLEMENTS, ASSISTANT PROFESSORS  
TILDEN AND ROSENDAHL, MESSRS. HUFF AND BUTTERS  
Six credits (six hours per week)                      First and second semesters  
Open to freshmen.  
Greenhouse study of the behavior and structure of flowering plants, following the life cycle from germination to seed production; laboratory study of the evolution of the plant kingdom, and the underlying principles of plant life; laboratory and greenhouse work in the identification and relationship of flowering plants, together with field work on the plants of forest and grassland; practical papers on selected topics, viz., bacteria, plant growth, evolution, etc.
2. **ADVANCED BOTANY**                      PROFESSOR CLEMENTS, ASSISTANT PROFESSORS  
TILDEN AND ROSENDAHL  
Six credits (six hours per week)                      First and second semesters  
Open to sophomores.  
Systematic work in the naming and classification of plants, chiefly of the groups of economic importance, i. e., flowering plants, fungi and algae, with emphasis on the common plants of Minnesota; ecological study in the greenhouse of the structure and meaning of the adaptations of root, stem and leaf, and in the field of the principles of plant distribution, migration and grouping; cytological study of growth, production of pollen and egg-cells, fertilization, hybridization and seed formation; one practical paper each semester, cytology of plant breeding and the botany of a group of economic plants for horticultural students, plant adaptations and the life history of a forest for forestry students.
3. **PHYSIOLOGY AND ECOLOGY**                      PROFESSOR CLEMENTS AND MR. HUFF  
Six credits (six hours per week)                      First and second semesters  
Open to juniors.  
Study of the factors which make the plant's home, viz., water, light, soil, heat, etc.; response of the plant to its home, absorption, transport, water-loss, food-making, storage, growth, fertilization and reproduction; adaptation of plants to their various homes, and the origin of new forms by selection, adaptation, mutation and hybridization; structure and development of vegetation, i. e., grouping, migration, competition, acclimatization, invasion, succession, zonation, etc. of plants; one practical paper each semester on selected topics, e. g., acclimatization, adaptation, origin of new forms, vegetation of Minnesota, of North America, etc.
7. **FLOWERING PLANTS**                      ASSISTANT PROFESSOR ROSENDAHL  
Six credits (six hours per week)                      Both semesters  
Open to those who have completed courses 1 and 2; the laboratory fee is three dollars per semester.  
The course is designed to afford the student an opportunity to become proficient in the determination of plant species and plant types, as well as to show the genetic development and relationships of the flowering plants. Lectures, reference reading, laboratory, greenhouse and herbarium work, together with field work in the fall and spring.

8. **ECOLOGY** PROFESSOR CLEMENTS  
Six credits (six hours per week) Both semesters  
Open to those who have completed courses 1, 2 and 3; the laboratory fee is three dollars per semester.  
A critical study of plant habitats by means of instruments, and the adaptations produced by water and by light, together with a careful examination of the causes and reactions of plant formations. Class discussions and quizzes, field and greenhouse work.
9. **PLANT PHYSIOLOGY** PROFESSOR CLEMENTS  
Six credits (six hours per week) Both semesters  
Open to those who have completed courses 1, 2 and 3; the laboratory fee is three dollars per semester; alternates with course 8.  
A study of the relations of factor, function and structure in the various organs of the plant, with special reference to absorption, transpiration, photosynthesis, respiration, irritability, and reproduction. Class discussions and quizzes, greenhouse and field work.
11. **INDUSTRIAL BOTANY** ASSISTANT PROFESSOR TILDEN  
Six credits (six hours per week) Both semesters  
Open to technical students who have completed course 1 and to academic students who have completed courses 1 and 2; the laboratory fee is three dollars per semester.  
A study of the origin, distribution and cultivation of plants, yielding products of economic value, the nature and use of these products, and the processes by which they are obtained from the plants. Lectures, demonstrations, topics and laboratory work.

### VEGETABLE PATHOLOGY AND BOTANY

1. **PLANT PATHOLOGY** PROFESSOR FREEMAN  
Six credits (six hours per week) First and second semesters  
Open to juniors.  
General outline of the diseases of plants due to fungus organisms; a special study of the life histories and classification of the most important plant diseases, particularly those affecting economic plants of Minnesota. Thesis work and specialization according to the interests of the students; for instance, for forestry students, diseases of forest trees; for agronomy students, diseases of cereal crops, etc. Special attention is paid to methods of prevention and cure. Lectures, reference reading, laboratory and thesis work.
2. **WOOD TECHNOLOGY** PROFESSOR FREEMAN  
Three credits (six hours per week) Second semester  
Open to sophomores in forestry course.  
A comprehensive study of the structural features of types of the most important woods of commerce; special reference to the woods of the United States, and particularly those of this state. Structural development in the life of the tree. Physical and mechanical characters as related to the structural features. A comparative study of a large number of woods with a view to identification and classification. Thesis work on the detail studies in the histology of woods.

### DAIRY HUSBANDRY AND ANIMAL NUTRITION

1. **DAIRY STOCK AND DAIRY FARM MANAGEMENT** PROFESSOR HAECKER  
Three credits, elective (three hours per week)  
The lectures cover a brief history of the dairy breeds. The fundamental principles of breeding for milk production, the rearing of

dairy stock with the object of developing the highest efficiency in the mature animal and the study of the gross anatomy of the dairy cow in its relation to milk production, form essential features of the course. One hour per week is given in tracing pedigrees and in practice work in the management, care and judging of dairy stock.

2. **BUTTER MAKING** PROFESSOR HAECKER AND ASSISTANTS  
(Four hours per week)  
The running of separators; ripening and churning of cream; how to ripen cream to secure best flavor; how to churn, wash and salt butter so as to avoid specks and mottles; to secure good grain and best methods of preparing for market—are some of the points which receive special attention. As all creamery men should be able to judge butter from a commercial standpoint, students are trained daily in the art of scoring butter by the score card.
3. **PRINCIPLES OF ANIMAL NUTRITION** PROFESSOR HAECKER  
Three credits (three hours per week) First semester  
Open to juniors.  
Lectures and class room work. The principles of nutrition and their relation to the economic production of animals and animal products form the basis of this course. Practice work is given in formulating and compounding rations, in the study of the comparative value of food stuffs and other problems relating to feeding.
4. **FACTORY DAIRYING** PROFESSOR HAECKER  
Elective Second semester  
Open to juniors.  
This is offered during the session of the dairy school, beginning November 18th. Lectures in the forenoon on dairy bacteriology, dairy chemistry, the care of milk and cream, lactic cultures, flavors, cleaning milk, cream ripening and churning, working and packing butter. In the afternoon, students are given two and a half periods' practice in the factory training rooms and in the dairy laboratory.
5. **NUTRITION RESEARCH** PROFESSOR HAECKER  
Three credits (elective) First semester  
Open to seniors.  
Seminar and laboratory work in the study of animal nutrition problems. This course is open to advanced students and is offered during the last half of the first and the first half of the second semester. The student is required to become familiar with the literature of some phase of animal nutrition, outline and conduct an investigation under the supervision of the instructors of the department, and prepare a suitable report of the investigation. The object of this course is to familiarize the student with the methods employed in the study of animal nutrition problems.

## DOMESTIC ART

1. **ELEMENTARY SEWING** MRS. BLAIR  
(Four hours per week) First and second semesters  
Open to freshmen registered in division B.  
Instruction is given in hand-sewing, including the different stitches, hems, seams, gussets, plackets, fastenings and the various kinds of darning and patching, taking up the practical application of each. Talks are given on the use and care of the work basket, touching upon the history of its implements, and upon the textiles, cotton, wool, silk and linen.
2. **DESIGNS IN DRAFTING** MRS. BLAIR  
Four credits (four hours per week) First and second semesters  
Open to sophomores.  
Each student is given instruction in designing, drafting, cutting and making of children's garments, also underwear for adults. The drafting is taught by a simple method in which only a tape

line and square are used. Lecture work deals with the selection of suitable material and the care of the underwear.

3. **TEXTILES** Mrs. BLAIR  
 Three credits (three hours per week) Second semester  
 Open to juniors.  
 A course in textiles is also given the first semester. This includes the study of cotton, linen, flax and wool, the manufacture of the different materials. The student is required to make a note-book containing sample of each material as it is studied.
4. **ADVANCED DESIGNING, DRAFTING, ETC.** Mrs. BLAIR  
 Six credits (six hours per week) First and second semesters  
 Open to juniors.  
 Instruction is given in designing, drafting, fitting and finishing a gown; also a color study from nature in reference to harmony of color in dress. Lectures are given upon proper dress, its style, neatness and suitability to the wearer.  
 Practice Teaching.
5. **HOUSEHOLD ART** Mrs. BLAIR  
 Three credits (three hours per week) First semester  
 Open to juniors.  
 Household art lectures are given upon house and grounds, noting the distinctive character of the country home; the sanitary conditions involved in the selection of the site of the house; also the influence of the outlook, an elementary study of architecture in connection with planning a house; instruction in the fundamental value of color, form and design; training the taste and emphasizing the laws of hygiene that should influence the selection of materials and styles in the finishings and furnishings of the house.
6. **HANDICRAFT** Mrs. BLAIR  
 Three credits (six hours per week) Second semester  
 Open to seniors.  
 Pottery, basketry, leather work, weaving, crocheting and knitting are taken up in this course and studied in their simpler forms.

### DOMESTIC ECONOMICS

1. **HOME ECONOMICS** Mrs. BOUTELLE  
 (Three hours per week) First semester  
 Open to freshmen registered in division B.  
 This course deals with the problems of economics arising in the home; generic lines of expenditure; values; business methods; standards of living; constructive agencies for economic betterment in the home; lectures, problems and recitations.
2. **EVOLUTION AND ADMINISTRATION OF THE HOME** Mrs. BOUTELLE  
 Three credits (three hours per week) First semester  
 Open to juniors.  
 The home as a social and economic institution and its evolution from primitive conditions; evolution of industrial, social, religious and economic influences in the home; the relation of the home to civic life. The organization and maintenance of a home; the home as a place and an opportunity for the right development of the physical and spiritual natures; lectures, problems and recitations.
3. **DOMESTIC HYGIENE** DR. MOORHEAD  
 (First nine weeks) Second semester  
 Open to freshmen registered in division B.  
 Several lectures will be given upon maidenhood, maternity and infancy. These special lectures will be supplemented by the regular lectures which consider the health of the family as dependent upon pure food, pure water, personal cleanliness and proper habits as well as upon heredity. The aim is to impress the truth that a knowledge of and obedience to the laws of hygiene are essential to the preservation as well as the restoration of health.



## DOMESTIC SCIENCE

1. **ELEMENTARY DOMESTIC SCIENCE** MISS SHEPPERD  
 (Four hours per week) First and second semesters  
 Open to freshmen registered in division B.  
 Fuels. Composition, source and available power for household use are considered together with various appliances used in the culinary art.  
 Cooking. The composition, digestibility, food and money value of vegetables, cereals, breads, are carefully studied, and possible losses in preparing and cooking are elaborated by the use of suitable laboratory exercises. The cooking of vegetables, cereals, breads, fruits, jellies, pickles, preserves, etc., are special topics considered.  
 Research work is directed largely toward acquiring reliable data regarding the composition, digestibility, comparative food and money values of such materials as are used in the bi-weekly laboratory practice.  
 Laundering. During the first half of the second semester the principles of laundering are taken up; removing stains, dyeing, bleaching, etc., as well as the right use of chemicals and machinery in the laundry receive due attention. The comparative value of starches and bluing is studied. The use of hand and commercial laundry machinery is taught by means of demonstration, observation and reading, text-books, lectures, assigned readings and recitations.
  
2. **DOMESTIC SCIENCE** MISS SHEPPERD  
 Two credits (four hours per week) First semester  
 Open to sophomores.  
 The library reading and class room discussions are limited to reliable data, and the practical work aims to illustrate ways in which foods may be best prepared and served.
  
3. **DOMESTIC SCIENCE** MISS SHEPPERD  
 One credit (one hour per week) Second semester  
 Open to sophomores.  
 Instruction consists of discussions in regard to the conditions necessary to healthfulness; the general application of sanitary principles in relation to food, air and water; care of plumbing; heating, lighting and ventilating apparatus; disposal of kitchen waste, etc.
  
4. **BACTERIOLOGY** DR. BEEBE  
 One credit (one hour per week, nine weeks) Second semester  
 Open to sophomores.  
 Lectures once a week during the second semester of the sophomore year. Domestic bacteriology; bacteriology of the common infectious diseases.
  
5. **DOMESTIC SCIENCE** MISS SHEPPERD  
 Four credits (four hours per week) First and second semesters  
 Open to juniors.  
 Students practice teaching under supervision and independent practice in preparing and serving meals. The object of the former is to train students to teach successfully under varied conditions, thus enabling them to acquire ability to lead pupils to work rapidly, quietly, harmoniously and successfully. The object of the practice work is to ensure an understanding of approved methods and attain efficiency in performing and supervising such work. Special attention is given to methods of teaching. Students are required to elaborate syllabi of lessons on certain topics such as water, air, etc. General information concerning their class work in practice teaching is required in the form of an itemized account, i. e., kind and amount of materials used, number of students present, cost of lessons, etc. The practice teaching must cover at least twenty recitations. Library reading, observation, text book, lectures and discussions.

6. DOMESTIC SCIENCE MISS SHEPHERD  
 Six credits (four hours per week) First and second semesters  
 Open to seniors.  
 The dining room in its different phases of equipment, care, etc.; labor saving devices and the possible application of business methods in house-keeping receive due consideration. Independent teaching with as much practice as possible in selecting food materials at the market, preparing and serving with limited means.  
 This is the culmination of the student's school work and each is expected to show her ability to use knowledge by preparing floor plans showing equipment, with details for construction and tentative cost of a laboratory kitchen as well as to make lesson outlines, practice their use and revise and perfect them as far as possible.

### DRAWING

1. MECHANICAL DRAWING MR. A. M. BULL  
 (Four hours per week) First semester  
 Open to freshmen registered in Division B.  
 The student is taught the practical value of drawing for the purpose of designing and arranging buildings, machinery, etc. He makes drawings of the shop exercises, then works from his own drawings, thereby learning the application.  
 Designs are made for dwellings, barns, outbuildings, and machinery. As practical subjects for their designs, students are requested to bring from home data for plans of buildings needed on their farms. Estimates are made of the amount of material required and cost of construction.
2. FREE-HAND DRAWING MISS CLOPATH  
 (Four hours per week) one-half semester Second semester  
 Open to freshmen.  
 The study of nature forms, including drawings from plants, landscape, animals and from figures posed. The study of perspective and drawing from objects. Exercises in composition.
3. DESIGNING MISS CLOPATH  
 Two credits (four hours per week) Second semester  
 Open to juniors.  
 Exercises in the various forms of decorative work. Adaptation of plant forms, stencils, lettering. Original designs in different styles for articles of household use. Lectures on composition and principles of design.
4. TOPOGRAPHICAL DRAWING MR. A. M. BULL  
 Three credits (six hours per week) First semester  
 Open to sophomores.  
 Topographic drawing and mapping; exercises in lining and lettering, tracing and blue printing.
5. TOPOGRAPHICAL DRAWING MR. A. M. BULL  
 Three credits (six hours per week) Second semester  
 Open to sophomores.  
 Topographical drawing and mapping, platting, landscape designing.

### ECONOMICS

1. ELEMENTS OF ECONOMICS PROFESSOR ROBINSON, DR. PHELAN  
AND MR. COULTER  
 Three credits (three hours per week) Repeated each semester  
 Open to sophomores, juniors, and seniors; designed for those who desire a general knowledge of economics and as an introduction to the more advanced courses offered in the department. Required of all taking the six year medical course.  
 A thorough course in the elements of economic theory, with special reference to present day economic and social problems. McVey's *Outline* and a text-book, supplemented by lectures and problems, with a weekly quiz.

2. **ECONOMIC GEOGRAPHY** PROFESSOR ROBINSON  
 Three credits (three hours per week) First semester  
 Open to sophomores, juniors, and seniors.  
 A study of the economic basis of modern civilization. The course embraces (1) a brief survey of the history of commerce prior to the modern period; (2) an analysis of the causes, both in nature and man, which control the development and the localization of industry and commerce; (3) a summary view of the development of transportation in relation to commerce; (4) some mention of the principal materials of commerce; and, (5) a more detailed consideration of the natural resources, chief industries, commercial products, and commercial relations of the leading countries. Special attention is given to the United States and to international trade routes, both by land and sea. Text-book, supplemented by lectures, reports on special topics, and quiz.
3. **MODERN INDUSTRIAL AND COMMERCIAL HISTORY** PROFESSOR GRAY  
 Three credits (three hours per week) Both semesters  
 Open to sophomores, juniors, and seniors; may be taken in conjunction with course 1 or course 2; both semesters must be completed before credit is given for the first semester.  
 The industrial and commercial history of western Europe and America since the middle of the eighteenth century. The effects of modern inventions and political changes on industry and trade. Lectures with prescribed topical readings. One written report of considerable length will be required each semester.
4. **ADVANCED ECONOMICS** PROFESSOR ROBINSON  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 1; required for a major in economics.  
 An advanced course in general economics, devoted largely to a study of recent theories of distribution.  
 Assigned readings, reports, and discussions.
5. **MONEY AND BANKING** DR. PHELAN  
 Three credits (three hours per week) Repeated each semester  
 Open to those who have completed course 1.  
 The history and theory of money; nature and uses of credit; functions of banks, trust companies, and other financial institutions; foreign exchange and the settlement of international balances. Lectures, text-book, assigned readings, and discussions.
23. **FINANCIAL HISTORY OF THE UNITED STATES** DR. PHELAN  
 Three credits (three hours per week) Second semester  
 Open to those who have completed courses 1 and 5.  
 The main lines of our financial development, including our monetary and banking history, are traced by means of lectures. Readings in the literature of the subject and topics for investigation are assigned. Lectures, text-book, assigned readings, and discussions.
6. **PUBLIC FINANCE** PROFESSOR ROBINSON  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1.  
 The development of the state as an economic organism. Public expenditures from the view point of public wants. Budget systems of the leading countries with special emphasis on the United States. Public revenues from public domains and industries. Principles, incidence, and administration of taxation. The theory of public debts. Text-books, supplemented by lectures and assigned readings.
7. **PROBLEMS IN TAXATION** PROFESSOR ROBINSON  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 6.  
 Study of tax systems, tax reforms, and special forms of taxation, such as the mortgage, corporation, and inheritance taxes.

Based on Seligman, *Essays in Taxation*, and reports of state tax commissions with lectures and reports on special topics.

3. ECONOMICS OF TRANSPORTATION AND COMMUNICATION

PROFESSOR ROBINSON

Three credits (three hours per week) Second semester  
Open to those who have completed course 1 and to students in the technical colleges.

A general course on the history and theory of transportation and communication with special reference to the United States; early routes and methods of migration and commerce; causes determining the location of railways; effect of steam and electricity in the consolidation of industries and of nations; signal systems, the post, telegraph and telephone; parcels post and express service; economic functions and relations of highways.

14. ECONOMICS OF AGRICULTURE

MR. COULTER

Three credits (three hours per week) Second semester  
Open to those who have completed course 1 or course 2, and to others by special permission of the instructor.

Preliminary survey and classification of industries as extractive, manufacturing, and distributive; and comparison of the several extractive industries in the United States, viz., fishing, forestry, grazing, farming, and mining. Historic development of agriculture and comparison of existing systems, with reference to stage of economic development and geographic conditions. Transition in the United States from extensive to intensive and from general to specialized farming in relation to the law of decreasing returns. Markets, transportation facilities, and other causes affecting the value of land and the prices of farm products. The size, organization, labor-system, and ownership of farms as bearing on economic efficiency and social and political conditions. Lectures, assigned readings, reports on special topics and quiz.

23. ECONOMICS OF FORESTRY AND IRRIGATION

MR. COULTER

Three credits (three hours per week) First semester  
Open to those who have completed course 1 or course 2.

Preliminary survey of forest controls and forest influences. In this connection, special attention to the progress of the national irrigation works in relation to economic development, land laws, and land tenure. Location and value of the extant forest resources of the United States. Intensive study of the forest industry, covering: (1) history and processes, (2) employees, (3) division into stages (logging, sawing, etc.), (4) internal organization of each, (5) transportation and marketing, (6) economic relations to other industries, (8) share of forest products in foreign commerce, (9) economic necessity of a scientific system of forestry. Lectures, assigned reading, and reports.

EDUCATION

Course 1 in philosophy and courses 1 and 2 in education are specified as necessary for the University Teacher's Certificate. One other three-hour course for a half year is required for this certificate, and is elective from the courses in education.

1. HISTORY OF EDUCATION TO THE REFORMATION

ASSISTANT PROFESSOR SWIFT

Three credits (three hours per week) First semester  
Open to juniors and seniors.

An introductory study in the history of education conducted by means of lectures, assigned readings, discussions and reports. The purpose of the course is to arouse an interest in educational problems, to secure some perspective for use in current investigation, with some command of the facts of educational history, and some ease in the methods of historical study. An attempt is made to bring out education as one phase of civilization and to show the connection of schools with other

social institutions. Attention will be given especially to an examination of the schools of Greece and of Rome, the education of the early Christian centuries, the development of different types of schools in Medieval times, the rise of the university and of the humanistic schools of the Renaissance.

2. HISTORY OF MODERN EDUCATION ASSISTANT PROFESSOR SWIFT  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have taken course 1 in education.  
 A somewhat intensive study of the periods in the history of modern education, with special reference to the development of the various national systems of public instruction. Different types of educational theory are considered in connection with a study of the men who first advanced them, and of the schools in which they were first put into effect. This course is a direct preparation for an understanding of the educational systems, theories, and practices of the present.

### ENTOMOLOGY

1. GENERAL ENTOMOLOGY PROFESSOR WASHBURN  
 (Three hours per week) First semester  
 Open to freshmen registered in division B.  
 Structure and classification of insects. The dissection of type, life history and habits of leading forms. Each student is required to make a collection of at least fifty insects.
2. ECONOMIC ENTOMOLOGY PROFESSOR WASHBURN AND MR. RUGGLES  
 Three credits, elective (three hours per week) First semester  
 Lectures upon injurious insects of Minnesota, and best methods of combating the same. The use of insecticides and spraying machinery. Beneficial insects.
3. FOREST ENTOMOLOGY PROFESSOR WASHBURN AND MR. RUGGLES  
 Three credits (six hours per week) First semester  
 The students in this course must have a thorough, practical training in elementary entomology and economic entomology in order to put into practical use in field work the principles to be learned in both of these courses. The student will be directed in a special study of insects affecting the forest and will be encouraged in doing field work, collecting, identifying, and in the life history of forest insects.  
 Open only to students in the forestry course.
4. COMPARATIVE ANATOMY AND HISTOLOGY OF INSECTS MR. RUGGLES  
 Three credits, elective (six hours per week)  
 A detailed study of structure of representatives of different orders of insects.
5. ELEMENTS OF BEE KEEPING PROFESSOR WASHBURN  
 One credit Second semester  
 Open to juniors and seniors.  
 One lecture a week and work in apiary during spring term.  
 Offered to those qualified for the work.
6. SPECIAL PROBLEMS (elective) PROFESSOR WASHBURN  
 For graduate students only First or second semester

### FARM STRUCTURES AND FARM MECHANICS

1. CARPENTRY MR. WHITE  
 (Four hours per week) First semester  
 Open to freshmen registered in division B.  
 Instruction is given by means of lectures on the care and use of the common carpenter tools, such as should be found on every farm; also on methods of farm building construction, framing, laying out rafters, stairways, estimating building material, painting, etc. In the carpenter shop students are

required to make such exercises as will give them some practice in using carpenter tools. They are required to make mortise joints, splices, drawing boards, hammer handles, eveners, cup-boards, etc.

Each student is required to file his own saws, sharpen his planes, chisels, etc., and to lay out rafters for buildings.

2. **BLACKSMITHING** Mr. DREW  
 (Four hours per week) Second semester  
 Open to freshmen registered in division B.  
 The students are instructed in the management of the forge and fire, and in bending, shaping and welding iron and steel. They are required to make links, rings, hooks, bolts, clevises, whiffle-tree-irons, tongs, cold chisels, punches, in short to become familiar with all the operations necessary to enable them to do their own repair work when they return to the farm. Particular attention is given to rapid and accurate welding and to the shaping and tempering of steel tools. The forges used are such as any farmer can make for himself, and each student is taught to make his own tools, so that he will be able to furnish his shop with very little outlay.
  
3. **CARPENTRY FOR FORESTERS** PROFESSOR W. BOSS  
 Three credits Second semester  
 Open to juniors.  
 Lectures and practice work on care and use of tools used in lumbering; saw filing; construction of camp buildings, bridges, etc.
  
4. **FARM STRUCTURES** PROFESSOR W. BOSS  
 Three credits (three hours per week) Second semester  
 Open to juniors.  
 Lectures and practice work are given in laying out plans for farm buildings. The questions of location, size, convenience, methods of construction, materials, heating systems, water systems, ventilation, sewage disposal, painting, durability, cost, etc., are discussed.
  
5. **FARM STRUCTURES** PROFESSOR W. BOSS  
 Three credits (three hours per week) First semester  
 Open to seniors.  
 The practical application of principles given in course 1. Each student selects an imaginary or real farm and makes drawings showing location of buildings, drives, yards, fences, etc., paying particular attention to locating each building properly and planning them so as best to meet the requirements of each individual farm and the means at hand for erecting them. Specifications and estimates of cost of buildings are also made.
  
6. **FARM STRUCTURES** PROFESSOR W. BOSS  
 Three credits (three hours per week) Second semester  
 Open to juniors.  
 Lectures and practice work in drawing. Location of farm buildings, drives, yards, etc., architectural designing, the study of plans, fittings and equipment; heating systems, ventilation, floors and wood work, painting and decorations.
  
7. **FARM STRUCTURES** PROFESSOR W. BOSS  
 Three credits (three hours per week) First or second semester  
 Open to juniors and seniors.  
 The practical application of the principles outlined in course 3. Each student is required to lay out plans for an imaginary or real house, paying particular attention to location, sanitary conditions, heating, ventilating and general convenience.

## FORESTRY

1. **GENERAL FORESTRY** ASSISTANT PROFESSOR DETWILER  
 Three credits (three hours per week) First semester  
 Open to freshmen.  
 This course is intended to give the student an outline of the possibilities of forestry work and an idea of the forestry problems to be solved in this country. Considerable attention will be devoted to the sylvics of the trees suited to Minnesota climate; the establishment of nurseries; the planting and care of windbreaks and groves, especially on the prairies.
2. **SYLVICS** ASSISTANT PROFESSOR DETWILER  
 Three credits First semester  
 Open to juniors.  
 The study of the fundamental principles which form the basis of silviculture, including the relation of forests to soil, climate and other factors which influence tree growth. Methods of silvical research, characteristics and habits of important trees. Lectures and collateral reading.
3. **SYLVICULTURE** ASSISTANT PROFESSOR DETWILER  
 Four credits Second semester  
 Open to juniors.  
 Methods of crop production and reproduction; care and improvement of the forest; silvicultural practice in the United States and abroad. Special work in silvicultural studies and the making of forest descriptions. Lectures, assigned reading and field work.
4. **FOREST PLANTING** ASSISTANT PROFESSOR DETWILER  
 One credit.  
 Open to seniors. (In Itasca Park)  
 Preparation of planting plans and notes on results of planting. Practical instruction in seed collecting, nursery practice, sowing and planting. Lectures and field work.
5. **MENSURATION** ASSISTANT PROFESSOR CHEYNEY  
 Four credits (In Itasca Park)  
 Open to juniors.  
 Determination of the rate of growth and volume of single trees and of stands; construction of volume and yield tables. The measurement of logs and lumber. Compilation of statistics. Lectures, recitations and problems.
6. **SURVEYING** PROFESSOR STEWART  
 Four credits (In Itasca Park)  
 Open to juniors.  
 Theory of land surveying and drill in the use and the care of the transit, level, plane table, etc. The student will be made familiar with approved methods of field work, particularly in running boundaries, topographic surveying and reconnaissance. Lectures and field work.
7. **PROTECTION** ASSISTANT PROFESSOR CHEYNEY  
 Three credits First semester  
 Open to juniors.  
 Practical measures for the protection of forests against fire, insects, grazing, etc. Protection of water right and regulations of stream flow. Lectures and field work.
8. **GAME PROTECTION AND FISH CULTURE**  
 One credit.  
 Open to seniors (nine weeks) Second semester  
 Habits, range, usefulness and manner of protecting the important large and small game, fish and birds of the United States.

9. **FOREST MANAGEMENT** ASSISTANT PROFESSOR CHEYNEY  
 Three credits First semester  
 Open to seniors.  
 This course includes forest valuation. The calculation of soil rent, forest rent and the value of growing stock; the values of even and uneven stands; the different methods of managing forest properties and the principles underlying them. Lectures, assigned reading and problems.
10. **LUMBERING** ASSISTANT PROFESSOR CHEYNEY  
 Three credits First semester  
 Open to seniors.  
 History of logging in the United States, together with the different methods used in the different forest regions; cruising, location of camps, building of roads, felling trees, skidding and transportation of the logs from the woods to the mill. The marketing and utilization are treated elsewhere. In connection with this course, the student is obliged to hand in a lumbering report based on data collected by him at some lumbering camp. This requires an excursion of about two weeks. Lectures and collateral reading.
11. **FORESTS OF THE UNITED STATES AND WORLD** ASSISTANT PROFESSOR DETWILER  
 One credit  
 Open to sophomores.  
 Closely follows forest physiography and metrology. Includes a brief description of the forests of the world including their distribution and chief characteristics. Detailed description of the forests of the United States with types and species of the different regions. Lectures and collateral reading.
12. **LUMBER GRADING** ASSISTANT PROFESSOR CHEYNEY  
 (Nine weeks) Second semester  
 Open to juniors.  
 The part which it plays in the lumber industry; methods and organization leading to uniformity. Study of the rules adopted by the Northern Pine Manufacturers' Association. Several excursions are made to the mills of Minneapolis to study grades and grading in the yards.
13. **MAPPING** PROFESSOR STEWART  
 Two credits  
 Open to seniors. (In Itasca Park)  
 Completion of a set of boundary, topographic, type, block and stand maps in connection with and based on data from working plans.
14. **ADMINISTRATION** ASSISTANT PROFESSOR DETWILER  
 One credit  
 Open to seniors. (In Itasca Park)  
 A study of the organizations necessary for the management of forest properties; federal, state, corporation and private.
15. **FOREIGN FORESTRY** PROFESSOR GREEN  
 One credit  
 Open to seniors. (In Itasca Park)  
 The development and present status of forestry in foreign civilized countries. Lectures.
16. **SEMINARY** ASSISTANT PROFESSORS CHEYNEY AND DETWILER  
 Three credits First semester  
 Open to seniors.  
 This is not, as the term generally implies, a class for the prosecution of original research work, but for the purpose of systematically reviewing the whole field of forestry and studying the concrete application of the different branches. Assigned questions and problems. Discussions.



17. **WORKING PLANS** ASSISTANT PROFESSOR CHEYNEY  
 One credit  
 Open to seniors. (In Itasca Park)  
 This subject will be given in the woods. A course of lectures paralleling the field work will deal with the principles and methods involved. Each class will be obliged to work out a complete plan including surveys, silvicultural plans, estimating, yield tables, maps and systems of management. Lectures and field work.
18. **THINNING** ASSISTANT PROFESSOR DETWILER  
 Four credits  
 Open to juniors. (In Itasca Park)  
 This course is designed to teach the student the principles underlying thinning operations and the tending of forests. Besides the class room work, there will be two months of field lectures and actual practice in marking. Lectures and field work.
19. **PACKING** (In Itasca Park)  
 Open to juniors.  
 Demonstration and practice under direction in the packing of wagons, boats, canoes, pack animals and pack sacks. Field lectures and practice.
20. **ROAD BUILDING** PROFESSOR STEWART  
 Open to juniors. (In Itasca Park)  
 Elementary principles of the science of road building. Rough field methods of laying out and constructing wood roads and trails; building bridges, etc. Lectures and field work.
21. **ESTIMATING TIMBER**  
 Two credits  
 Open to seniors (In Itasca Park)  
 Duties of the cruiser, his methods, and the value of his results. Particular attention will be given to the best methods for use in a forest reconnaissance. Lectures and field practice.
22. **MARKET** ASSISTANT PROFESSOR CHEYNEY  
 One credit  
 Open to seniors (first nine weeks) Second semester  
 General studies of the lumber market. Conditions of the market at present and methods which would tend to its betterment and greater stability in the future. The demands of the market and how they are supplied.
23. **SAW MILLS** ASSISTANT PROFESSOR CHEYNEY  
 One credit  
 Open to seniors (first nine weeks) Second semester  
 Capital invested, machinery used, methods, cost of operation, and output of portable and stationary mills. Studies will be made of the modern mills of Minneapolis.
24. **FOREST ECONOMICS AND FOREST LAW** PROFESSOR GREEN  
 One credit  
 Open to sophomores.  
 The development of forestry in the United States and European countries; the forest conditions here and abroad and their effect upon the lumber industry; forest policies of different governments. Laws in regard to contracts, water rights, roads, fences, legal papers. Legal measures for the prevention of trespass and fire. Text book, lectures and recitations.

## FRENCH

1. **BEGINNING FRENCH** ASSISTANT PROFESSORS ANDRIST AND FRELIN.  
 MADAM BERTIN  
 Ten credits (five hours per week) Both semesters  
 Open to all, but juniors and seniors receive only half credit; both semesters must be completed before credit is given for the first semester; not credited toward a minor in French.  
 Fraser and Squair's *French Grammar and Reader*; modern texts.

2. INTERMEDIATE FRENCH ASSISTANT PROFESSOR FRELIN AND  
MADAM BERTIN  
Six credits (three hours per week) Both semesters  
Open to sophomores, juniors and seniors who have completed course 1; both semesters must be completed before credit is given for the first semester.  
*Francois Advanced French Prose Composition*; modern texts will be read, including some of the works of Coppée, Mérimée, Daudet, Scribe, etc.

GEOLOGY

1. GENERAL GEOLOGY PROFESSOR HALL  
Three credits (three hours per week) First semester  
Open to juniors and seniors.  
Comprises: (1) geodynamics, in which are set forth the phenomena of the atmosphere, water, heat, gravity, and plants and animals as geologic agents; (2) structural geology, where-in stratification, displacement and veining of rock masses are described; (3) physiographic geology, pointing out prominent earth features and inquiring into the causes producing them; (4) an outline of historical geology. Conferences and lectures illustrated by photographs, maps, profiles, and lantern slides.
2. ESSENTIALS OF PHYSICAL GEOGRAPHY ASSISTANT PROFESSOR LENHERTS  
Three credits (three hours per week) First semester  
Open to juniors and seniors.  
Discussion of the principles of earth sculpture and description of the structural features of continents, with special reference to the ethnic movements and commercial activities of mankind.
3. INDUSTRIAL GEOGRAPHY ASSISTANT PROFESSOR LENHERTS  
Three credits (three hours per week) Second semester  
Open to juniors and seniors who have completed course 1 or 2.  
The structural features of the North American continent outlined as an introduction. Following this is a study of the types of soil and dominating climatic characters of the several agricultural regions of the continent; a discussion of the geography of industries as they have grown up within the past 100 years and their dependence upon physiographic conditions; a study of local industries effected through excursions and reports. A brief survey of industries in other parts of the world parallels the more detailed study of North America. Throughout the course cause and effect are kept in view.
4. ELEMENTS OF METEOROLOGY ASSISTANT PROFESSOR LENHERTS  
Three credits (three hours per week) Second semester  
Open to juniors and seniors who have completed course 1 or 2.  
The general principles of meteorology are treated, embracing the properties and phenomena of the atmosphere, including an explanation of the ordinary observations of pressure and temperature, together with a more extended study of the apparatus and practice of a weather bureau office. This is followed by a study of storms and climatic elements generally. The conditions of climatic changes are studied and the influence of physiographic conditions are discussed. Text-book, lectures, and reference reading.
5. GEOGRAPHY AND GEOLOGY OF MINNESOTA PROFESSOR HALL  
Three credits (three hours per week) Second semester  
Open to juniors and seniors who have completed course 1.  
(a) The physical geography of the state in its relations to geological history and industrial development. (b) A study of the principles and facts of pre-Cambrian geology as exemplified within the state and the extension of these into general application. (c) The present problems of the state in agriculture, drainage, water power, mining, quarrying, etc., are considered in some detail.

## MINERALOGY

1. ELEMENTS OF MINERALOGY PROFESSOR HALL AND MR. GROUT  
 Three credits (six hours per week) First semester  
 Open to sophomores, juniors and seniors; the laboratory fee is three dollars.  
 (a) The morphology of minerals; the physical and chemical characters of minerals, with demonstrations; a study of the native elements and of economic minerals; the basis of classification. (b) laboratory work; this consists of practice in the recognition of crystal forms, tests illustrating the range of minerals, and the application of chemical and blowpipe analysis to the identification of species.

## GERMAN

1. BEGINNING PROFESSOR SCHLENKER, ASSISTANT PROFESSORS WILKIN AND JUERGENSEN, MR. BURKHARD, AND MR. WILLIAMS  
 Ten credits (five hours per week) Both semesters  
 Open to all, but juniors and seniors receive only half credit; both semesters must be completed before credit is given for the first semester.  
 Pronunciation, grammar, conversation, and composition; selected reading in easy prose and verse.
2. INTERMEDIATE PROFESSOR SCHLENKER, MR. BURKHARD, AND MR. WILLIAMS  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed course 1 or its equivalent; both semesters must be completed before credit is given for the first semester. This course may be supplemented by course 5. It should be followed by course 6 or course 7. Students who obtain credit for this course cannot receive credit also for either course 3 or course 4.  
 First semester, selections from modern narrative and descriptive prose; selected lyrics and ballads. Second semester, a drama of Lessing, Goethe, or Schiller.
3. SCIENTIFIC INTERMEDIATE ASSISTANT PROFESSOR JUERGENSEN  
 Six credits (three hours per week) Both semesters  
 Open to all who have completed course 1; both semesters must be completed before credit is given for the first semester.  
 First semester: Hodge's *German Science Reader* (or equivalent).  
 Second semester: *Brandt and Day's German Scientific Reading*.  
 This course aims to give the student a reading knowledge of German for use in scientific studies.

## HORTICULTURE

1. FRUIT GROWING MR. CADY  
 (Two hours) First semester  
 Open to freshmen registered in division B.  
 Geography of fruit growing, tilling, fertilizing and irrigation of lands; seed sowing; pollination; diseases and injurious insects and their prevention; storing, harvesting and marketing fruits.  
 Lectures and text book.
2. VEGETABLE GARDENING MR. KOHLER  
 (Three hours) half semester Second semester  
 Open to freshmen registered in division B.  
 Geography of vegetable growing, tilling, fertilizing and irrigation of lands; seed sowing; vegetables under glass; pollination; diseases and their prevention; storing, harvesting and marketing of vegetables. Lectures and text books.
3. PLANT PROPAGATION PROFESSOR GREEN AND MR. CADY  
 Last nine weeks Second semester  
 Open to freshmen registered in division B.  
 Development of cultivated varieties of plants and seed testing; propagation of plants by seed, cutting, grafting and budding;

the work of the class room is illustrated by the orchards, nurseries, forest plantation, gardens and greenhouses on the grounds of the experiment station, and by visits to commercial nurseries and greenhouses nearby.

4. NURSERY WORK MR. CADY  
 (Four hours per week) Second semester  
 Open to sophomores.  
 Seedage, layerage, cuttage, graftage, planting, pruning, thinning, storage of nursery stock; tillage of nursery lands; insects and diseases injurious to the nurseries and their prevention. Lectures and practice work.
5. GREENHOUSE MANAGEMENT AND FLORICULTURE PROFESSOR GREEN AND MR. CADY  
 Three credits (elective)  
 Open to juniors and seniors elective.  
 Lectures and laboratory work. Greenhouse construction and management; temperature; soil; watering; benches; propagation; prevention of diseases and extermination of insects in greenhouses; rest and growth periods of plants; plants for greenhouse cultivation.
6. LANDSCAPE GARDENING PROFESSOR GREEN  
 Three credits (elective), (given in 1908-9) Second semester  
 Open to juniors and seniors elective.  
 A general course in the practice and principles of landscape gardening, special attention being given to the planting of small grounds.
7. PLANT BREEDING PROFESSOR GREEN  
 Three credits (elective), (given in 1909-10) Second semester  
 Open to juniors and seniors elective.  
 Lectures and laboratory work. The fact and philosophy of variation; crossing of plants and origination of domestic varieties.
8. SYSTEMATIC POMOLOGY MR. KOHLER  
 Three credits (six hours per week) First semester  
 Open to juniors and seniors elective.  
 Description and classification of the varieties of the various fruits with special reference to those varieties adapted to Minnesota; the identification of varieties; judging of fruits; fruit sections of the country; and a brief study of the fruits not taken up in course 1 with their introduction, cultivation, propagation and distribution.

### MATHEMATICS

1. SECOND PART HIGHER ALGEBRA MR. ROE  
 (Three hours per week) First semester  
 Open to freshmen registered in division A.  
 For those not having an entrance credit in this subject.
2. SOLID GEOMETRY MR. ROE  
 (Three hours per week) First semester  
 For those not having an entrance credit.
3. PLANE TRIGONOMETRY MR. ROE  
 (Three hours per week) half semester Second semester  
 Open to sophomores.  
 Functions of plane trigonometry, use of logarithm tables and numerous applications.
4. FARM ACCOUNTS MR. VYE  
 Two credits, elective (four hours per week) Second semester  
 Open to freshmen registered in division B.  
 The work in accounts is applied to the transactions which the student meets in the various duties on the farm. He is taught to keep his accounts that he may know at any time the profit or

loss of any department of his business and is thus enabled to plan intelligently.

Lectures are given on special features of farm business such as purchasing, selling, co-operation, banks, insurance, commercial, law and methods of obtaining accurate information concerning the farm.

## PSYCHOLOGY

1. **INTRODUCTORY PSYCHOLOGY** PROFESSOR WILDE AND ASSISTANTS  
 Three credits (three hours per week) First semester  
 This course is required for all advanced work in Psychology and for the teacher's certificate; it also serves as an introduction to the courses in philosophy. The purpose of the course is to acquaint the student with the general characteristics and laws of mental life and with the aims and methods of modern psychology. The work involves text books, lectures and essays.
2. **EDUCATIONAL PSYCHOLOGY** ASSISTANT PROFESSOR MINER  
 Three credits (three hours per week) Second semester  
 Open only to sophomores, juniors and seniors who have completed course 1. The study of mental development in its relation to heredity and training. Lectures and student reports on the facts and theories of childhood and adolescence with special reference to their bearing on education.

## PHYSICS

1. **AGRICULTURAL PHYSICS** PROFESSOR STEWART  
 Three credits (six hours per week) Second semester  
 Open to sophomores.  
 This work is carried on by class demonstrations, reference work, discussions and note book records, a part of the work being done by the student in the laboratory.  
 Among the questions treated are the molecular nature of matter, diffusion of liquids and gases, capillarity, etc.; the nature of force, specific gravity, the laws of motion, fluid pressure, weather forecasting, pumps, elevators, pulleys, the principles of draft in the horse, the various causes of draft in wagons and the fundamentals of electricity; rock-forming minerals, their physical properties and composition and their effect in the soil on texture and fertility; specific gravity determinations are made and pore-space calculated and tested and the bearings of these matters on productiveness are taken up.

## RHETORIC

1. **RHETORIC** PROFESSOR LANSING  
 Six credits (three hours per week) First and second semesters  
 Open to all freshmen who have passed the entrance test in English. This course includes the study of formal rhetoric, the writing of compositions, and the study and analysis of masterpieces of prose.
2. **RHETORIC** PROFESSOR LANSING  
 Six credits (three hours per week) First and second semesters  
 Open to sophomores. The course consists of a study of the short story and of the essay and forms of public address. The writing of compositions and the keeping of a note book form a greater part of the work.

## VETERINARY

1. **VETERINARY WORK** PROFESSOR REYNOLDS  
 (Three hours per week) First semester  
 Open to freshmen registered in division B.  
 During the freshman year class B students take up a course of study in veterinary medicine, the purpose of which is to fit them for intelligent care of their farm stock. In this course the teaching is done by means of text book, lectures, reviews,

and clinical work at the hospital maintained for this purpose. Lectures are illustrated by means of stereopticon, charts, manikin of horse, skeletons and various other appliances. The work covers the following subjects elementary anatomy; elementary pathology; cause and prevention of diseases; diagnosis and treatment of common diseases; examination for soundness; and a final short course on common medicines, studying their effects, uses and doses. At the hospital clinics, students are enabled to learn the elements of diagnosis for common diseases and forms of lameness.

2. **ANATOMY** PROFESSOR REYNOLDS  
 One and a half credits (three hours per week) first nine weeks  
 (elective) Second semester  
 Open to juniors and seniors.  
 Comparative anatomy of the digestive organs, dissection, collateral reading and recitation. Chauveau's *Comparative Anatomy* is used for reference and comparison.
3. **BODY NUTRITION** PROFESSOR REYNOLDS  
 One and one half credits (three hours per week) nine weeks  
 (elective) Second semester  
 Open to juniors and seniors.  
 This is an advanced study of the veterinary physiology of digestion, taking up the digestive fluids, nervous mechanism of digestion, absorption and digestion of grains and fodders. It also includes a study of body nutrition, body income and expenditures, sources of heat supply and heat loss, and metabolism. Veterinary Physiology, by F. Smith, is used as a text and guide for this work but students are required to do collateral reading.
4. **ADVANCED ANATOMY** PROFESSOR REYNOLDS  
 One and one-half credits (six hours per week) first nine weeks  
 (elective) Second semester  
 Open to juniors and seniors.  
 This course deals with the anatomy of locomotion. The bones, articulations and muscles involved in locomotion and conformation are studied by text book- dissection and collateral reading. Shoeing, diagnosis and treatment of common forms of lameness may be included in course 3. Strangeway's *Veterinary Anatomy* is used as a text book and Chauveau for reference.
5. **COMMON DISEASES** PROFESSOR REYNOLDS  
 One and one-half credits (three hours per week) Second semester  
 Open to juniors and seniors as an elective.  
 This course covers causes, prevention, and deals with common and serious diseases of domestic animals.

## ZOOLOGY

1. **GENERAL ZOOLOGY** PROFESSOR SIGERFOOS, ASSISTANT PROFESSOR  
OESTLUND, BROWN, DOWNEY, AND MR. JOHNSON  
 Six credits (six hours per week) Both semesters  
 Open to all; the laboratory fee is three dollars per semester.  
 This course is a comparative study of the principles of structure, physiology, and development in animals. In the laboratory a brief study of insects and the dissection of the frog are used as a practical introduction to the course. Then follow a study of cell structure and cell division, a systematic study of representatives of the chief phyla or branches of the animal kingdom, and a study of the elements of embryology as illustrated by the development of the star fish and chick. Lectures, quizzes, and laboratory work. Text-book required: Hertwig's *Manual of Zoology*.
2. **MORPHOLOGY OF INVERTEBRATES** PROFESSOR SIGERFOOS AND MR. JOHNSON  
 Six credits (six hours per week) Both semesters  
 Open to those who have completed course 1; both semesters must

be completed before credit is given for the first semester; the laboratory fee is three dollars per semester.

The object of this course is to familiarize the student with the methods and principles of zoology through an intensive study of two or three groups of animals and to acquaint him with the minor phyla not considered in course one. During the year 1908-9 the Protozoa and Crustacea will be the groups especially taken up.

3. ESSENTIALS OF HISTOLOGY AND EMBRYOLOGY PROFESSOR NACHTRIEB  
AND ASSISTANT PROFESSOR DOWNEY

Six credits (six hours per week) Both semesters  
Open to those who have completed course 1; the laboratory fee is three dollars per semester.

In this course are taken up the development and minute structure of the animal as an organism built up of tissues combined into organs, and the student is given practice in general methods, technique, and the use of apparatus. The course prepares directly for most of the advanced courses. Lectures, quizzes, and laboratory work.

4. COMPARATIVE ANATOMY OF VERTEBRATES ASSISTANT PROFESSOR BROWN  
AND MR. JOHNSON

Six credits (six hours per week) Both semesters  
Open to those who have completed course 1 or its equivalent; both semesters must be completed before credit is given for the first semester; the laboratory fee is three dollars per semester.

The first semester's work is based upon a study of chordates, cartilaginous and bony fishes and all classes up to mammalia; the second semester to a detailed study of the cat and comparative studies of the rabbit, sheep, and man. Lectures, quizzes, and laboratory work. Required text-books: Davidson's *Mammalian Anatomy* and *Burkholder's Anatomy of the Brain*.

5. GENERAL PHYSIOLOGY PROFESSOR NACHTRIEB  
Both semesters

Six credits (three hours per week)  
Open to those who have completed course 1; both semesters must be completed before credit is given for the first semester.

In the first semester are considered the physical, structural, and functional features of living substance; the cell, present conditions, and expressions of life; and the theories of the origin of life and death. Demonstrations and simple experiments constitute an essential part of the course in both semesters.

In the second semester the life of the cell is considered in its relations to that of other cells and the course is concluded with special reference to the teaching of physiology in high schools.

## Students

### GRADUATE STUDENT—1.

Gaumnitz, Carl, St. Cloud.

### SENIORS—7.

Amslie, George G., Rochester.	Erwin, May, St. Anthony Park.
Canavarro, Georges de Souza, Honolulu, Hawaii.	Hobart, Inez M., Minneapolis.
Cooper, Thomas P., Minneapolis.	White, Hall B., Winnebago.
	White, William, Camden, N. J.

### JUNIORS—11.

Bergstrom, Chester H., Minneapolis.	Orr, George R., Michigan City, Ind.
*Bohn, Carl F., St. Paul.	Paterson, Thomas G., Wayzata.
Carroll, Harry B., Jr., St. Paul.	Peterson, Elvin L., Olivia.
Hartzell, Mary K., Minneapolis.	Underwood, Clarence, Hutchinson.
Miller, Ralph C., Minneapolis, Sta. F., R. 1.	Ware, John F., St. Anthony Park.
	West, Ralph L., Minneapolis.

### SOPHOMORES—24.

Benson, Arnold O., Glenwood.	Laate, Gurid, St. Anthony Park.
Benzin, Basil, Russia.	Lathrop, Elbe A., Hugo.
Berry, J. Bert, St. Paul.	Lewis, Charles L., Jr., St. Paul.
Chator, Fred W., Minneapolis.	Marsden, Edith Viola, Edgerton, Wis.
Crandall, Leroy V., Red Wing.	Merrill, Alfred S., Minneapolis.
Crimmins, Ellen May, Minneapolis.	Pond, Harold H., Minneapolis, Sta. F., R. 1.
Gaumnitz, Florence, St. Cloud, R. 1.	Robb, George F., St. Paul.
Gore, John E., San Dimas, Cal.	Schrepel, Minnie A., LeSueur, R. 1.
Hohle, Ola Arnold, Hector, Washington, Wis.	Svarstad, Anne, Bath, So. Dak.
Jacobson, Norman, Port Washington, Wis.	Underwood, William, Hutchinson.
Knowlton, Edith Viola, Minneapolis.	Waller, Congad J., St. Paul.
Krauch, Herman, St. Paul.	Potter, Alden A., Minneapolis.

### FRESHMEN—74.

Alwin, LeRoy V., New Ulm.	Hamilton, Carl L., Minneapolis.
Army, Albert C., St. Paul Park.	Hartzell, Dorothy, Minneapolis.
Arrivee, David A., St. Paul.	Hauge, Adolph G., Albert Lea.
Baker, George J., St. Paul.	Haw, John W., St. Anthony Park.
Baker, Norman M., Davenport, Ia.	Hayford, Ruth, Minneapolis.
Bilsborrow, James D., Wolverton.	Hillman, Frank M., Minneapolis.
Blegen, Martha C., Minneapolis.	Hofmann, Julius V., Janesville.
Brewster, Donald R., Minneapolis.	Howard, Leola M., Rochester.
Bryan, William James, Red Wing, R. 2.	Johnson, Fred O., St. Anthony Park.
Bush, Clarence A., Minneapolis.	Keefe, Adeline M., Minneapolis.
Christopherson, Edna H., Sioux Falls, S. D.	Lane, Dwight J., Minnetonka, R. 2.
Coan, John R., Minneapolis.	Lemon, Lynn, St. Paul.
Collin, William H., Northwood, Ia.	McElmeel, Stephen P., St. Paul.
Donovan, Raymond L., Dundas.	Madden, Virginia A., St. Paul.
Drew, Laurence, St. Paul.	Matthews, Charles A., Ortonville.
Devorehek, Henry E., Glencoe.	Merrick, Kathleen, Minneapolis.
Erickson, Richard I., Stillwater.	Merrill, Frederick B., Stillwater.
Evans, H. Vaughn, Tracy.	Miles, Lee O., West Concord.
Falkenhagen, Jay F., Montevideo.	Moore, Will A., Chatfield.
Forsman, John A., Duluth.	Morstad, Irene C. M., Sioux Falls, S. Dak.
Fowler, Charles F., Minneapolis.	Nash, Malcolm A., Tracy.
Gilbertson, Henry W., Jasper.	Noble, William E., Albert Lea.
Gillis, James R., St. Anthony Park.	Ohman, Enoch, Glenwood.
Glotfelter, Madge L., Minneapolis.	Older, Frank E., Luverne.
Hagerman, Wm. F., Morris.	Parmatee, Alice B., Sioux Falls, S. Dak.

\*Died March 6, 1908.



Peters, Alfred G., Lake City, R 1.  
Peterson, Joy R., St. Paul.  
Peterson, Roy M., Olivia.  
Poe, Richard, Cannon Falls.  
Prosser, Eugene C., Minneapolis.  
Robbins, Leon H., Clearwater.  
Rowe, Bess M., Minneapolis.  
Rust, Jay B., St. Paul.  
Sargent, Forrest H., Red Wing, R 2.  
Stanley, Ward A., Minneapolis.  
Strong, Florence S., St. Paul.  
Taylor, Deane C., St. Paul.  
Thompson, Mark J., Winsted.  
Tolaas, Arne C., St. Paul.  
Uptegrafft, Leroy, St. Anthony Park.  
Vafiadakis, Antony, Smyrna,  
Asia Minor.  
Vancura, Edward W., Lakefield.  
Weber, Henry G., Minneapolis.  
White, Frank B., Excelsior.  
Wilke, Agnese, Minneapolis.  
Williams, Donald T., Minneapolis.  
Williams, Ruth J., St. Louis Park, R 1.  
Wood, Robert A., Minneapolis.  
Young, John Paul, St. Paul.



The  
University of Minnesota  
Bulletin

College of Law

1908-1909

Volume XI

May 12, 1908

No. 11

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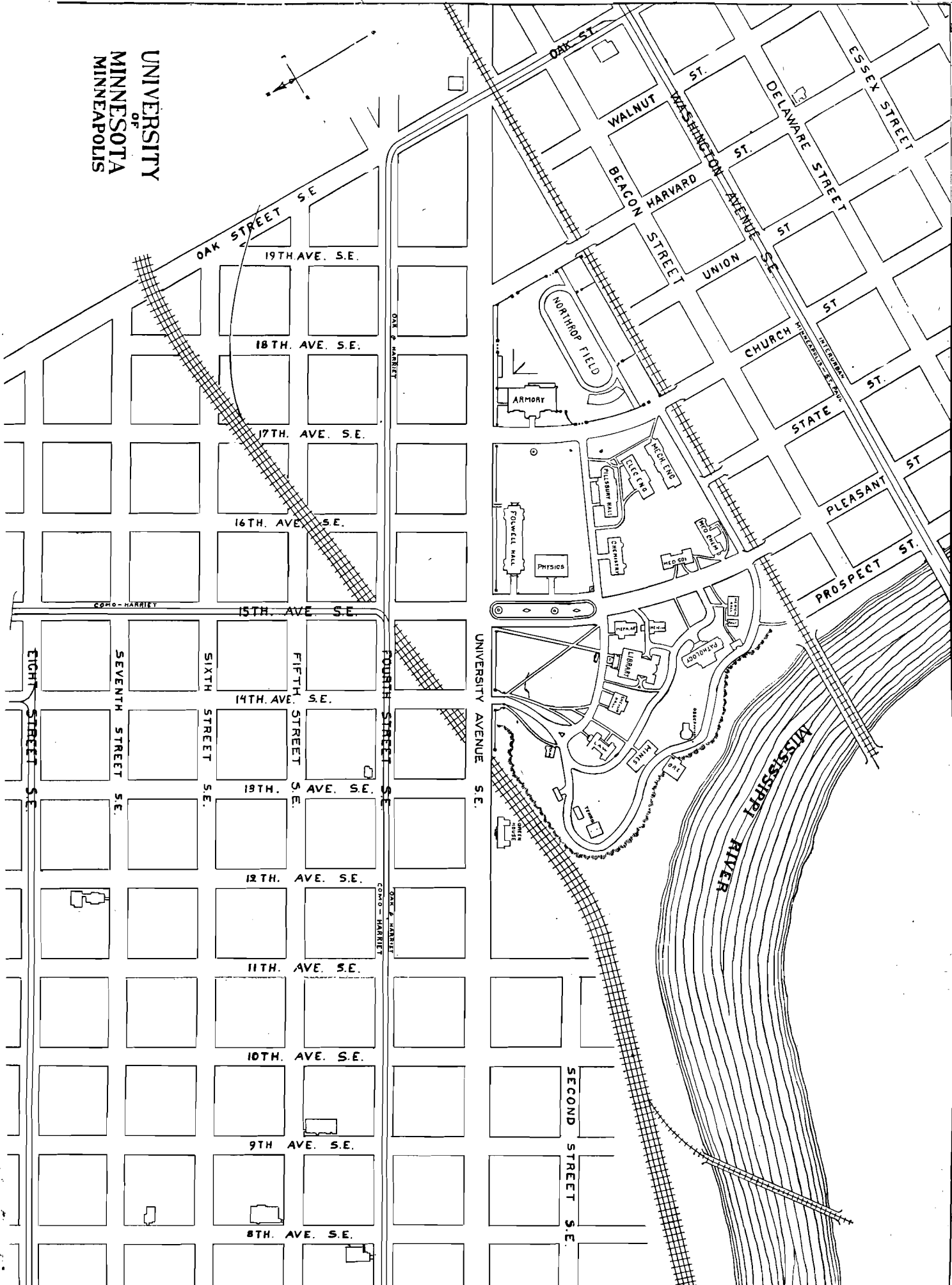
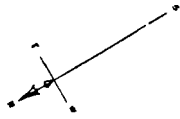
The University catalogues are published by authority of the Board of Regents, as a regular series of bulletins. One bulletin for each college is published every year, and in addition a bulletin of general information outlining the entrance requirements of all colleges of the University, and embodying such items as University equipment, organizations and publications, expenses of students, loan and trust funds, scholarships, prizes, etc. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them. In calling for bulletins, please state the college or school of the University concerning which information is desired. Address,

THE REGISTRAR,

The University of Minnesota,

Minneapolis, Minnesota.

UNIVERSITY  
OF  
MINNESOTA  
MINNEAPOLIS



# CALENDAR FOR 1908-1909

1908

1909

## MAY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	<b>30</b>
31	..	..	..	..	..	..

## JUNE

..	1	2	3	4	5	6
<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
..	..	..	..	..	..	..

## SEPTEMBER

..	..	1	2	3	4	5
6	<b>7</b>	8	9	10	11	12
13	14	<b>15</b>	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..
..	..	..	..	..	..	..

## OCTOBER

..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
..	..	..	..	..	..	..

## NOVEMBER

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	<b>26</b>	<b>27</b>	<b>28</b>
29	30	..	..	..	..	..
..	..	..	..	..	..	..

## DECEMBER

..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	<b>19</b>
20	21	22	23	24	25	26
27	28	29	30	31	..	..

## JANUARY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	4	<b>5</b>	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

## FEBRUARY

..	1	<b>2</b>	3	4	5	6
7	8	9	10	11	<b>12</b>	13
14	15	16	17	18	19	20
21	<b>22</b>	23	24	25	26	27
28	..	..	..	..	..	..
..	..	..	..	..	..	..

## MARCH

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
..	..	..	..	..	..	..

## APRIL

..	..	..	..	1	2	3
4	5	6	7	8	<b>9</b>	<b>10</b>
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	..
..	..	..	..	..	..	..

## MAY

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	<b>31</b>	..	..	..	..	..

## JUNE

..	..	1	2	3	4	5
<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..

## College Calendar, 1908-9

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SEPTEMBER	7-14	Entrance examinations and registration.
	15	Classes called for regular work.
DECEMBER	5	End of first term.
	7	Second term opens, classes called for regular work.
	19	Holiday recess begins—no classes.
JANUARY	5	Work resumed.
MARCH	13	End of second term.
	15	Third term opens, classes called for regular work.
JUNE	6-10	Commencement week.
	10	Commencement day, graduating exercises.

# The University

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THE UNIVERSITY OF MINNESOTA comprises the following named schools, colleges and departments:

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

THE DEPARTMENT OF AGRICULTURE, including—

*The College of Agriculture*

*The School of Agriculture*

*Short Course for Farmers*

*The Dairy School*

*The Crookston School of Agriculture*

THE COLLEGE OF LAW

THE COLLEGE OF MEDICINE AND SURGERY

THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE SCHOOL OF MINES

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

The Regents of the University have entrusted to their charge:

THE EXPERIMENT STATIONS, including—

*The Main Station at St. Anthony Park*

*The Sub-Station at Crookston*

*The Sub-Station at Grand Rapids*

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

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Bulletins of these schools, colleges and departments may be obtained upon application to the University Registrar.

# The Board of Regents

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CYRUS NORTHROP, LL.D., MINNEAPOLIS . . . . .	<i>Ex-Officio</i>
The President of the University	
The HON. JOHN LIND, MINNEAPOLIS . . . . .	1914
The President of the Board	
The HON. JOHN A. JOHNSON, ST. PETER . . . . .	<i>Ex-Officio</i>
The Governor of the State	
The HON. JOHN W. OLSEN, ALBERT LEA . . . . .	<i>Ex-Officio</i>
The State Superintendent of Public Instruction	
The HON. THOMAS WILSON, ST. PAUL . . . . .	1909
The HON. A. E. RICE, WILLMAR . . . . .	1909
The HON. B. F. NELSON, MINNEAPOLIS . . . . .	1910
The HON. DANIEL R. NOYES, ST. PAUL . . . . .	1910
The HON. PIERCE BUTLER, ST. PAUL . . . . .	1910
The HON. S. M. OWEN, MINNEAPOLIS . . . . .	1913
The HON. W. J. MAYO, ROCHESTER . . . . .	1913
The HON. HENRY B. HOVLAND, DULUTH . . . . .	1914

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C. D. DECKER, MINNEAPOLIS,  
Secretary of the Board



# Executive Officers

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## THE UNIVERSITY

CYRUS NORTHROP, LL. D., *President*

ERNEST B. PIERCE, B. A., *Registrar*

JAMES T. GEROULD, B. A., *Librarian*

C. D. DECKER, *Purchasing Agent*

J. D. BREN, *Cashier*

## THE COLLEGES

JOHN F. DOWNEY, M. A., C. E., *Dean of the College of Science, Literature,  
and the Arts*

FREDERICK S. JONES, M. A., *Dean of the College of Engineering and the  
Mechanic Arts*

EUGENE W. RANDALL, *Dean and Director of the Department of Agriculture*

WILLIAM S. PATTEE, LL. D., *Dean of the College of Law*

FRANK FAIRCHILD WESBROOK, M. A., M. D., C. M., *Dean of the College of  
Medicine and Surgery*

EUGENE L. MANN, B. A., M. D., *Dean of the College of Homeopathic  
Medicine and Surgery*

ALFRED OWRE, D. M. D., M. D., *Dean of the College of Dentistry*

FREDERICK J. WULLING, Phm.D., LL.M., *Dean of the College of Pharmacy*

WILLIAM R. APPLEBY, M. A., *Dean of the School of Mines*

GEORGE B. FRANKFORTER, Ph. D., *Dean of the School of Chemistry*

GEORGE F. JAMES, Ph. D., *Dean of the School of Education*

HENRY T. EDDY, C.E., Ph. D., LL. D., *Dean of the Graduate School*

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ADA L. COMSTOCK, M. A., *Dean of Women*

# The University Council

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At the regular meeting of the Board of Regents of the University, May 31st, 1905, a University Council was established according to the following plan:

I. The name of the body shall be The University Council. It shall consist of the President of the University, the Deans of the various colleges and schools, one elected representative from each college or school for each 400 students or major fraction thereof, and one representative of the general alumni association.

II. The elected members shall serve for a period of one year. They shall be chosen from the various faculties at the time of the selection of standing committees. The representative of the general alumni association shall be chosen by that body at its annual meeting from among the alumni who are not members of the University.

III. The Council shall be authorized to—

a) Appoint the following committees or the faculty representation thereon:

The University auditing committee

The University press committee

The committee on athletics

The committee on University relations to other institutions of higher learning

The committee on health and sanitation

The committee on commencement and other University functions

The committee on catalogue, programs and courses of study

The committee on student entertainments and social affairs

And such other committees as the general University interests may require

b) Receive reports from such committees and to make such recommendations as may be required.

c) Consider and act upon any matter of general University interest beyond the province of a single faculty which may be referred to it by the President of the University or any faculty.

IV. The Council shall hold stated meetings upon the first Monday of October, December, April and June, and such other meetings as the President of the University may call.

# Representatives to the Council

## **The University**

PRESIDENT CYRUS NORTHROP

## **The College of Science, Literature and the Arts**

DEAN JOHN F. DOWNEY

PROFESSOR JOHN H. GRAY

PROFESSOR J. C. HUTCHINSON

PROFESSOR H. F. NACHTRIEB

PROFESSOR NORMAN WILDE

## **The College of Engineering and the Mechanic Arts**

DEAN FREDERICK S. JONES

PROFESSOR GEORGE D. SHEPARDSON

## **The College and School of Agriculture**

DEAN EUGENE W. RANDALL

PROFESSOR HARRY SNYDER

PROFESSOR SAMUEL B. GREEN

## **The College of Law**

DEAN WILLIAM S. PATTEE

PROFESSOR HENRY J. FLETCHER

## **The College of Medicine and Surgery**

DEAN F. F. WESBROOK

PROFESSOR THOMAS G. LEE

## **The College of Homeopathic Medicine and Surgery**

DEAN EUGENE L. MANN

## **The College of Dentistry**

DEAN ALFRED OWRE

## **The College of Pharmacy**

DEAN FREDERICK JOHN WULLING

## **The School of Mines**

DEAN WILLIAM R. APPLEBY

## **The School of Chemistry**

DEAN GEORGE B. FRANKFORTER

## **The College of Education**

DEAN GEORGE F. JAMES

## **The Graduate School**

DEAN HENRY T. EDDY

## **General Alumni Association**

DAVID P. JONES

# University Council Committees

## **The University Auditing Committee**

PROFESSORS ANDERSON, FLETCHER, OWRE, SIGERFOOS, SPRINGER

## **The Committee on Athletics**

PROFESSORS PAIGE, BROOKE, HARDING, D. P. JONES, LITZENBERG

## **The Committee on Grounds and Sanitation**

PROFESSORS FLATHER, BASS, BRACKEN, HICKMAN, RANDALL, SIDENER,  
WESBROOK

## **The Committee on Catalogue, Programs and Course of Study**

DEANS APPLEBY, EDDY, FRANKFORTER, JAMES, JONES, MANN, OWRE,  
WULLING; PROFESSORS FLETCHER, JOHNSTON, SCHLENKER, SNYDER,  
E. B. PIERCE

## **The Press Committee**

PROFESSORS SCHAPER, BAUER, CONSTANT, ERDMANN, JAMES

## **The Committee on Commencement and other University Functions**

PROFESSORS NACHTRIEB, JENKS, OWRE, PATTEE, RANDALL, SCHLENKER,  
WASHBURN

## **The Committee on Student Entertainments and Social Affairs**

PROFESSORS FRANKFORTER, BASS, COMSTOCK, COOKE, MULLEN, PIKE

## **The Committee on University Relations to other Institutions of Higher Learning**

PROFESSORS DOWNEY, BOTHNE, EDDY, GRAY, GREEN, JAMES, LEE

## **The Committee on University Extension and University Lectures**

PROFESSORS WEST, HAECKER, RANKIN, SCHLENKER, SHEPARDSON

## **The Committee on the Library**

PROFESSORS EDDY, FLETCHER, F. S. JONES, LEE, REYNOLDS,  
VAN BARNEVELD, WEST

# The College of Law

## FACULTY.

- CYRUS NORTHROP, LL.D., President.  
WILLIAM S. PATTEE, LL.D., Dean and Professor of Law.  
A. C. HICKMAN, LL.D., Professor of Law.  
JAMES PAIGE, A.M., LL.M., Professor of Law.  
HENRY J. FLETCHER, LL.M., Professor of Law.  
EDWIN A. JAGGARD, LL.D., Associate Justice of the Supreme Court.  
HOWARD S. ABBOTT, B.L., of the Hennepin County Bar.  
ROBERT S. KOLLINER, LL.B., of the Hennepin County Bar.  
HUGH E. WILLIS, A.M., LL.M., Assistant Professor.  
HUGH V. MERCER, LL.M., Minneapolis.  
HOMER W. STEVENS, A.M., LL.M., Librarian.

## LECTURERS.

- CHARLES W. BUNN, St. Paul.  
*Federal Jurisdiction.*  
CHRISTOPHER D. O'BRIEN, St. Paul.  
*Criminal Procedure.*  
JARED HOW, LL.B., St. Paul.  
*Landlord and Tenant.*

## SPECIAL LECTURERS FOR 1907-8.

- HON. JOHN LIND, Minneapolis; Ex-governor of Minnesota.  
*Law of Interstate Commerce.*  
CHARLES B. ELLIOTT, Minneapolis; Justice Supreme Court of Minn.  
*Disputed Questions in International Law.*  
A. B. JACKSON, LL.B., Minneapolis.  
*Conflict of Laws.*  
T. D. O'BRIEN, St. Paul; Ex-insurance Commissioner.  
*Proper exercise of the Police Power of the State.*

JOHN W. WILLIS, A.B., St. Paul; Ex-judge of District Court.

*Lawyers, Oriental, Medieval and Modern.*

WM. A. LANCASTER, Minneapolis; Ex-judge District Court of Minn.

*Impairing Obligation of Contracts.*

JOHN F. MCGEE, Minneapolis; Ex-judge District Court, Minn.

*Federal Jurisdiction.*

ROME G. BROWN, LL.B., Minneapolis.

*Water-rights.*

HON. DANIEL FISH, Minneapolis.

*Law Making.*

HON. EDMUND S. DURMENT, St. Paul.

*Eminent Domain.*

# The College of Law

## OBJECT

It is the object of the College of Law of the University of Minnesota to educate its students by means of the study of jurisprudence, and at the same time so familiarize them with the fundamental principles of positive law that they will be able, at the end of their course, to safely enter upon the duties of the legal profession. Education, and not simply information, is the prime object. The power to think clearly, to reason cogently, to perceive distinctions quickly, to investigate thoroughly, to generalize carefully and to express his thoughts accurately are the basal qualifications of the safe counsellor. To secure for the students these habits of thought and expression should be the aim of both the student himself and his instructor.

The method of work generally pursued in the college is threefold. *First.* The reported cases, being the original repositories of the principles of law and equity, are read by the student and considered in the class-room. To facilitate the work and save expense for the student, volumes of these cases are reprinted and put, free of charge, into the hands of the student during the continuance of the subject, and each subject is pursued daily until its completion. *Second.* Besides reading the cases, the student in most subjects is required to prepare a written analysis of each case, stating in his own words, the issue upon which the case turns, the law which governs it, a brief statement of the facts, and the conclusion which the law and facts logically necessitate. This practice has proved helpful in securing a greater thoroughness in reading, greater carefulness in reasoning and greater accuracy on the part of the student in the art of expression. *Third.* In addition to the student's

investigation of the cases, and his presentation of them to his instructor, a systematic and orderly arrangement of each subject in the form of a summary, and much additional information regarding the details of the law's application in particular instances, and a consideration of the exceptions, limitations and statutory modifications of general principles, and especially information regarding the art of practice, are indispensable, and are in most instances supplied by printed lectures prepared for that purpose, or by well-written text-books upon the subject under consideration. *Information*, as well as *education*, is necessary to prepare a student to begin the practice of law. So far as possible he should, at the end of his course, grasp the various subjects of law in the unity of a system, and to do this he must, in many instances, take the generalizations of his instructor, or take them from some text-book, until he shall find time to investigate the subject for himself.

### LAW BUILDING.

The Law building, recently enlarged, is admirably adapted to the uses for which it was constructed. It supplies ample facilities for all the varied exercises of the college. The entire upper story is devoted to the library and reading room, except that portion of it conveniently arranged for the Judge's Chambers, the Court room, the Clerk's office, the Jury room, and the offices of the Dean. Upon the first floor there is a large and convenient auditorium, lecture rooms, and private offices for the professors, besides the general office for the special business of the department. Under the most recently constructed portion of the building there is a well-lighted and convenient basement, devoted to society rooms for the legal, literary, and debating organizations. As now reconstructed and arranged the building provides for all the conveniences of a modern court-house for the practice department, furnishes ample light and well-ventilated reading rooms and other excellent library facilities, and affords sufficient room for all the other regular work of the College.



## REQUIREMENTS FOR ADMISSION

Graduates of universities or colleges, and students who have graduated from any normal school or State high school of Minnesota, or from similar institutions of equal grade in other states, may be admitted without examination upon presentation of their diplomas.

All other applicants must pass an examination in the studies required for admission to the freshman class of the College of Science, Literature and the Arts, which are as follows:

N. B.—*Time element, as indicated with each subject, is essential.*

*English*, Four years, including

(a) Classics.

(b) Principles of composition.

(c) Practice in written expression.

*Algebra*, elementary, one year.

*Geometry*, plane, one year.

In addition to the above named subjects, which are required for all courses, and for which substitutes cannot be accepted, applicants shall present evidence of preparation in *nine* year-credits, or their equivalent, to be chosen from the following list:

*Algebra*, higher, one half year

*Geometry*, solid, one half year

*Latin*,

Grammar, (one year credit)

Caesar, four books, (one year credit)

Cicero, six orations, (one year credit)

Vergil, six books, (one year credit)

*Greek*,

Grammar, (one year credit)

Anabasis, four books, (one year credit)

*German*,

Grammar, (one year credit)

Literature, (one year credit)

*French*,

Grammar, (one year credit)

- Literature, (one year credit)
- Spanish*, (two years)
  - Grammar, one year
  - Literature, one year
- History*,
  - Ancient, to Charlemagne, one year
  - Modern, from Charlemagne, one year
  - England, one half year
  - Senior American, one half year
- Civics*, (one-half year credit)
- Political economy*, (one-half year credit)
- Physics*, (one year credit)
- Chemistry*, (one year credit)
- Botany*, (one-half or one year credit)
- Zoology*, (one-half or one year credit)
- Astronomy*, (one-half year credit)
- Commercial Geography*, (one-half or one year credit)
- Geology*, (one-half year credit)
- Physiography*, (one-half year-credit)

N. B.—By a *year credit* is meant a full year's work upon one subject, five recitations per week, as given in an ordinary high school course.

Substantial equivalents may be substituted, and a business education, as well as experience in teaching, may be accepted in lieu of some of the less important subjects.

Applicants who have diplomas entitling them to admission without examination should present them to the dean of the college, and those who are to take examinations or enter as special students, should present themselves to the dean, who will, upon proof of their qualification for admission, refer them to the registrar and accountant to whom they pay their matriculation fee and the first term's tuition.

## SPECIAL STUDENTS

Persons who are not candidates for a degree may enter the College as special students by special permission of the faculty; but any undergraduate from a high school will

be required before admission to present to the faculty a satisfactory record of his high school work and an honorable discharge from such high school. And all such students will be entitled to a certificate upon satisfactory examination in the subjects pursued by them, stating the time they have been members of the college and the subjects in which they have passed a creditable examination.

Such students, however, if they elect studies in both the day and evening courses, pursuing both at the same time, will be charged ten dollars per term additional tuition.

Students in the day or evening classes will not be permitted to attend more than two courses of lectures daily, unless in exceptional cases, and then a card of admission must be procured from the faculty and ten dollars per term additional tuition must be paid.

Students who are regular members of one class, either day or evening, will not be permitted to pursue studies in any class in advance of that to which they belong, unless there are special circumstances requiring it, and only upon special permission granted by the faculty.

### SENIOR ELECTIVES

Students in the senior class of the College of Science, Literature and the Arts, are permitted to elect, throughout the senior year, work in the College of Law, including the elements of contracts, domestic relations, torts, criminal law and negotiable paper. The satisfactory completion of the above named subjects will give the student a six hour credit throughout the senior year, and will entitle him to admission to the middle class of the College of Law. No such student will be permitted to take more than one lecture per day in the College of Law, without special permission of the faculty of the College of Science, Literature and the Arts.

### ADVANCED STANDING.

Should any person desire to enter the middle or senior class for a degree he must be at least nineteen years of age,

must pass the required preliminary examination upon the subjects of the preceding year or years, or their equivalents, but no person will be allowed to receive his degree who has not spent one full year in this department. Attorneys at law, however, who have been admitted to practice in the state of Minnesota and have a high school education or its equivalent, may enter the senior class without examination upon presentation of their certificates of admission, and shall be entitled to their degree upon a satisfactory showing at the final examination of the year upon the entire work of the three years.

#### ENTRANCE REQUIREMENT BEGINNING SEPTEMBER, 1909.

In addition to the preceding requirements for entrance as a regular student, there will be required, beginning September, 1909, one year of academic work, in the University of Minnesota, or in some other university or college of equal rank. This advanced work will be required of all students who wish to obtain the degree of Bachelor of Laws—whether they matriculate for the day or the evening work—but students with a high school diploma, will be admitted to the college without examination, as at the present time, receiving at the close of their course of study, a certificate indicating the subjects they have taken, and the character of their work.

And students who have not completed a high school course of study may enter the college upon satisfactory evidence that they are capable of doing the work in a satisfactory manner, and with profit to themselves, and they shall also receive a certificate showing the subjects they have taken, and the character of the work they have done.

#### ELECTIVES IN OTHER DEPARTMENTS

Students in the College of Law, may be permitted, after the junior year and under proper regulations, to elect work

in other departments of the University, without extra charge, so far as it does not interfere with their work in Jurisprudence. The faculty of law encourage students to avail themselves of this opportunity during the middle and senior years, but such election of work should be made only after consultation with the faculty. Among the subjects which may be profitably selected are English and American Constitutional History, political science, and economics. Students who elect such work must complete it in a satisfactory manner before the degree in law will be conferred upon them.

### TRANSFER OF STUDENTS

Students who matriculate in the College of Science, Literature and the Arts, or in other departments of the University, and fail in their work in such college, will not be admitted to the College of Law until such unfinished work shall have been satisfactorily completed.

The faculty earnestly advises all young men contemplating a course in law, and especially those who expect to engage in practice, to take the first two years at least, in the College of Science, Literature and the Arts, and if possible to complete the entire course there, before entering the College of Law.

### DAY COURSE OF THREE YEARS

#### FIRST YEAR—JUNIOR

Contracts (twelve weeks)	PROFESSOR FLETCHER
Illustrative cases.	
Personal Property and Sales (eight weeks)	ASSISTANT PROFESSOR WILLIS
Illustrative cases.	
Domestic Relations (four weeks)	PROFESSOR PAIGE
Illustrative cases.	
Common Law Pleading (three weeks)	PROFESSOR HICKMAN
Text Book, Phillips.	
Torts (nine weeks)	PROFESSOR PAIGE
Illustrative cases.	
Equity (Maxims) (six weeks)	DEAN PATTEE
Illustrative cases.	

Commercial Paper (four weeks) Illustrative cases.	PROFESSOR PAIGE
Blackstone (Second Book) (four weeks) Lewis' or Cooley's Blackstone.	PROFESSOR PAIGE
Agency (three weeks) Illustrative cases.	PROFESSOR PAIGE
Criminal Law (five weeks) Illustrative cases.	PROFESSOR PAIGE

## SECOND YEAR—MIDDLE

Wills and Administration (four weeks) Illustrative cases.	PROFESSOR PAIGE
Chattel Mortgages (three weeks) Illustrative cases.	PROFESSOR FLETCHER
Partnership (four weeks) Illustrative cases.	PROFESSOR PAIGE
Code Pleading (seven weeks) Phillips on Code Pleading and Illustrative Cases.	PROFESSOR HICKMAN
Liens (two weeks) Illustrative cases.	PROFESSOR FLETCHER
Bankruptcy (two weeks) Illustrative cases.	PROFESSOR FLETCHER
Bailments and Carriers (four weeks) Illustrative cases.	ASSISTANT PROFESSOR WILLIS
Private Corporations (five weeks) Illustrative cases.	ROBERT S. KOLLINER
Public Corporations (three weeks) Illustrative cases.	HOWARD S. ABBOTT
Insurance (three weeks) Illustrative cases.	ASSISTANT PROFESSOR WILLIS
Equity (Doctrines) (six weeks) Illustrative cases.	DEAN PATTEE
Damages (four weeks) Illustrative cases.	ASSISTANT PROFESSOR WILLIS
Real Property (twelve weeks) Illustrative cases.	PROFESSOR FLETCHER
Landlord and Tenant (two weeks) Illustrative cases.	JARED HOW

## THIRD YEAR--SENIOR

Evidence (five weeks) Greenleaf on Evidence (Vol. I) and Illustrative cases.	PROFESSOR HICKMAN
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Trusts (three weeks) Illustrative cases.	PROFESSOR FLETCHER
Minnesota Real Property (four weeks) Illustrative cases.	PROFESSOR PAIGE
Constitutional Law (six weeks) Illustrative cases.	PROFESSOR FLETCHER
International Law (four weeks) Illustrative cases and text-book.	PROFESSOR FLETCHER
Taxation (four weeks) Professor's text-book and illustrative cases.	JUSTICE E. A. JAGGARD
Equity (Remedies) (six weeks) Illustrative cases.	DEAN PATTEE
Mortgages (four weeks) Illustrative cases.	DEAN PATTEE
College Court. Each student is required to have two cases in court of Justice of the Peace. Four cases in District Court. One Case in Supreme Court	A. C. HICKMAN, JUDGE W. S. PATTEE, C. M. FERGUSON H. E. WILLIS, JUSTICES

## FOUR YEAR EVENING COURSE

To accommodate those who cannot attend the school during the day there is offered an evening course, comprising the same subjects as those above enumerated, extending over a period of four years, of nine months each. But if any student in this course will, during the first three years, complete the work of the fourth year, in the day class, he may be allowed to graduate at the end of the third year.

### FIRST YEAR

Contracts (eleven weeks) Illustrative cases.	ASSISTANT PROFESSOR WILLIS
Domestic Relations (four weeks) Illustrative cases.	PROFESSOR PAIGE
Personal Property and Sales (seven weeks) Illustrative cases.	ASSISTANT PROFESSOR WILLIS
Torts (nine weeks) Illustrative cases.	ROBERT KOLLINER
Criminal Law (five weeks) Illustrative cases.	PROFESSOR PAIGE

## SECOND YEAR

Wills and Administration (four weeks)	PROFESSOR PAIGE
Illustrative cases.	
Partnership (four weeks)	PROFESSOR PAIGE
Illustrative cases.	
Equity (Jurisdiction and Maxims) (four weeks)	DEAN PATTEE
Illustrative cases.	
Bailments and Carriers (three weeks)	ASSISTANT PROFESSOR WILLIS
Illustrative cases.	
Private Corporations (six weeks)	ROBERT S. KOLLINER
Illustrative cases.	
Public Corporations (three weeks)	HOWARD S. ABBOTT
Illustrative cases.	
Commercial Paper (four weeks)	PROFESSOR PAIGE
Illustrative cases.	
Blackstone (three weeks)	PROFESSOR PAIGE
Lewis' or Cooley's Blackstone.	
Insurance (three weeks)	ASSISTANT PROFESSOR WILLIS
Illustrative cases.	
Common Law Pleading (two weeks)	PROFESSOR HICKMAN
Text-book, Phillips.	

## THIRD YEAR

Evidence (five weeks)	PROFESSOR HICKMAN
Greenleaf on Evidence (First Vol.) and illustrative cases.	
Code Pleading (seven weeks)	PROFESSOR HICKMAN
Phillips on Code Pleading and illustrative cases.	
Constitutional Law (five weeks)	PROFESSOR FLETCHER
Illustrative cases.	
Equity (Doctrines and Remedies) (seven weeks)	DEAN PATTEE
Illustrative cases.	
Chattel Mortgages (two weeks)	PROFESSOR FLETCHER
Illustrative cases.	
Real Property (ten weeks)	PROFESSOR FLETCHER
Illustrative cases.	

## FOURTH YEAR

Liens (two weeks)	PROFESSOR FLETCHER
Illustrative cases.	
Real Estate Mortgages (three weeks)	DEAN PATTEE
Illustrative cases.	



Minnesota Real Property (four weeks)	PROFESSOR PAIGE
Illustrative cases.	
Agency, (three weeks)	PROFESSOR PAIGE
Illustrative cases.	
International Law (three weeks)	PROFESSOR FLETCHER
Text-book and illustrative cases.	
Trusts (three weeks)	PROFESSOR FLETCHER
Illustrative cases.	
Damages (four weeks)	ASSISTANT PROFESSOR WILLIS
Illustrative cases.	
Taxation (three weeks)	JUSTICE E. A. JAGGARD
Professor's text-book and illustrative cases.	
College Court Work, throughout the year.	
Special lectures during the year upon the subjects of Abstracts, Practice in the United States Courts, Conflict of Laws, Federal Jurisdiction, Bankruptcy, Criminal Procedure, and Landlord and Tenant.	

THIRD YEAR COURSE FOR 1908-1909

Evidence (five weeks)	PROFESSOR HICKMAN
Greenleaf on Evidence and illustrative cases.	
Blackstone (four weeks)	PROFESSOR PAIGE
Lewis' or Cooley's Blackstone.	
Code Pleading (seven weeks)	PROFESSOR HICKMAN
Phillips on Code Pleading and illustrative cases.	
Real Property (eight weeks)	PROFESSOR FLETCHER
Illustrative cases.	
Minnesota Real Property (three weeks)	PROFESSOR PAIGE
Illustrative cases.	
Equity (eight weeks)	DEAN PATTEE
Illustrative cases.	
College Court Work throughout the year.	

SPECIAL COURSE

For the benefit of those who do not care to pursue an extended course of legal instruction, but desire such a knowledge of law as will be of value to them in a business career, the foregoing regular courses are arranged so that, upon consultation with the faculty and registration as special students, such men may pursue certain special courses, embracing the following: Contracts, including statute of frauds; agency; commercial paper; partnership:

bankruptcy law; liens; bailments; master and servant; insurance; sales; and such other subjects as their business life or preference may render desirable.

## GRADUATE COURSE

### FIRST

For the benefit of those students who wish to pursue their legal studies further than they are able to do in the undergraduate years, two graduate courses are offered, the first leading to the degree of master of laws, (LL.M.), the second to the degree of doctor of civil law, (D.C.L.).

The courses of lectures offered in the first year of graduate work are as follows:

Philosophic basis of jurisprudence.

Roman law.

Political science.

Constitutional jurisprudence and history.

Those who enter this course as candidates for the degree must have already received the degree of bachelor of laws, from this or some other law college having a three-year course of study. Those who spend the entire year in the work prescribed for this course, and pass a satisfactory examination upon the subjects taken, will be entitled to the degree of master of laws.

But the diploma conferring this degree of LL.M. does not entitle its holder to admission to the bar.

### SECOND

Students who have received the degree of LL.B., from this or some other law school requiring three years' study of law for said degree, and who have also received the degree of LL.M., from this or some other school, after not less than one year of graduate study, and who have taken high rank in all the studies leading to these degrees, may apply to the faculty for the degree of Doctor of Civil Law. A knowledge of French or German, as well as of Latin is required, and special proficiency in Roman history

is necessary to entitle a student to entrance for such degree.

There is no prescribed time within which students are required to do their work in this course, but they must make themselves proficient in the subjects of Roman law, political science, comparative constitutional law, and the philosophy of jurisprudence before any thesis will be accepted from them.

None of the aforementioned degrees will be conferred until a satisfactory thesis is presented to the faculty by the student, and the thesis for the doctor's degree must be one evincing original investigation and special excellence.

Whether a class will be organized in this course during the academic year of 1908 and 1909 will depend upon the number of applicants for admission.

## TUITION

### UNDERGRADUATE STUDENTS

A matriculation fee of ten dollars must be paid by every student entering the college. The tuition fee is sixty dollars a year, or twenty dollars per term payable in advance at the beginning of each term.

### GRADUATE STUDENTS

The tuition fee for graduate students is forty dollars per year, payable in advance as follows: twenty dollars at the beginning of the school year, and twenty dollars February 1st following. In addition a matriculation fee of ten dollars is due from each student entering upon the course who has not previously matriculated in this college.

### FREE CASE BOOKS

In order to protect the College, Bar Association and State Libraries from the special injury incident to continual use, and to facilitate the class work of the college, free case books are furnished the students by the University.

## LIBRARIES

The college has a good library containing those English and American reports most frequently cited, digests, dictionaries, and a full and excellent selection of standard text-books. To this collection additions are being constantly made.

Further facilities are afforded the college by the generous action of the Bar Association of Minneapolis in granting to the students the free use of its extensive and ample library located in the Court House. It contains all the American reports, state and national, and also the English text-books and reports, so necessary for the student in his study of fundamental jurisprudence.

Besides the University and Bar Association libraries, the State library, containing all books which a student would have occasion to consult, is located at the capitol, in St Paul, and is thus within easy reach of the students.

The general library at the University contains about seventy-five thousand bound volumes, besides many thousand volumes of pamphlets, magazines, reports, etc. About one hundred and twenty periodicals are received regularly by the library, not inclusive of technical magazines and newspapers in English and other languages.

Besides the general library of the University, there are several special libraries, consisting mainly of books of reference and current periodicals relating to technical subjects in connection with the several departments of engineering, biology, and botany. These libraries are open during the entire day, and the University library is open also in the evening.

## METHODS OF INSTRUCTION

The recitations of the Junior and Middle day classes occupy the forenoon, and the Senior day class the afternoon, and the evening classes begin their work at seventhirty P. M. Each subject is continued daily until its completion, one recitation following another immediately.

in order to save the student the expense and time required in going to and returning from the University.

Each recitation period continues sixty to ninety minutes, and the work of the class room continues six days each week, except that the Senior day and the night classes do not meet on Saturdays.

### EXAMINATIONS FOR PROMOTION

Examinations will be held at the close of each subject during the middle and junior years, and no student who fails to pass a satisfactory examination in any of his studies will be advanced to the next higher class, except upon special permission of the faculty; and no such permission will be granted to any student who has failed in more than two subjects; but if he has not failed in more than two subjects he may be admitted to the next higher class provided he makes up those studies in which he is deficient by taking them in the regular classes where they are taught.

At the end of the middle year an examination is held upon the work of both the Junior and Middle years, for such students as the Faculty may select because of their low grades, or because their work, in whole or in part, was taken in another school, and if any student fails to pass this examination satisfactorily to the faculty he will be denied admission to the Senior class.

### EXAMINATION FOR GRADUATION

While the grades secured by students upon examination at the end of each subject will, as a general rule, stand as a final grade, yet, if a student has taken any part of his work in an office or in another law school, or for any other reason the faculty consider a review of any student's work desirable, he shall take such examination upon such subjects as the faculty may select, and only upon passing such examination satisfactorily to the faculty, shall he be entitled to his diploma.

## COLLEGE COURTS

As fast as the student becomes acquainted with the primary rights of persons, cases are prepared for his consideration, whereby he may apply the principles of law with which he has become familiar.

There is also established in the senior year a system of college courts corresponding to the justice, the district and the supreme courts of Minnesota, wherein the student may become familiar with the practice and the rules of the courts respectively.

It is the aim of the department to acquaint the student with the practice as well as the theory of law, and to this end the subjects of pleading, evidence, rules of practice adopted by our state courts, methods of securing provisional remedies, appeals from one court to another, the writs of habeas corpus, certiorari, and others of frequent use, conveyancing, drawing contracts and other like practices which comprise the daily work of the general practitioner, will, during the senior year, receive special and careful attention.

Some member of the faculty will preside over each of these courts, and the student is required to prepare appeal papers, bonds, paper books and to furnish the courts with his points and authorities according to requirements of law applicable to the various courts of the state.

## STATE AND UNITED STATES COURTS

The department is located within easy reach of both the federal and state courts. The United States courts are in session in St. Paul and Minneapolis during the greater part of the school year. The supreme court of Minnesota, the district courts of Ramsey and Hennepin counties, and the municipal courts of St. Paul and Minneapolis are open and in session almost constantly, and afford all the opportunity for witnessing the trial of actual cases which the student will have either time or desire to improve.

## THE LITERARY SOCIETIES

The students of the college have organized three literary societies for the purpose of general improvement and for cultivation in the practice of extemporaneous speaking. They hold weekly meetings and derive great benefit from their exercises.

### PRIZES

#### THE PILLSBURY PRIZE

Three prizes of \$100, \$50, and \$25, offered by the heirs of the Hon. John S. Pillsbury, are awarded for the best work in the rhetorical department, as evidenced finally by an oration in public.

#### THE DUNWOODY PRIZE

Mr. Wm. H. Dunwoody, president of the St. Anthony and Dakota Elevator Co., offers \$100 to that student who shall earn the right to represent Minnesota in the Northern Oratorical League. This league is composed of the seven largest universities of the central states, viz: Minnesota, Iowa, Wisconsin and Michigan State Universities, and Oberlin, Chicago and Northwestern.

#### THE LOWDEN PRIZE

Mr. Frank O. Lowden, of Chicago, offers a prize to be competed for by the Northern Oratorical League, an endowment of \$3,000, which will yield an annual income of about \$175. A prize of \$100 will be given to the winner of the first place, \$50 to the orator who gets second place, and the remainder will be set aside each year for an interest fund to accumulate, and, in time, produce another endowment.

## DEGREE OF BACHELOR OF LAWS

The degree of bachelor of laws will be conferred upon regular students of good moral character who pursue the full course in this college and pass an approved examina-

tion, and the degree will also be conferred upon those who, having attended another law school for the period of two years, shall also attend one year in this college and pass a like examination upon the three years' work. Students who pass their examinations with distinguished excellence will receive the degree of Bachelor of Laws, *cum laude*.

### EXPENSES

These depend largely upon the tastes and habits of the individual. Students find no difficulty in obtaining board among the people of the city. Good board can be obtained for \$4.00 per week. Students board in clubs at less expense.

For further particulars write to the Dean, W. S. Pattee, and all the information necessary for the student will be furnished promptly. The Dean will be pleased to correspond with any one who is thinking of pursuing a course of legal study. Letters addressed to him at Minneapolis, Minnesota, will receive prompt attention.

### ADMISSION TO THE BAR

Students residing in Minnesota are admitted to the bar of this state upon presenting to the court their diploma, conferring the degree of LL.B., without examination or other condition, except that each applicant for admission must furnish a certificate of good moral character, and make affidavit of residence and citizenship in Minnesota.



# Students

## FOR THE DEGREE OF DOCTOR OF CIVIL LAW—5.

Bates, William Earl, LL.M.,	Minneapolis
Denegre, James D., LL.M.,	St. Paul
Hermann, Arthur L., LL.M.,	Minneapolis
Mercer, Hugh Victor, LL.M.,	Minneapolis
Willis, Hugh E., LL.M.,	Minneapolis

## FOR THE DEGREE OF MASTER OF LAWS—9.

Bicknell, Lewis William, LL.B.,	Minneapolis
Feroe, Herman Mathew, LL.B.,	Minneapolis
Gregg, Kenneth P., LL.B.,	Minneapolis
Lien, Elias Johnson, LL.B.,	St. Paul
Mueller, Albert W., LL.B.,	New Ulm
Praxel, Anthony J., LL.B.,	Lamberton
Reiff, I. Merton, LL.B.,	Minneapolis
Schain, Josephine, LL.B.,	Minneapolis
Williams, Wadsworth A., LL.B.,	Minneapolis

## FOR THE DEGREE OF BACHELOR OF LAWS.

### SENIOR DAY—61.

Allison, Lawrence R.,	Minneapolis
Baker, James Bradford,	Brownton
Batzer, Reinhold Erick,	Royalton
Bott, Herman J.,	Minneapolis
Cady, Edward Philip (2 yrs. U. of M. Sc.),	Pipestone
Campbell, Roy E.,	Minneapolis
Carson, Harry Summers,	Minneapolis
Champine, Clifford C. (1 yr. U. of M. Sc.),	Fargo, N. D.
Coleman, Henry J.,	Chippewa Falls, Wis.
Colgrove, Albert Ralph (A. B., Mich.),	Minneapolis
Crawhall, Lester William,	Minneapolis
Dacey, Walter F.,	Eveleth
Davenport, Murray T. (A. B., U. of M.),	Minneapolis
Dempsey, William Henry,	Waukesha, Wis.
Donohue, William John,	Minneapolis
Doyle, David Wilfred,	Great Falls, Mont.
Dunn, Ney Marshall,	Jackson
Eenkema, Abelius,	Clara City
Evans, Eliza P.,	Minneapolis
Fawcett, Andrew,	Minneapolis

Foster, Willie Kerr, .....	Renville
Firestone, Milton Phillip, .....	St. Paul
Forbes, Mason Merrill, .....	Minneapolis
Fulton, David Langdon (U. of Wis.), .....	Minneapolis
Gage, Leroy Arthur, .....	Montrose, S. D.
Greene, Hammond Bey, .....	Sheldon, N. D.
Haas, William Hanson (A. B., St. Thomas), .....	St. Paul
Hamrum, Alfred Ulysses, .....	Franklin
Henderson, George Norman, .....	Red Wing
Jensen, Henry Nils, .....	Detroit City
Jevne, Franz, .....	Meridian
Johnson, Robert E., .....	Marshalltown, Ia.
Joyce, Wilbur B., .....	Minneapolis
Kells, Lemel L. (1 yr. U. of M. Sc.), .....	Sauk Centre
Leach, Helon Edwin (A. B., U. of M.), .....	Spring Valley
Lockerby, Charles Emory, .....	Mapleton
Lohn, Lewis Kent, .....	Fosston
McLaughlin, Mark M., .....	Mapleton
Morse, Frank Leonard, .....	Minneapolis
Massee, Edward K., .....	St. Paul
Molyneau, Francis A., .....	Winnebago City
Myron, Olin C. (A. B., U. of M.), .....	Vermillion, S. D.
Neal, Jared Augustus Perkins (A. B. Harvard), .....	Minneapolis
Nelson, Severt A., .....	Humbolt, Ia.
Nicholas, Edwin Herbert (A. B., U. of M.), .....	Minneapolis
O'Gordon, Joseph Arthur, .....	Minneapolis
Oyen, Brynjolf (A. B., Augsburg), .....	Watson
Pattison, Edward S., .....	Durand, Wis.
Roberts, Horace Wills, .....	Minneapolis
Rustad, Garfield H., .....	Moorhead
Russell, John C., .....	Fairfax
Schwartz, Louis Benjamin, .....	St. Paul
Searls, Spencer Judd, .....	St. Paul
Sigmond, Lloyd, Edgar, .....	Zumbrota
Senn, Henry B., .....	Kasson
Sigerfoos, Edward (A. B., Ohio State), .....	Minneapolis
Sorenson, Niles Madison, .....	Hayfield
Storer, George Lord, .....	Minneapolis
Sullivan, George Francis, .....	Shakopee
Swinland, Ingman, .....	Halsted
Washington, Derwood, .....	Glendive, Mont.

## MIDDLE DAY—70.

Barnes, Arthur Rich (A. B., U. of M.), .....	Campbell
Bartlett, James, .....	Minneapolis
Bingham, Charles B., .....	Sleepy Eye
Bremer, Paul Grover, .....	St. Paul
Brin, John Leonard, .....	Stewartville
Brown, Montreville J. (A. B., U. of M.), .....	Minneapolis
Cahaley, Cottrell James, .....	Minneapolis
Capron, George, .....	Minneapolis

Christopherson, Lewis Christian, .....	Pewaukee, Wis.
Dickson, Marshall J., .....	Fulda
Donohue, Keron Daniels, .....	Minneapolis
Doud, Fred L. (1 yr., Carlton), .....	Chatfield
Duff, Hartman Blaine, .....	Superior, Wis.
Duffy, Thomas E. J., .....	Minneapolis
Eickhorn, Edmund, .....	Minneapolis
Erickson, Harold, .....	Hancock
Evans, Nelson James (B. A., Cornell-Ia.), .....	Minneapolis
Flachsenhar, Walter Roscoe, .....	Mankato
Fligelman, Sol, .....	Minneapolis
Forbes, Vernon Alex, .....	St. Croix Falls, Wis.
Garberg, Peder, .....	Mariata
Gardner, John Wm., Jr., .....	Ortonville
Hanrahan, Morgan John (A. B., Creighton), .....	Clare, Ia.
Hanson, Thorwald (A. B., U. of M. '08), .....	Benson
Henderson, Fred Savage, .....	Northfield
Higgins, Harry Getchell, .....	Minneapolis
Houck, Norman Albert (1½ yrs. U. of M. Sc.), .....	Minneapolis
Huber, Earl Eldon, .....	Ellsworth, Wis.
Hudson, Irving M., .....	Benson
Huntley, Earl W. (A. B., U. of M.), .....	Spring Valley
Kelehan, James H. L., .....	Granite Falls
Kohn, Louis, .....	Minneapolis
LaPalme, Camille, .....	Minneapolis
Lampert, Jacob, .....	Minneapolis
Lauderdale, Henry William (2 yrs. U. of M. Sc.), .....	Minneapolis
Leak, John Roy, .....	Brainerd
Little, George Rudd (A. B., U. of M.), .....	Kasson
Linn, C. August, .....	Fergus Falls
McCanna, Simon Michael, .....	Minneapolis
McCoy, Charles Vaughan, .....	Duluth
McMillan, Malcolm Dana, .....	St. Paul
McNamara, Charles, .....	Montello, Wis.
Maloy, Charles Edward Hill, .....	St. Cloud
Moore, Earl M., .....	Minneapolis
Muir, Robert W. (3 yrs. U. of M.), .....	Hunter, N. D.
Murphy, Eugene Horton, .....	Minneapolis
O'Brien, Clarence Burke, .....	Winona
O'Brien, Giles Patrick, .....	Brainerd
Peterson, Adolph C. (A. B., U. of M.), .....	Minneapolis
Prigge, Lampert F., .....	Ada
Randall, Claude David (A. B., U. of M.), .....	St. Paul
Rasmussen, William J. (1 yr. U. of Wis.), .....	Phillips, Wis.
Reitz, Alfred E., .....	Chaska
Schuknecht, John Robert (3 yrs. U. of M.), .....	Minneapolis
Senn, Fred William, .....	Kasson
Spicer, Fred Hopper, .....	Minneapolis
Spoooner, Paul Lord (A. B., U. of M.), .....	Morris
Stern, Sam, .....	Fargo, N. D.
Strand, Oscar Bernard, .....	Zumbrota
Taylor, Wilfred Brunson, .....	Litchfield

Temmey, James E., .....	Oneida, S. D.
Walker, Arthur J., .....	Minneapolis
Walker, Charles John, .....	Spencer Brook
Watts, William A., .....	Crookston
Webster, Clarence Bernhardt, .....	St. Peter
Wendtlandt, Edward W., .....	Manchester, Wis.
Wheeler, George Charles, .....	Kekoskee, Wis.
Wilmsen, Harry Robert, .....	Hecla, S. D.
Wilson, Oscar Sylvanus, .....	Minneapolis
Wooley, Mark J., .....	Howard Lake

## JUNIOR DAY—142.

Adams, Innes, .....	Minneapolis
Allanson, Henry Gray, .....	Henderson
Anderson, Arthur Harragut, .....	Minneapolis
Atchison, William Edmond, .....	Minneapolis
Bailey, George, .....	Minneapolis
Berge, Henry S. (2 yrs. Carleton), .....	Minneapolis
Berry, Howard Morgan, .....	Mapleton
Bonifield, Ralph Ward, .....	Des Moines, Ia.
Bonner, John Farrington, .....	Winona
Borneman, Arthur DeForest, .....	Hallock
Brant, Charles Xien, .....	Renville
Branyer, Leon Peary, .....	Minneapolis
Bringelson, August E., .....	Dassel
Burdick, Ralph E., .....	International Falls
Campbell, Heil Stillman, .....	Mantorville
Cannon, R. C. (A. B., U. of M. '08), .....	Watertown, S. D.
Canterbury, James Ralph, .....	Minneapolis
Chadbourn, Philip, .....	St. Paul
Christiansen, Clarence R., .....	Northwood
Clarkson, Hugh J., .....	St. Charles
Cole, Loyal, .....	Minneapolis
Colgrove, Chester Walker, .....	Minneapolis
Conant, John, .....	Devil's Lake, N. D.
Crane, Ralph P., .....	Austin
Cutter, Leeds Hancock, .....	Anoka
Comer, Cloyde E., .....	Round Lake
DeLong, Frank Brooks (½ yr. U. of Wis.), .....	Elroy, Wis.
Dahl, Theodore R. (B. S., St. Olaf), .....	Minneapolis
Dahl, Sigvert S., .....	Virginia
Davis, Homer Isaac (1 yr. U. of N. D.), .....	Dickinson, N. D.
Dennis, Lawrence E., .....	Winslow, Ill.
Deering, Harold Cleaves (A. B., U. of M. '08), .....	Minneapolis
Doherty, Michael J. (3 yrs. U. of M. Sc.), .....	LeSueur
Evans, Albert Grant (A. B., U. of M. '08), .....	Duluth
Falk, Harold Newton, .....	Minneapolis
Finkelburg, Karl Augustus, .....	Winona
Fletcher, Victor W. (A. B., U. of M. '08), .....	Farmington
Flynn, Timothy George, .....	Minneapolis
Foley, Edward T., .....	St. Paul

Gansle, George E., .....	Minneapolis
George, James McBride, .....	Renville
Gibbs, Myron F., .....	Tracy
Glaser, John, .....	Appleton, Wis.
Gould, Robert David, .....	St. Cloud
Granbeck, Joseph, .....	St. Paul
Granley, John Frank, .....	Minneapolis
Grant, Malcolm E., .....	Faribault
Griffith, Joseph M., Jr., .....	Minneapolis
Ginsberg, Abe, .....	Minneapolis
Haas, Charles Theodore, (A. B., St. Thomas), .....	St. Paul
Haller, Adolph Ignatius, .....	Red Wing
Halls, Carl Borre (Luther College), .....	Hills
Hamilton, John A. J. (2 yrs. U. of M. Sc.), .....	Minneapolis
Hallett, Otis Albert, .....	Minneapolis
Hanson, John A., .....	Muskegon
Harris, George Due (1 yr. Ames), .....	Cedar Falls, Ia.
Hedman, Victor, .....	St. Paul
Held, Julius W., .....	St. Louis Park
Helgerson, Lynn S., .....	Plainview
Hoag, Richard Lawrence, .....	Minneapolis
Hoel, Ingram Harry, .....	Canby
Hoel, James Rudolph, .....	Canby
Holen, Oscar M. (1 yr. U. of M. Sc.), .....	Argyle
Horwitz, Henry, .....	St. Paul
Howes, William A., .....	Tomah, Wis.
Hunter, Asa J., .....	Minneapolis
Irwin, Harry A., .....	Belle Plain
Jeppeson, Frederick J., .....	Hopkins
Justeson, Marion B. (1 yr. U. of Wis.), .....	Augusta, Wis.
Kelehan, William, .....	Granite Falls
Kendall, John Catlin, .....	Minneapolis
Kenkel, John, .....	Minneapolis
King, William A., .....	Grand Rapids
Kjomme, Hans O. (A. B., Luther College), .....	Decorah, Ia.
Langen, Leonard Henry, .....	Battle Lake
Little, Maitland F., .....	Byron
Lindberg, Carl A., .....	Appleton
Lindgren, Harold Clarence, .....	Adrian
McCallum, Raymond E., .....	Langdon
McCubrey, Lewis, .....	Moorhead
MacDonald, Charles H., .....	St. Paul
McDowall, James K., .....	Seattle, Wash.
McGovern, John, .....	Arlington
McGrath, T. J., .....	St. Paul
McGregor, Scott, .....	Minot, N. D.
McGuigan, Joseph, .....	Minneapolis
McMahon, John Francis, .....	Huron, S. D.
Maginnis, John, .....	Duluth
Martin, John F., .....	Minneapolis
Mather, Verne Thomas, .....	Minneapolis
Mihlusen, Fred Russel, .....	Minneapolis

Miller, Harvey J.	Buffalo, N. D.
Miller, Herschel Frederick	Minneapolis
Mohl, Everett	Adrian
Molstad, Alfred G. (1 yr. U. of M. Sc.)	Clarkfield
Morgan, Hiram	Lake City
Mueller, Frederick C.	St. Paul
Nelson, Clarence O.	Granite Falls
Ness, J. A.	Hector
Nichols, Chester	Appleton
O'Rourke, Leo U. (B. A., St. Thomas)	Annandale
Ostensoe, Oliver Julian	Canby
Owen, D. Cavour	Osseo
Parker, Ralph Seth	Bloomington
Priche, John Gustav	Minneapolis
Radermacher, Walter Henry	Minneapolis
Raff, Leslie Arthur	Crookston
Randall, Frank E. (2 yrs. Hamline)	Hamline
Ripley, W. C. (1½ yrs. Ripon)	Minneapolis
Rodsater, George I. (B. A., Luther Col.)	Manchester, Ia.
Ronning, Andrew Generious (St. Olaf)	Boyd
Rudesill, Henry Amos	Minneapolis
Rudesill, Kora Ellis	Minneapolis
Salisbury, Maurice E. (A. B., U. of M. '08)	Minneapolis
Sanberg, Severt A.	Malnes
Sanford, Leroy Woodsworth (A. B., U. of M. '08)	Minneapolis
Schlehr, Arthur F.	Frazee
Seeger, Gustav Robert	St. Paul
Sevaried, Ephraim (1 yr. Luther)	Kenyon
Shields, Marcellus C.	Winona
Shipley, Albert L.	Virginia
Sischo, Kenneth	St. Paul
Skahen, Vance E. (2 yrs. L. Stanford)	Minneapolis
Smith, James Russell (A. B., U. of M. '08)	Minneapolis
Smith, Julian C.	Aberdeen, S. D.
Smith, William Cornel	Elroy, Wis.
Stewart, Earle William Russell	Princeton, Wis.
Stockland, George Alfred	Minneapolis
Stone, Alfred Finney (2 yrs. Carleton)	Morris
Storms, Robert	Minneapolis
Sturley, Rodney	St. Paul
Streissguth, Thomas	Arlington
Tesdell, Edward S.	Slayton, Ia.
Thoren, Reuben	Stillwater
Torrison, Anker Osul (A. B., Luther)	Manitowac, Wis.
Van Rhee, George Jacob (A. B., U. of M. '08)	Milaca
Warren, Earl William	St. Paul
Weeks, Joseph G.	Thief River
Weiland, Walter F. (1 yr. U. of M. Sc.)	Brainerd
Welte, Edward	Lengby
Wigen, Joris	Sargent
Young, Gerald	Minneapolis

EVENING SCHOOL.

THIRD YEAR—21.

Brown, Marcus Edward, .....	St. Paul
Burk, Harvey B. (A. B., Carlton), .....	Leedit Falls, Ohio
Dolan, Francis Marion (A. B., U. of M.) .....	St. Paul
Edquist, Reuben E., .....	Minneapolis
Everhard, Frank T. (A. B., U. of M.), .....	Minneapolis
Gates, Cassius E. (2 yrs. U. of M. Sc.), .....	Alma City
Gavere, Harry, .....	Minneapolis
Greening, Charles William (A. B., Carlton), .....	Minneapolis
Groat, Benjamin Feland (A. B., U. of M.), .....	Minneapolis
Gurnee, William Harold, .....	Minneapolis
Houck, Stanley B. (2 yrs. U. of M. Sc.), .....	Minneapolis
Hosp, Joseph Abraham, .....	Hopkins
Luxton, Harry Addison, .....	Minneapolis
Machatanz, Karl Adolph (A. B., Ohio Wesleyan), .....	St. Anthony Park
Moore, Russell L., .....	St. Paul
Mulally, James H. (A. B., Dartmouth), .....	St. Paul
Norton, Frank E. (A. B., U. of M.), .....	Minneapolis
Running, Clarence Herman, .....	Ada
Smiley, William C., .....	St. Paul
Smiley, Henry Le Fevre, .....	Minneapolis
Stratton, Paul D. (A. B., U. of M.), .....	Granite Falls

SECOND YEAR—39.

Akutsu, Kenji, .....	Tochigi, Japan
Anderson, Albert George, ♯, .....	Starbuck
Baker, Clayton R. C., .....	Brownton
Bowen, Oscar (B. A., Cent. U. of Ia.), .....	Minneapolis
Broderick, George M., .....	Minneapolis
Broderick, Leo C., .....	Minneapolis
Brouillard, Thomas L. (Charles City College), .....	Charles City, Ia.
Burroughs, Walter S., .....	Winona
Campbell, P. P., .....	Mayer
Carnes, Raymond John, .....	Renville
Case, George Leland, .....	St. Peter
Christiansen, Christian Theodore (B. A., U. of M. Sc.), .....	Minneapolis
Clutter, Guy Earl (A. B., U. of M. Sc.) .....	Anoka
Cowles, Ray John, .....	West Concord
Dart, Ray H. (A. B., U. of M. Sc.), .....	Litchfield
George, David Wickham (½ yr. Mining), .....	Minneapolis
Hinshaw, Virgil G. (A. B., Penn.), .....	Minneapolis
Johnson, Chester Marius, .....	Austin
King, Richard, .....	Minneapolis
LaBelle, Dezara, .....	Minneapolis
Lindahl, Albert L., .....	Minneapolis
McKellar, Robert Smithson, .....	Minneapolis
Marsh, Fayette Elaine, .....	Stillwater
Marwin, Paul (1 yr. U. of M. Sc.), .....	Minneapolis
Moe, Herman (3 yrs. Augsburg), .....	Minneapolis

Morse, David Lawrence (3 yrs. Cornell, Ia.),	Belmond, Ia.
Ohman, John,	Greenwood, Wis.
Persinger, Floyd T. (Ph. B., Hamline),	Minneapolis
Peterson, Albert Victor Anfield,	Minneapolis
Peterson, William Leroy,	St. Cloud
Schweska, Claude Burr (Ph. B., Upper Iowa),	West Union, Ia.
Sinclair, John Franklin, (A. B., U. of M.),	Minneapolis
Skaug, Julius,	Minneapolis
Speeter, Harold J.,	St. Charles
Stine, Harry Irwin,	Minneapolis
Vallbrecht, Robert, (2 yrs. Col. City of N. Y.),	Minneapolis
Velikanje, Emil Borguwell,	Minneapolis
Woods, George William,	St. Paul
Youngquist, Charles A.,	Minneapolis

## FIRST YEAR—62.

Ackley, Edward,	Chippewa Falls, Wis.
Ashley, Lynn,	River Falls, Wis.
Aylmer, Albert R. (A. B., U. of M. '08),	Minneapolis
Baker, Harold Irwin,	Minneapolis
Bang, Svening,	Minneapolis
Behrens, Verner George	LeRoy
Blackwell, Hiram Ross (2 yrs. U. of M. Sc.),	Minneapolis
Brady, Paul Edward,	Minneapolis
Brearley, Charles S., (3 yrs. U. of M. Sc.)	Minneapolis
Brazell, Edward Joseph,	Minneapolis
Brodérick, John J. (3 yrs. U. of M. Sc.),	Minneapolis
Cheroske, Louis Sebald,	Minneapolis
Clark, Edward K.,	Minneapolis
Coakley, Raymond James,	Minneapolis
Conant, Roy B.,	Hancock, Wis.
Conant, Clarence A.,	Hancock, Wis.
Corcoran, John Bach (3 yrs. U. of Chi.),	Minneapolis
Corcoran, Frank Richard,	Minneapolis
Currier, George William, Jr.,	St. Paul
Davenport, John E. (A. B., U. of M. '08),	Fairfield
Dexter, Arthur H.,	Minneapolis
Durham, Frederick H.,	Minneapolis
Easton, Dana M. (U. of M.),	Minneapolis
Everhard, Raymond Marsh,	Minneapolis
Ferguson, E. S.,	Minneapolis
Gale, Charles H. (1 yr. U. of M. Sc.),	Minneapolis
Goodwin, Bart J.,	Minneapolis
Harter, Clarence M. (A. B., U. of M. '08),	Minneapolis
Herrick, Floyd E.,	Minneapolis
Hetzler, Henry Benedict,	Minneapolis
Kerns, Clarence,	Minneapolis
Kimball, Guy Watson (A. B., Albion),	St. Paul
Krebs, Robert D.,	Minneapolis
Lewis, Donald Cameron,	Minneapolis
Lewis, William H.,	Minneapolis



Merrill, William, .....	Minneapolis
Oulman, Orrin M., .....	Minneapolis
Palmer, Charles Addison, .....	Minneapolis
Parker, Charles J., .....	Minneapolis
Pearson, William Edward, .....	Fisher
Peterson, Albert Sanford (A. B., U. of M. '08), .....	Wheaton
Plankerton, Roy Earle, .....	Minneapolis
Pye, Hugh James (1 yr. U. of M. Sc.), .....	Minneapolis
Quigley, James Joseph, .....	Minneapolis
Quackenbush, Harry C. (A. B., U. of M.), .....	West Concord
Randall, R. C. (A. B., U. of M. '08), .....	Wheaton
Rausch, Harry, .....	Minneapolis
Rossman, Claude W. (A. B., U. of M. '08), .....	Minneapolis
Rowberg, H. C. (A. B., U. of M. '08), .....	Hanley Falls
Safford, Orren E. (3 yrs. U. of M.), .....	Minneapolis
Seeds, Harry C. (2 yrs. Grinnell), .....	Manchester, Ia.
Shaw, Wilbur D. (A. B., U. of M. '08), .....	Minneapolis
Shave, Edgar L. (A. B., U. of M. '08), .....	Minneapolis
Schroeder, Florence C. (A. B., U. of M. '08), .....	Perham
Simer, Jerome Kenneth (A. B., U. of Ill.), .....	Tolono, Ill.
Smith, J. Raymond, .....	Minneapolis
Swan, James E. (3 yrs. U. of M.), .....	Minneapolis
Swanson, Victor J., .....	St. Paul
Swenson, Charles A. (C. E., U. of M.), .....	Winthrop
Wassing, Ole M., .....	Minneapolis
Young, Danxil Ruford, .....	St. Paul
Zoerb, Albert J. (U. of Wis. Ph. B.), .....	Algolah, Wis.

SPECIAL STUDENTS—91.

Abel, Ernest, .....	Butterfield
Beim, Nels C., .....	Minneapolis
Bennett, William, .....	Madison
Birkeland, Berge, .....	Donnybrook, N. D.
Block, Arthur B., .....	St. Paul
Brand, Chester, .....	Minneapolis
Brill, Harry Hosiah, .....	Minneapolis
Brown, Hosner A., .....	Brownsdale
Burfening, Peter John, .....	Kuhn, N. D.
Brundage, Harry P., .....	Minneapolis
Bryant, Glynn Arthur, .....	Minneapolis
Casserly, Paul Nathaniel, .....	Marshall
Chalgren, Edward A., .....	Sauk Rapids
Cheney, Christopher Arthur, .....	Minneapolis
Clark, Stella M. Dahl, .....	Minneapolis
Cohen, Julius, .....	Minneapolis
Colburn, Stanley C., .....	Minneapolis
Cummings, Peter L., .....	Minneapolis
Elwell, Edwin S., .....	Minneapolis
Evans, William, .....	Minneapolis
Fay, Shiel A., .....	Pipestone
Fitchette, Elwood, .....	Minneapolis

Foster, John Clinton, .....	Rosebud Ind. Ag., S. D.
Fountain, Percival T., .....	Hawley
Frary, Grace B., .....	Minneapolis
Full, George D., .....	Pembina, N. D.
Gaus, Fred William, .....	Minneapolis
Golden, Richard I., .....	Minneapolis
Graham, Raymond A., .....	Rochester
Gran, Arthur W., .....	Minneapolis
Gray, Walter Baker, .....	St. Paul
Gunderson, Lewis C., .....	Poynette
Hall, Bruce, .....	Minneapolis
Hennessey, Walter H., .....	Minneapolis
Hilary, Frank Charles, .....	Minneapolis
Hilliard, Edward Ferdinand, .....	Duluth
Hinch, Frederick Mortenson, .....	Minneapolis
Hjort, Carl Lyng, .....	Minneapolis
Hofman, Charles E., .....	Minneapolis
Holland, Edward M., .....	Minneapolis
Jelle, Gilbert, .....	Bricekyu
Johnson, Arthur, .....	St. Paul
Johnson, Charles William, .....	Minneapolis
Knoble, William C., .....	Minneapolis
Kniderwater, W. J., .....	Minneapolis
Kopplin, Frederick William, .....	St. Paul
Kremer, William A., .....	Minneapolis
Larkin, Jay A. (A. B., Redfield), .....	Alden
Larson, Hjelmer F., .....	Minneapolis
Leonard, Patrick Fehr, .....	Wabasha
Lindahl, Walter, .....	Parker's Prairie
Lovell, John Whitcomb, .....	Vernon Centre
Logan, Carlton, .....	Pelican Rapids
McAlmon, Herbert Ross, .....	Madison, S. D.
McCallum, William B., .....	Barry
McCarthy, J. Vernon, .....	Minneapolis
McDermott, Eugene Mills, .....	Minneapolis
McKay, Fred E., .....	Minneapolis
Mackenzie, Claude H., .....	Robbinsdale
Magoffin, Samuel, .....	St. Paul
Main, Ross C., .....	Tracy
Martin, Julius Herman, .....	Minneapolis
Martin, au, William R., .....	Minneapolis
Miller, William Eugene, .....	St. Charles
Mitchell, John W., .....	Minneapolis
Moore, Orville C., .....	Minneapolis
Morrison, Neal, .....	Minneapolis
Nelson, Edward Bernhardt, .....	Minneapolis
Olson, Arthur E., .....	Afton
Peterson, Adolph Martin, .....	Minneapolis
Posey, James, .....	Courtenay, N. D.
Pohlman, Ed. J. (A. B., U. of M.), .....	Minneapolis
Poucher, Jay Colton, .....	Minneapolis
Quilty, James M., .....	Minneapolis

Redden, James Walter, .....	Minneapolis
Rose, Frank Dunham, .....	Minneapolis
Russell, John Francis, .....	Minneapolis
Reilly, Roger Eugene, .....	St. Paul
Saari, John, .....	Sparta
Sanborn, N. W. (A. B., U. of Wis.), .....	Ashland, Wis.
Sanford, Nelson A., .....	Arnold's Park.
Sahl, Gustav H. (A. B. Augsburg), .....	Kenyon
Scallen, Eugene A., .....	Minneapolis
Shields, John A. (3 yrs. Campbell College), .....	Holton, Kan.
Simmons, William Reed, .....	Minneapolis
Swain, Hubert A., .....	Minneapolis
Towers, Eugene, .....	Minneapolis
Wanvig, Orlando, .....	Minneapolis
Waters, Murray R., .....	Minneapolis
Williams, Frank Joseph, .....	Minneapolis
Winthrop, Max S., .....	Minneapolis

SUMMARY.

D. C. L. Students .....	5
LL. M. Students .....	9
Undergraduates—	
Senior Day .....	61
Middle Day .....	70
Junior Day .....	142
Third Year (night) .....	21
Second Year (night) .....	39
First Year (night) .....	62
Special Students .....	91
	— 486
Total .....	500





The  
University of Minnesota  
Bulletin

The Graduate School

1908-1909

Volume XI

May 19, 1908

No. 12

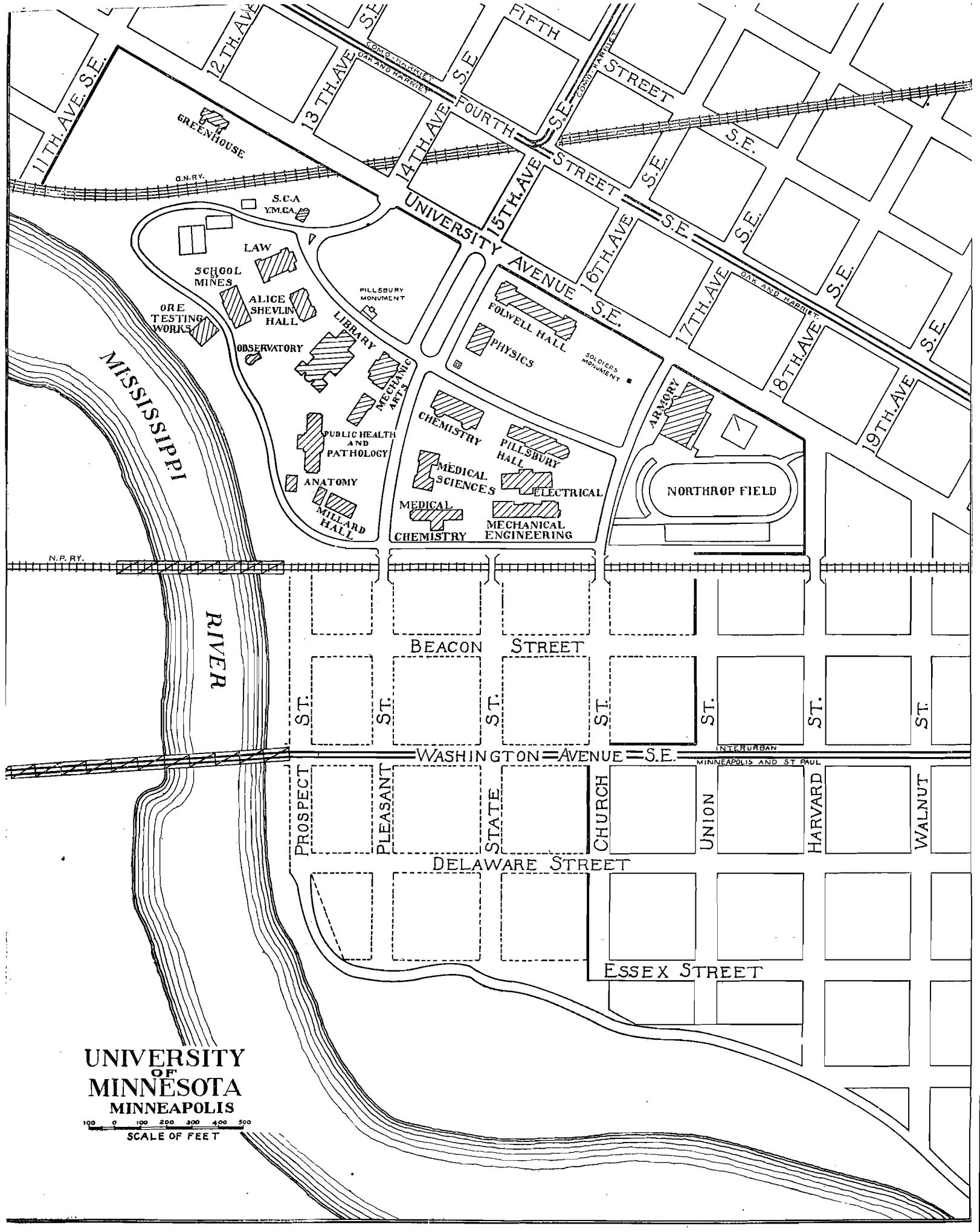
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The University catalogues are published by authority of the Board of Regents, as a regular series of bulletins. One bulletin for each college is published every year, and in addition a bulletin of general information outlining the entrance requirements of all colleges of the University, and embodying such items as University equipment, organizations and publications, expenses of students, loan and trust funds, scholarships, prizes, etc. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them. In calling for bulletins, please state the college or school of the University concerning which information is desired. Address,

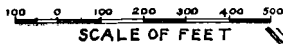
THE REGISTRAR,

The University of Minnesota,

Minneapolis, Minnesota



**UNIVERSITY  
OF  
MINNESOTA  
MINNEAPOLIS**



# CALENDAR FOR 1908-1909

1908

1909

## MAY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	<b>30</b>
31	..	..	..	..	..	..

## JUNE

..	1	2	3	4	5	6
<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
..	..	..	..	..	..	..

## SEPTEMBER

..	..	1	2	3	4	5
6	<b>7</b>	8	9	10	11	12
13	14	<b>15</b>	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..
..	..	..	..	..	..	..

## OCTOBER

..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
..	..	..	..	..	..	..

## NOVEMBER

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	<b>26</b>	<b>27</b>	<b>28</b>
29	30	..	..	..	..	..
..	..	..	..	..	..	..

## DECEMBER

..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	<b>19</b>
20	21	22	23	24	25	26
27	28	29	30	31	..	..

## JANUARY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	4	<b>5</b>	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

## FEBRUARY

..	1	<b>2</b>	3	4	5	6
7	8	9	10	11	<b>12</b>	13
14	15	16	17	18	19	20
21	<b>22</b>	23	24	25	26	27
28	..	..	..	..	..	..
..	..	..	..	..	..	..

## MARCH

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
..	..	..	..	..	..	..

## APRIL

..	..	..	..	1	2	3
4	5	6	7	8	<b>9</b>	<b>10</b>
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	..
..	..	..	..	..	..	..

## MAY

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	<b>31</b>	..	..	..	..	..

## JUNE

..	..	1	2	3	4	5
<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..



# University Calendar

1907-1908

## THE UNIVERSITY YEAR

The University year covers a period of thirty-eight weeks beginning on the second Tuesday in September. Commencement day is always the second Thursday in June.

FEBRUARY	4 T	Second semester begins—classes called for regular work
	12 W	Lincoln's birthday—legal holiday
	22 S	Washington's birthday—legal holiday
APRIL	17 F	Good Friday. Recess two days
MAY	2 Th	Regular meeting Board of Regents
	25 M	Senior examinations begin
	30 S	Decoration Day—legal holiday
JUNE	1 M	Semester examinations begin
	6 S	Semester examinations close

## COMMENCEMENT WEEK, 1908

SUNDAY	June 7	Baccalaureate service
MONDAY	June 8	Senior class exercises
TUESDAY	June 9	Phi Beta Kappa address. Senior promenade
WEDNESDAY	June 10	Alumni Day. Regular meeting Board of Regents
THURSDAY	June 11	Commencement Day. The thirty-sixth annual commencement
FRIDAY	June 12	Summer vacation begins

## 1908-1909

SEPTEMBER	7-14	Entrance examinations, condition examinations and registration
	15 T	Classes called for regular work. Seventeenth annual session
OCTOBER	1 Th	Regular meeting Board of Regents
	5 M	Regular meeting University Council. Opening day, School of Agriculture
NOVEMBER	26 Th	Thanksgiving Day. Recess three days
DECEMBER	7 M	Regular meeting University Council
	8 T	Annual meeting Board of Regents
	19 S	Holiday recess begins (no classes)
JANUARY	5 T	Work resumed in all departments
	23 S	Semester examinations begin
	30 S	Semester examinations close
FEBRUARY	2 T	Second semester begins—classes called for regular work
	12 F	Lincoln's birthday—legal holiday
	22 M	Washington's birthday—legal holiday
APRIL	5 M	Regular meeting University Council
	9 F	Good Friday. Recess two days

MAY	6 Th	Regular meeting Board of Regents
	24 M	Senior examinations begin
	31 M	Decoration Day—legal holiday
JUNE	1 T	Semester examinations begin
	5 S	Semester examinations close
	7 M	Regular meeting University Council

COMMENCEMENT WEEK, 1909

SUNDAY	June 6	Baccalaureate service
MONDAY	June 7	Senior class exercises
TUESDAY	June 8	Sigma Xi address. Senior promenade
WEDNESDAY	June 9	Alumni Day. Regular meeting Board of Regents
THURSDAY	June 10	Commencement Day. The thirty-seventh annual commencement
FRIDAY	June 11	Summer vacation begins

PROGRAM—ENTRANCE EXAMINATIONS

MONDAY,	September 7, 9	A. M.	3 Botany
			3 Zoology
			1 Astronomy
			3 Geology
		2 P. M.	2 American Government
			2 Political Economy
TUESDAY,	September 8, 9	A. M.	2 History
			5 Physics
		2 P. M.	4 Chemistry
			3 Physiography
WEDNESDAY,	September 9, 9	A. M.	1 English
			2 P. M.
			1 French
			1 Latin
			1 Scandinavian
THURSDAY,	September 10, 9	A. M.	1 Elementary Algebra
			2 Commercial Geography
		2 P. M.	1 Higher Algebra
FRIDAY,	September 11,	A. M.	1 Plane Geometry
			2 P. M.

1 Folwell Hall, 2 Library Building, 3 Pillsbury Hall, 4 Chemical Laboratory, 5 Physics Building, 6 Mechanic Arts Building.

PROGRAM OF CONDITION EXAMINATIONS

TUESDAY,	September 8, 9	A. M.	English, Rhetoric, Sociology
			2 P. M.
WEDNESDAY,	September 9, 9	A. M.	Animal Biology, Botany, Geology,
			Physics
		2 P. M.	Astronomy, Chemistry, Economics,
			Drawing
THURSDAY,	September 10, 9	A. M.	French, German, Greek, Scandina-
			vian
		2 P. M.	History, Latin, Education, Politics

For notice of the class-rooms in which these examinations will be given, see bulletin in library building.  
The school year for 1909-10 will begin Tuesday, Sept. 14.

# The University

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THE UNIVERSITY OF MINNESOTA comprises the following named schools, colleges and departments:

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

THE DEPARTMENT OF AGRICULTURE, including—

*The College of Agriculture*

*The School of Agriculture*

*Short Course for Farmers*

*The Dairy School*

*The Crookston School of Agriculture*

THE COLLEGE OF LAW

THE COLLEGE OF MEDICINE AND SURGERY

THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE SCHOOL OF MINES

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

The Regents of the University have entrusted to their charge:

THE EXPERIMENT STATIONS, including—

*The Main Station at St. Anthony Park*

*The Sub-Station at Crookston*

*The Sub-Station at Grand Rapids*

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

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Bulletins of these schools, colleges and departments may be obtained upon application to the University Registrar.

In the COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS, there is a four-year course of study leading to the degree, Bachelor of Arts. The work of the first year is elective within certain limitations as to the range of subjects from which the electives may be chosen. The remaining work of the course is entirely elective, with the provision that a certain number of long courses be selected. The course is so elastic that it permits the student to make the general scope of his course classic, scientific or literary, to suit his individual purpose.

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS offers courses of study, of four years each, in civil, mechanical, electrical and municipal engineering, leading to the degrees of Civil, Mechanical, and Electrical Engineer. This college offers a four-year course of study in science and technology, leading to the degree of Bachelor of Science, with an additional year leading to the engineer's degree in any one of the various lines offered in the college. This college also offers graduate work leading to the degree, Master of Science.

THE SCHOOL OF MINES offers four-year courses of study in mining and metallurgy upon completion of which the degrees, Engineer of Mines and Metallurgical Engineer, are conferred.

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY, leading to the degrees, Bachelor of Science in Chemistry, and Bachelor of Science in Chemical Engineering, offers two courses of study of four years each in analytical and applied chemistry.

THE COLLEGE OF EDUCATION receives students who have completed two years of college work, and offers them a three-year course leading to the master's degree. At the end of the second year students may receive the bachelor's degree and the University teacher's certificate. Graduates of other colleges, who have pursued an equivalent course in education, may enter for the master's degree.

THE GRADUATE SCHOOL gathers into a single organization and unites for the purposes of administration all the activities of the University in all its schools and colleges in so far as they relate to advanced instruction offered for the second or higher degrees, viz.; Master of Arts and Doctor of Philosophy conferred for advanced, non-technical study; Master of Science and Doctor of Science for technical study; Master of Laws and Doctor of Civil Law for advanced legal studies. The privileges of this school are in general open to all Bachelors of Arts, of Science, pure and applied, and of Laws, from reputable colleges and universities having courses substantially equivalent to those at this University.

THE UNIVERSITY SUMMER SCHOOL is organized for a six weeks' session in June and July under the direction of the State Department of Public Instruction. In the elementary section courses are given for teachers in all the common school branches and in preparation for the state teacher's certificates. In the college section courses are given for high school teachers and in preparation for the state professional certificate. Students who desire University entrance credits and credits toward the bachelor's degree may secure these by pursuing not more than two full courses at each session.

SPECIAL COURSES. In each of the Colleges, students of mature age and adequate preparation are permitted to pursue, under the direction of the faculty, one or two distinct lines of study.

EXTENSION LECTURES. Professors in the University are prepared to give a limited number of extension lectures from time to time. For subjects, speakers, terms and dates, application should be made to the Chairman of the Committee on University Extension.

THE COLLEGE OF AGRICULTURE offers a four-year course in agriculture. The degree of Bachelor of Science, in Agriculture, is conferred upon completion of the course. Students in this College may specialize along the line of forestry or of home economics and secure the degree, Bachelor of Science (in Forestry, or in Home Economics).

THE SCHOOL OF AGRICULTURE offers a three-year course of study and is a training school for practical farm life and in domestic economy. The College of Agriculture is open to graduates of this School who have completed the fourth year of work required for admission to the college.

*The Dairy School* offers practical instruction in dairying, specially designed for those who are actually engaged in the manufacture of butter and cheese.

*The Short Course for Farmers* is designed to be of the greatest help possible to those actually engaged in farming.

*The Crookston State School of Agriculture* offers a course of study quite similar to that given in the School of Agriculture.

THE COLLEGE OF LAW offers a three-year course of instruction leading to the degree of Bachelor of Laws. Graduate work leading to the degrees, Master of Laws, and Doctor of Civil Law, is offered. An evening class is provided in this college.

THE COLLEGE OF MEDICINE AND SURGERY, AND THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY offer four-year courses of study, of nine months each, requiring two years of collegiate work for admission. Upon completion of either of the prescribed courses the degree, Doctor of Medicine, is conferred.

In the Colleges of Science, Literature and the Arts, of Medicine and Surgery, and of Homeopathic Medicine and Surgery, there has been established a combined course of six years, leading to the degrees, Bachelor of Science, and Doctor of Medicine.

THE COLLEGE OF DENTISTRY offers a three-year course of study, of nine months each. Upon completion of the prescribed course the degree of Doctor of Dental Surgery is conferred.

THE COLLEGE OF PHARMACY offers a two or three-year course of study leading to the degree of Pharmaceutical Chemist. This college also offers graduate work leading to the degrees, Master of Pharmacy and Doctor of Pharmacy.

# The Board of Regents

CYRUS NORTHROP, LL. D., MINNEAPOLIS . . . . .	<i>Ex-Officio</i>
The President of the University	
The HON. JOHN LIND, MINNEAPOLIS . . . . .	1914
The President of the Board	
The HON. JOHN A. JOHNSON, ST. PETER . . . . .	<i>Ex-Officio</i>
The Governor of the State	
The HON. JOHN W. OLSEN, ALBERT LEA . . . . .	<i>Ex-Officio</i>
The State Superintendent of Public Instruction	
The HON. THOMAS WILSON, ST. PAUL . . . . .	1909
The HON. A. E. RICE, WILLMAR . . . . .	1909
The HON. B. F. NELSON, MINNEAPOLIS . . . . .	1910
The HON. PIERCE BUTLER, ST. PAUL . . . . .	1910
The HON. CHARLES A. SMITH, MINNEAPOLIS . . . . .	1910
The HON. S. M. OWEN, MINNEAPOLIS . . . . .	1913
The HON. W. J. MAYO, ROCHESTER . . . . .	1913
The HON. HENRY B. HOVLAND, DULUTH . . . . .	1914

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C. D. DECKER, MINNEAPOLIS  
Secretary of the Board.

# Executive Officers

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## THE UNIVERSITY

CYRUS NORTHROP, LL. D., *President*

ERNEST B. PIERCE, B. A., *Registrar*

JAMES T. GEROULD, B. A., *Librarian*

C. D. DECKER, *Purchasing Agent*

J. D. BREN, *Cashier*

## THE COLLEGES

JOHN F. DOWNEY, M. A., C. E., *Dean of the College of Science, Literature, and the Arts*

FREDERICK S. JONES, M. A., *Dean of the College of Engineering and the Mechanic Arts*

EUGENE W. RANDALL, *Dean and Director of the Department of Agriculture*

WILLIAM S. PATTEE, LL. D., *Dean of the College of Law*

FRANK FAIRCHILD WESBROOK, M. A., M. D., C. M., *Dean of the College of Medicine and Surgery*

EUGENE L. MANN, B. A., M. D., *Dean of the College of Homeopathic Medicine and Surgery*

ALFRED OWRE, D. M. D., M. D., *Dean of the College of Dentistry*

FREDERICK J. WULLING, Phm.D., LL.M., *Dean of the College of Pharmacy*

WILLIAM R. APPLEBY, M. A., *Dean of the School of Mines*

GEORGE B. FRANKFORTER, Ph. D., *Dean of the School of Chemistry*

GEORGE F. JAMES, Ph. D., *Dean of the School of Education,*

HENRY T. EDDY, C.E., Ph. D., LL. D., *Dean of the Graduate School*

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ADA L. COMSTOCK, M. A., *Dean of Women*

# The University Council

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At the regular meeting of the Board of Regents of the University, May 31st, 1905, a University Council was established according to the following plan:

I. The name of the body shall be The University Council. It shall consist of the President of the University, the deans of the various colleges and schools, one elected representative from each college or school for each 400 students or major fraction thereof, and one representative of the general alumni association.

II. The elected members shall serve for a period of one year. They shall be chosen from the various faculties at the time of the selection of standing committees. The representative of the general alumni association shall be chosen by that body at its annual meeting from among the alumni who are not members of the University.

III. The Council shall be authorized to—

a) Appoint the following committees or the faculty representation thereon:

The University auditing committee

The University press committee

The committee on athletics

The committee on University relations to other institutions of higher learning

The committee on health and sanitation

The committee on commencement and other University functions

The committee on catalogue, programs and courses of study

The committee on student entertainments and social affairs

And such other committees as the general University interests may require

b) Receive reports from such committees and to make such recommendations as may be required.

c) Consider and act upon any matter of general University interest beyond the province of a single faculty which may be referred to it by the President of the University or any faculty.

IV. The Council shall hold stated meetings upon the first Monday of October, December, April and June, and such other meetings as the President of the University may call



# Representatives to the Council

## **The University**

PRESIDENT CYRUS NORTHROP

## **The College of Science, Literature and the Arts**

DEAN JOHN F. DOWNEY

PROFESSOR JOHN H. GRAY

PROFESSOR J. C. HUTCHINSON

PROFESSOR H. F. NACHTRIEB

PROFESSOR NORMAN WILDE

## **The College of Engineering and the Mechanic Arts**

DEAN FREDERICK S. JONES

PROFESSOR GEORGE D. SHEPARDSON

## **The College and School of Agriculture**

DEAN EUGENE W. RANDALL

PROFESSOR HARRY SNYDER

PROFESSOR SAMUEL B. GREEN

## **The College of Law**

DEAN WILLIAM S. PATTEE

PROFESSOR HENRY J. FLETCHER

## **The College of Medicine and Surgery**

DEAN F. F. WESBROOK

PROFESSOR THOMAS G. LEE

## **The College of Homeopathic Medicine and Surgery**

DEAN EUGENE L. MANN

## **The College of Dentistry**

DEAN ALFRED OWRE

## **The College of Pharmacy**

DEAN FREDERICK JOHN WULLING

## **The School of Mines**

DEAN WILLIAM R. APPELBY

## **The School of Chemistry**

DEAN GEORGE B. FRANKFORTER

## **The College of Education**

DEAN GEORGE F. JAMES

## **The Graduate School**

DEAN HENRY T. EDDY

## **General Alumni Association**

DAVID P. JONES

## **The Dean of Women**

ADA L. COMSTOCK

# University Council Committees

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**The University Auditing Committee**

PROFESSORS ANDERSON, FLETCHER, OWRE, SIGERFOOS, SPRINGER

**The Committee on Athletics**

PROFESSORS PAIGE, BROOKE, HARDING, D. P. JONES, LITZENBERG

**The Committee on Grounds and Sanitation**

PROFESSORS FLATHER, BASS, BRACKEN, HICKMAN, RANDALL, SIDENER,  
WESBROOK

**The Committee on Catalogue, Programs and Course of Study**

DEANS APPELBY, EDDY, FRANKFORTER, JAMES, JONES, MANN, OWRE,  
WULLING; PROFESSORS FLETCHER, JOHNSTON, SCHLENKER, SNYDER.  
E. B. PIERCE

**The Press Committee**

PROFESSORS SCHAPER, BAUER, CONSTANT, ERDMANN, JAMES

**The Committee on Commencement and other University Functions**

PROFESSORS NACHTRIEB, JENKS, OWRE, PATTEE, RANDALL, SCHLENKER,  
WASHBURN

**The Committee on Student Entertainments and Social Affairs**

PROFESSORS FRANKFORTER, BASS, COMSTOCK, COOKE, MULLEN, PIKE

**The Committee on University Relations to other Institutions of  
Higher Learning**

PROFESSORS DOWNEY, BOTHNE, EDDY, GRAY, GREEN, JAMES, LEE

**The Committee on University Extension and University Lectures**

PROFESSORS WEST, HAECKER, RANKIN, SCHLENKER, SHEPARDSON

**The Committee on the Library**

PROFESSORS EDDY, FLETCHER, F. S. JONES, LEE, REYNOLDS,  
VAN BARNEVELD, WEST

# The Graduate School

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## FACULTY

- CYRUS NORTHROP, LL.D., *President* 519 Tenth Avenue S. E.  
HENRY T. EDDY, C. E., Ph. D., LL. D. 916 Sixth Street, S. E.  
*Dean of the Graduate School, and Professor of Mathematics  
and Mechanics, College of Engineering and the Mechanic Arts.*  
CEPHAS D. ALLIN, M. A., LL. B., Minneapolis  
*Instructor in Political Science.*  
FRANK MALOY ANDERSON, M.A., 1629 University Avenue, S. E.  
*Professor of History.*  
CHARLES W. BENTON, M.A., Litt.D., 516 Ninth Avenue S. E.  
*Professor of the French Language and Literature.*  
ANDREW BOSS, St. Anthony Park  
*Professor of Agriculture and Animal Husbandry.*  
GISLE BOTHNE, M. A., 934 Fifteenth Avenue S. E.  
*Associate Professor of Scandinavian Languages and Literature.*  
JABEZ BROOKS, D.D., 1708 Laurel Avenue  
*Senior Professor of the Greek Language and Literature.*  
RICHARD BURTON, Ph.D., Hampton Apartments  
*Professor of English Literature.*  
JOHN S. CLARK, B.A., 729 Tenth Avenue S. E.  
*Professor of the Latin Language and Literature.*  
F. R. CLEMENTS, Ph.D., Minneapolis  
*Professor of Botany.*  
FRANK H. CONSTANT, C.E., 1803 University Avenue S. E.  
*Professor of Structural Engineering.*  
JOHN L. COULTER, M. A., Minneapolis  
*Instructor in Economics.*  
SAMUEL N. DEINARD, M.A., Minneapolis  
*Assistant Professor of the Semitic Languages and Literatures.*  
JOHN F. DOWNEY, M.A., C.E., 825 Fifth Street S. E.  
*Dean of the College of Science, Literature and the Arts,  
and Professor of Mathematics.*  
HENRY A. ERICKSON, Ph. D., Minneapolis  
*Assistant Professor of Physics.*  
OSCAR W. FIRKINS, M. A., 1528 4th Street S. E.  
*Instructor in Rhetoric.*

- JOHN J. FLATHER, Ph.B., M.M.E., 1103 Fourth Street S. E.  
*Professor of Mechanical Engineering.*
- GEORGE B. FRANKFORTER, M.A., Ph.D., 525 River Road, S. E.  
*Dean of the School of Chemistry, and Professor of Chemistry.*
- EDWARD M. FREEMAN, M. S., Ph. D., St. Anthony Park  
*Assistant Professor of Botany.*
- JOHN E. GRANRUD, Ph.D., 605 Delaware Street S. E.  
*Assistant Professor of Latin.*
- J. H. GRAY, Ph.D., 412 Walnut Street, S. E.  
*Professor of Economics and Politics.*
- SAMUEL B. GREEN, B.S., St. Anthony Park  
*Professor of Horticulture and Forestry, and Horticulturist  
of the Experiment Station.*
- T. L. HAECKER, St. Anthony Park  
*Professor of Dairy Husbandry.*
- CHRISTOPHER W. HALL, M.A., 803 University Avenue S. E.  
*Professor of Geology and Mineralogy; Curator of the  
Geological Museum.*
- ARTHUR EDWIN HAYNES, M.S., M.Ph., Sc.D., 703 River Parkway  
*Professor of Engineering Mathematics.*
- JOHN C. HUTCHINSON, B.A., 3806 Blaisdell Avenue  
*Professor of the Greek Language and Literature.*
- GEORGE FRANCIS JAMES, Ph.D., 308 Eighteenth Avenue, S. E.  
*Dean of the College of Education, and Professor of Education.*
- ALBERT ERNEST JENKS, Ph. D., 313 Sixteenth Avenue S. E.  
*Professor of Anthropology.*
- JOHN BLACK JOHNSTON, Ph. D., 509 St. Anthony Parkway  
*Assistant Professor of the Anatomy of the Nervous System.*
- FREDERICK S. JONES, M.A., 712 Tenth Avenue S. E.  
*Dean of the College of Engineering and the Mechanic Arts,  
and Professor of Physics.*
- WILLIAM H. KAVANAUGH, M.E., 503 Fifteenth Avenue S. E.  
*Professor of Experimental Engineering.*
- WILLIAM H. KIRCHNER, B.S., 217 Beacon Street  
*Professor of Drawing and Descriptive Geometry.*
- FREDERICK KLAEBER, Ph.D., 616 Ninth Avenue S. E.  
*Professor of Comparative and English Philology.*
- FRANCIS P. LEAVENWORTH, M.A., 1628 Fourth Street S. E.  
*Professor of Astronomy and Director of the Observatory.*
- THOMAS G. LEE, B.S., M.D., 509 River Road  
*Professor of Histology and Embryology.*
- JAMES BURT MINER, Ph.D., 1319 Fifth Street S. E.  
*Assistant Professor of Psychology.*

- JOHN G. MOORE, B.A., 2810 University Avenue S. E.  
*Professor of the German Language and Literature.*
- W. S. NICKERSON, Sc. D., M. D., 217 Beacon Street S. E.  
*Assistant Professor of Histology and Embryology.*
- HENRY F. NACHTRIEB, B.S., 905 Sixth Street S. E.  
*Professor of Animal Biology; Zoologist of the Geological  
and Natural History Survey; Curator of the Zoological  
Museum.*
- OSCAR W. OESTLUND, M.A., 1910 Fourth Street S. E.  
*Assistant Professor of Animal Biology.*
- WILLIAM S. PATTEE, LL.D., 1319 Fifth Street S. E.  
*Dean of the College of Law, and Professor of Equity and In-  
ternational Law.*
- MARY GRAY PECK, M.A., 2412 Harriet Avenue  
*Assistant Professor of English.*
- RAYMOND V. PHELAN, Ph. D. 1629 University Avenue, S. E.  
*Instructor in Economics.*
- JOSEPH BROWN PIKE, M.A., 525 Tenth Avenue S. E.  
*Professor of Latin.*
- FRANCES S. POTTER, M.A., 2412 Harriet Avenue  
*Professor of English.*
- BENJAMIN M. ROSTALL, Ph. D., Minneapolis  
*Assistant Professor of Economics.*
- ALBERT W. RANKIN, A.B., 916 Fifth Street S. E.  
*Associate Professor of Education.*
- M. H. REYNOLDS, M.D., V.M., St. Anthony Park  
*Professor of Veterinary Medicine and Surgery and  
Veterinarian of the Experiment Station.*
- E. V. ROBINSON, Ph.D., 1213 Seventh Street, S. E.  
*Professor of Economics and Politics.*
- C. O. ROSENDAHL, Ph.D., 626 Sixteenth Avenue S. E.  
*Assistant Professor of Botany.*
- FREDERICK W. SARDESON, Ph.D., 414 Harvard Street  
*Assistant Professor of Paleontology.*
- CHARLES ALBERT SAVAGE, Ph.D., 1100 Fifth Street, S. E.  
*Assistant Professor of Greek.*
- WILLIAM A. SCHAPER, Ph.D., 1009 University Avenue S. E.  
*Professor of Political Science.*
- CARL SCHLENKER, B.A., 422 Union Street, S. E.  
*Professor of German.*
- GEORGE D. SHEPARDSON, A.M., M.E., Minneapolis  
*Professor of Electrical Engineering.*

- CHARLES F. SIDENER, B.S., 1320 Fifth Street S. E.  
*Professor of Chemistry.*
- CHARLES P. SIGERFOOS, Ph.D., 1206 Fifth Street S. E.  
*Professor of Zoology.*
- SAMUEL G. SMITH, Ph.D., LL.D., St. Paul  
*Professor of Sociology.*
- HARRY SNYDER, B.S., St. Anthony Park  
*Professor of Agricultural Chemistry, and Chemist of the  
Experiment Station.*
- FRANK W. SPRINGER, E.E., 1100 Fifth Street S. E.  
*Assistant Professor of Electrical Engineering.*
- ANDREW ADIN STOMBERG, M. A., 709 Delaware Street, S. E.  
*Professor of Scandinavian Languages and Literature.*
- DAVID F. SWENSON, B.S., 3101 Sixteenth Avenue S.  
*Assistant Professor of Philosophy.*
- JOSEPHINE E. TILDEN, M.S., 800 Fourth Street, S. E.  
*Assistant Professor of Botany.*
- FREDERICK L. WASHBURN, M.A., St. Anthony Park  
*Professor of Entomology, and Entomologist of the Experiment  
Station; State Entomologist.*
- WILLIS M. WEST, M.A., 1314 Sixth Street S. E.  
*Professor of History.*
- FRANK F. WESBROOK, M.A., M.D., C.M., 328 Tenth Avenue S. E.  
*Dean of the College of Medicine and Surgery; Professor of  
Pathology and Bacteriology.*
- ALBERT B. WHITE, Ph.D., 515 Fifteenth Avenue S. E.  
*Professor of History.*
- NORMAN WILDE, Ph.D., 910 Sixth Street S. E.  
*Professor of Philosophy and Psychology.*
- FREDERICK J. WULLING, Ph.G., Phar.D., LL.M., 3305 Second Avenue S.  
*Dean and Professor of Pharmacology, Pharmaceutical Chemistry,  
and Pharmacal Jurisprudence, College of Pharmacy.*
- ANTHONY ZELENY, Ph. D., 321 Church Street, S. E.  
*Assistant Professor of Physics.*
- JOHN ZELENY, Ph.D., Minneapolis  
*Professor of Physics.*

# The Graduate School

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The graduate school has been established by the Board of Regents to include in a single organization the graduate work of all colleges and schools of the University, which offer courses of instruction leading to the higher degrees. The administration of the school is entrusted to the Dean, who is charged with its supervision and regulation, under the general direction of the President.

The faculty of the school consists of all those professors in the University who give courses of instruction accepted for such higher degrees as are offered by the school. Each college of the University has its graduate committee.

The Dean is chairman of the faculty and of the graduate committees of the various colleges, *ex officio*.

Regular faculty meetings will be held on the second Friday of each semester and on the last Friday of the year, and they may also be called by the Dean at such other times as business may demand.

The aim of the school is to offer instruction and opportunity for study combined with facilities for investigation and research to graduate students who desire to pursue some one or more branches of knowledge beyond the ordinary undergraduate courses.

## FEES

All students taking full work in this school are required to pay a fee of ten dollars a semester, or a proportionate fee for less work. Members of the staff of instruction in the University may register for graduate work without payment of tuition fees. Laboratory fees are charged in addition to those just mentioned.

## ADMISSION

Any graduate from a four years' course of study in any reputable college or university will be admitted to the graduate school without examination, but will not be thereby admitted to candidacy for either of the higher degrees until his case has been duly considered and approved, as is explained later, in connection with the several degrees.

Each applicant for admission to the school should present himself in person to the Registrar with his credentials (preferably his diploma of graduation), in order to register and pay his fees.

In case of doubt respecting the sufficiency of credentials, consult the Dean.

Registration at the beginning of each semester is obligatory upon graduate students and undergraduates alike.

Each student will receive at registration for entrance to the school a registration book in which to inscribe the courses he desires to pursue. When the instructors in charge of these courses shall have signed this book certifying that the student is prepared to begin such courses and when the Dean shall have approved this choice, the Registrar will issue cards authorizing the student to attend the courses thus certified to. Upon the successful completion of such work the instructors shall again sign the registration book. The student shall retain his book until ready for final examination, when he shall present it to the chairman of the examining committee. The action of the committee shall be recorded thereon and the book be deposited with the Registrar for record.

## DEGREES

The degree of Master of Arts is, in general, conferred for advanced non-technical study; the degree of Master of Science for advanced technical study, such as agriculture, industrial chemistry, engineering, etc.; and Master of Laws for advanced legal studies.

*The Master's Degree.* Three degrees of this grade are conferred, viz.: Master of Arts (M.A.), Master of Science (M.S.), and Master of Laws (LL.M.).

*Candidacy for the Master's Degree.* Any bachelor, a graduate of this University or of any other university or college with an equivalent baccalaureate course, will be enrolled by the Dean as a candidate for the corresponding master's degree on the basis of an approved course of study conforming to requirements detailed below, provided the heads of the departments in which the studies selected lie, signify their approval of the student's preparation to enter upon the work selected.

In case of inadequate preparation for the work selected, such preliminary study as the case may require will be stated by the professor in charge and will be insisted on before the applicant is admitted to candidacy.

*Regulations.* The master's degree will be conferred on any candidate enrolled for that degree, who not sooner than one year after graduation if in residence at the University, and not sooner than two years after registration if not in residence, shall pass satisfactory final examinations on the course which was approved when he was admitted to candidacy, and shall in addition present an acceptable thesis in accordance with the following provisions:



The professor with whom the candidate pursues his major subject shall be chairman of a committee of three, having in charge the work of the candidate from the time of his enrollment as such, the other members of the committee being those professors under whom the candidate's minors fall. This committee shall arrange for and have charge of the final examinations of the candidate; they shall approve the subject of the thesis, and pass upon the thesis itself. The candidate must secure their approval of his subject at least three months before graduation, and must complete the thesis and all examinations at least two weeks before graduation. All candidates for the master's degree shall pass written examinations upon all work taken by them, time and place to be determined by the committee. If these examinations and the thesis are satisfactory, the candidate shall be admitted to a final oral examination before the committee. It shall be the duty of this committee to canvass the examinations of the candidate's whole course together with the thesis, and in case they regard him entitled to a degree, to report the fact to the Dean, at least one week before commencement. The chairman of the committee shall also make a final report upon the candidate to the Registrar one week before commencement.

Any candidate for master's degree at commencement must, as a preliminary, make application to the Dean in writing, by the first of the preceding May, and state the courses in which he has passed and is to pass examination, the title of his thesis, and the names of the committee in charge of his work.

The amount of work required for the master's degree shall be equivalent to that done by the senior class. Proficiency shall be determined by examination upon the subject matter of the courses taken and of the thesis.

For convenience in selecting among the various departments and subjects of study they are arranged in groups, as follows:

1. Education, Philosophy, Psychology, Sociology.
2. Economics, History, Law, Political Science.
3. Greek, Latin, Sanscrit, and Semitic languages and literatures.
4. Comparative Philology, English, Germanic, Romance, and Scandinavian languages and literatures.
5. Anatomy, Animal Biology, Bacteriology, Botany, Embryology, Histology, Paleontology, Physiology.
6. Agriculture, Chemistry, Geology, Mineralogy.
7. Astronomy, Engineering, Mathematics, Mechanics, Physics.

Candidates desiring a master's degree in some special line of study, for the purpose of teaching or research, or as a basis for studies leading to the doctor's degree, must select three subjects of study, a major to occupy at least one-half of the work required, a first minor to occupy one fourth, which shall be germane to the major subject by being selected from the same group or a closely related group, and a second minor to

complete the work required, which last shall be in some reasonable connection with the other subjects selected. In special cases the candidate may be allowed to fill the required time with a major and one minor only. The thesis in this case must embody the results of study and investigation along the line of the major subject. In attaining this specialized master's degree, the thesis is regarded of much importance, and to it the candidate should devote much time and effort. To render this possible, the professor in charge of the major subject may count work assigned in its preparation as part of the time required in that subject.

Candidates desiring a master's degree with a view to general culture will select subjects from three distinct groups, of which the work in no one group shall be less than four hours a week, for the year. The work in one of these groups shall be designated as the candidate's major and to it the subject of his thesis shall stand in close relation. The courses pursued in the major shall be in advance of any regularly pursued by undergraduates.

All theses must be written in satisfactory English and those accepted for the degree of M. S. and M. A. shall be filed with the librarian of the University for cataloguing before distribution to departmental libraries.

Theses for all degrees in the graduate school shall be typewritten on one side only of the sheet, on paper of good linen stock measuring eight and one-half by eleven inches, and shall have a margin of one and one-quarter inches on all sides of the text. The title page of the thesis should be in the following form: (Title of the thesis). "A thesis submitted to the faculty of the Graduate School of the University of Minnesota by (name in full) in partial fulfillment of the requirements for the degree of (name of the degree in full), (date)."

A candidate for the degree of Master of Laws must not only be Bachelor of Laws from a reputable law college having a course equivalent in length to that at the University of Minnesota, but he must in addition have been admitted to the bar in Minnesota. Any person who possesses the requisite legal learning may on registration pursue any or all of the studies offered for this degree, but he thereby acquires no standing as candidate for this degree.

The major selected for this degree will in all cases be Law, and the minors, Political Science and Constitutional History.

*The Doctor's Degree.* Three degrees of this grade are conferred, viz.: Doctor of Philosophy (Ph. D.), Doctor of Science (Sc. D.), and Doctor of Civil Law (D. C. L.), for still more advanced study than that leading to the corresponding bachelor's and master's degrees, and such special attainments therein as show power of original investigation and independent research, together with a fair degree of literary skill as evinced by the preparation of a thesis which shall be a contribution to knowledge.

*Candidacy for the Degree of Doctor.* Any student in the Graduate School who applies to be enrolled as candidate for a doctor's degree must, in order to be enrolled as such, possess a reading knowledge of French and German, certified to by the professors respectively in charge of those languages, and in case of an applicant applying to be enrolled as candidate for the degree of Doctor of Civil Law, proficiency in Latin and Roman History is also required. Knowledge of Latin will also be required in certain other cases such as for a major in Medieval History, or Philosophy, as the professor in charge may prescribe.

The applicant must also have made before enrollment such noteworthy advancement in his graduate work as to secure the approval of his candidacy by his instructors. And in particular, he must obtain the written consent of the professor under whom his major subject falls to take charge of his instruction in that subject. His minors must also be acceptable to this professor, who must recommend him to the dean as a suitable candidate for the degree sought.

In order for the applicant to be successful, this professor should also state that, through the work thus far accomplished by the applicant, he has become convinced of his capacity and of his probable ability to carry an investigation in his special field to a successful conclusion and embody it in a valuable thesis.

The Dean shall, after full consideration and consultation with the professor concerned, pass upon his application and have power to enroll the applicant as candidate or refuse to do so. Such enrollment as candidate must be secured at least one year before the degree will be conferred.

It will frequently not be practicable to enroll an applicant as candidate for the doctor's degree before the completion of one year's study in the Graduate School. Graduates desiring to become candidates for this degree will find it advisable, under ordinary circumstances, to spend the first year of graduate study in attaining to the specialized master's degree, as part of the work leading to the doctor's degree.

That procedure is likely to furnish such a decisive test of capacity for advanced study, as well as experience in preparation of a thesis, as to settle definitely the question of candidacy for the doctor's degree.

Candidates for the degree of Doctor of Civil Law are required to secure the degree of Master of Laws as a preliminary.

*Regulations.* Candidates for the degree of doctor must devote at least three years of graduate study to the subjects approved for candidacy, of which the last year must be spent in residence at the University of Minnesota. In lieu of the other years the candidate may offer an equivalent term of graduate study at some other university, but study pursued and work done *in absentia* without proper facilities of libraries and laboratories will not be accepted.

The same general regulations govern the candidate for this degree as hold in case of the specialized master's degree, both as regards the amount of study per year, the selection and relative amount of major and minors and as regards the chairman of the committee in charge of the work of the candidate, as well as regards the thesis required, which for this degree must give evidence of original and independent reasearch and must be a contribution to knowledge.

In particular, considerable portions of the work on the major and on the thesis may be carried on under general direction of the professor in charge, in which case the candidate will be held responsible for large attainments in the directions indicated, in the form of written reports, reviews and criticism.

The candidate must pass satisfactory written examinations upon his major and minor subjects at any time not more than a year prior to the final examination on the major.

In the case of the minors this written examination shall be final. If these examinations are satisfactory and the thesis approved the candidate shall be admitted to a final oral examination upon his major.

The final examination upon the major must show an exhaustive knowledge of the special subject selected, and a large acquaintance with the general field in which the subject lies, but the candidate shall not be admitted to the final examination upon his major until his thesis has been considered by the committee in charge and found satisfactory.

The order of procedure to be followed is this: The candidate for a doctor's degree shall submit the title and outline of his proposed thesis to the professor in charge of his major for final approval at least as early as the first of October preceding the commencement at which the degree is to be conferred. In case the proposed subject and the outline are acceptable, the candidate shall make a statement in writing to the Dean, as early as the first of the following February, of his intention to present himself for a doctor's degree at the next commencement, giving at the same time the names of the committee in charge of his work, the subjects of his major and minors, and the title of his thesis.

The thesis itself shall be completed in the typewritten form previously prescribed, and delivered to the professor in charge at least one month before commencement. In case the thesis is adjudged satisfactory, the candidate will be admitted by the committee to final examinations upon his major and upon the subject matter of his thesis.

This examination shall be arranged for by the professor in charge of the major, on a date at least two weeks before commencement. It shall be held by a committee of examination of which the professor in charge of the major shall be chairman, consisting of the professors in charge of the minors and, in addition, of such other members of the teaching force as

the Dean may appoint as members of this examining committee. In order to do this, the Dean shall be duly informed of the date of the examination by the chairman.

The examining committee shall decide from all the facts within its knowledge, whether the candidate is, in its estimation, entitled to receive the doctor's degree sought, and the chairman shall, without delay, report its findings, in writing, to the Dean and to the Registrar.

Immediately after the final examination, the thesis shall be placed by the chairman in the president's office for general examination, and finally deposited with the librarian.

In case the report of the committee is favorable, the candidate shall be presented to the faculty of the graduate school, at a meeting called for the purpose, by the professor in charge of his major subject, who shall then make a written statement of the academic life of the candidate, of the character and scope of his examinations, and the scope and value of his thesis.

Any member of the faculty shall then be at liberty to propound any questions he will to the instructors of the candidate, respecting his work, or to the candidate himself, respecting the subject matter of his thesis. Upon evidence before it, the faculty shall then decide by vote whether the candidate shall be recommended for the degree.

# Courses of Instruction

The Arabic numerals by which the courses are here designated are those under which they appear in the bulletins of the separate colleges.

The courses which are offered to both undergraduates and graduates may not be selected by graduates as major subjects, but as minors only. The courses offered primarily for graduates include the subjects offered to them as majors.

## AGRICULTURE

### PLANT BREEDING--FIELD CROPS

ASSISTANT PROFESSOR BULL

Courses in this subject will include research along such lines as may be advisable, in view of the previous training of the student, the available material and facilities for instruction, and the object sought by the candidate.

The prominent features of the course will be a study of history and methods; laws of evolution, heredity, etc.; probabilities, hybridization, selection; nursery and plant manipulation; character plotting; plant economics.

- Open to candidates for advanced degrees who have completed a long course in botany and agriculture 1 or their equivalent.

### FARM MANAGEMENT

MR. WILSON

Reading and research work combined with occasional lectures. Those who wish may choose any subject or problem of farm management that is of personal interest, provided they can get the necessary material for study. Any problem related to farming may be chosen, and must be presented from a practical business standpoint with special reference to profit and loss on the farm. Open as major subject to candidates for advanced degree.

## ANIMAL HUSBANDRY

### ANIMAL FEEDING AND NUTRITION

PROFESSOR BOSS

Original investigations in animal feeding with studies of food requirements for maintenance and growth. Problems will be arranged to suit the training and needs of the individual student.

### MEATS--STRUCTURE--COMPOSITION AND PREPARATION FOR USE

PROFESSOR BOSS AND ASSISTANT PROFESSOR GAUMNITZ

A course in which special consideration is given to the structure and composition of meats and to processes of ripening and curing them for food purposes. Original investigations will be required and equipment and material furnished for extensive study in this line.

## ANIMAL BIOLOGY

Graduates, whether candidates for a degree or not, will be admitted to any line of research or advanced work that can be carried on profitably.

Less advanced graduates will be admitted to any regular classes of the department for which they are sufficiently prepared.

All advanced students are expected to take an active part in the Journal Club and the Biological Club.

Students who contemplate taking advanced work are advised to confer with the head of the department.

10. HISTORY OF ZOOLOGY PROFESSOR NACHTRIEB  
 Two credits (two hours per week) First semester  
 Open to juniors and seniors; students are advised to complete course 1 before electing this course; not offered in 1908-9.

A course of lectures on the history of zoology from ancient times to the present, including a brief history of our domestic animals and those that have become extinct within historic times, and a discussion of the modern theories and problems of heredity and evolution.

11. ANIMAL HABITS AND INTELLIGENCE PROFESSOR NACHTRIEB  
 Two credits (two hours per week) Second semester  
 Open to juniors and seniors; students are advised to complete course 1 before electing this course; alternates with course twelve.

The course consists of lectures and discussions on animal habits and intelligence, and concludes with a consideration of the development of mental power in animals.

12. ECONOMIC ZOOLOGY PROFESSOR NACHTRIEB  
 Two credits (two hours per week) Second semester  
 Open to juniors and seniors; alternates with course 11; not given in 1908-9.

Lectures on the uses made of animals and their products, the production and protection of those animals of special economic importance, and the methods of protection against some of the disease-producing animals.

13. TEACHERS' COURSE PROFESSOR NACHTRIEB AND ASSISTANTS  
 One credit (one hour per week) First semester  
 Open to those who have completed a minor in zoology; given in alternate years.

Lectures and discussions on the ends to be attained through courses in general zoology and the methods and means by which such ends may be gained.

#### FOR GRADUATES

14. PROBLEMS AND RESEARCH PROFESSOR NACHTRIEB AND ASSISTANTS  
 Six or twelve credits (six or twelve hours per week) Both semesters  
 Open to those who have completed courses 1 and 3 or 1 and such other work as may be required by the instructor in charge; both semesters must be completed before credit is given for the first semester.

The course consists of advanced or essentially independent work carried on in some specific line under the direction of the professor in charge of that work. The lines of work open at present are:

- (a) Morphology of vertebrates under Assistant Professor Brown
- (b) Blood, connective tissue and excretory organs of vertebrates under Assistant Professor Downey
- (c) Entomology under Assistant Professor Oestlund
- (d) Experimental zoology
- (e) General physiology under Professor Nachtrieb
- (f) Invertebrate embryology under Professor Sigerfoos
- (g) Invertebrate morphology under Professor Sigerfoos
- (h) Vertebrate embryology or morphology under Professor Nachtrieb.

#### ASTRONOMY

##### FOR UNDERGRADUATES AND GRADUATES

2. PRACTICAL ASTRONOMY PROFESSOR LEAVENWORTH  
 Six or twelve credits (three or six hours per week) Both semesters  
 Open to juniors and seniors who have completed course 1 and mathematics 5, 6, and 7.

Theory and use of astronomical instruments in determining time, latitude, longitude, positions of heavenly bodies; astronomical photography, with measures of plates; study of the method of least squares.

## FOR GRADUATES

3. ADVANCED PRACTICAL ASTRONOMY                      PROFESSOR LEAVENWORTH  
Six credits (three hours per week)                      Both semesters  
Open to graduate students who have completed courses 1 and 2.
4. CELESTIAL MECHANICS                                      PROFESSOR LEAVENWORTH  
Six credits (three hours per week)                      Both semesters  
Open to graduate students who have completed courses 1 and 2.
5. ASTROPHOTOGRAPHY                                      PROFESSOR LEAVENWORTH  
Open to graduate students who have completed courses 1 and 2.  
Photography of the heavenly bodies, measurement of plates, determination of positions, parallax, etc.

## BOTANY

Students entering the department for the first time must take course 1, or present a satisfactory equivalent. Courses 1 and 2 are required for entrance to all advanced courses, with the exception of eleven to fifteen. Students are requested to confer with the head of the department before electing an advanced course.

The *Botanical Seminar* consists of advanced students in botany, together with the staff of the department. It meets every two weeks for the presentation of the results of investigation, and for the discussion of current problems.

## FOR UNDERGRADUATES AND GRADUATES

2. ADVANCED BOTANY                      PROFESSOR CLEMENTS, ASSISTANT PROFESSORS  
TILDEN AND ROSENDAHL  
Six credits (six hours per week)                      Both semesters  
Open to those who have completed course 1; the laboratory fee is three dollars per semester.

A study of the structure and classification of the great groups of plants, based on identification; the details of cell-division, of the formation of tissues and of reproduction; and the general relations of the plant to the physical factors of its home. Lectures and quizzes, laboratory, greenhouse and field work.

## SPECIAL COURSES

3. PLANT PHYSIOLOGY AND ECOLOGY                      PROFESSOR CLEMENTS AND MR. HUFF  
Six credits (six hours per week)                      Both semesters  
Open to those who have completed courses 1 and 2; by permission of the department the course may be taken in conjunction with course 2; the laboratory fee is three dollars per semester.

A study of the factors that affect the plant and its response to them; the adaptations of plants and the origin of new forms: the structure and development of vegetation, as shown in migration, invasion, competition, etc. Lectures and quizzes, greenhouse and field work.

4. ALGAE    ASSISTANT PROFESSOR TILDEN  
Six credits (six hours per week)                      Both semesters  
Open to those who have completed courses 1 and 2; the laboratory fee is three dollars per semester.

A detailed comparative study of the structure and classification of the algae; the blue-green and yellow-green algae, together with a systematic examination of forms in the Minneapolis water supply, occupy the first semester, and the brown and the red marine algae the second semester. Lectures, laboratory and reference work.



5. FUNGI PROFESSOR CLEMENTS  
 Six credits (six hours per week) Both semesters  
 Open to those who have completed courses 1 and 2; the laboratory fee is three dollars per semester.

The classification and life-history of the various groups of fungi, based on identification, cultures and field work, with particular reference to forms which cause plant and animal diseases. Lectures and discussions, laboratory, greenhouse and field work.

6. MOSSES AND FERNS ASSISTANT PROFESSOR ROSENDAHL AND MR. HUFF  
 Six credits (six hours per week) Both semesters  
 Open to those who have completed courses 1 and 2; the laboratory fee is three dollars per semester.

The course is designed for students who wish to pay special attention to the morphology and taxonomy of liverworts, mosses, and ferns. Lectures, laboratory and field work.

7. FLOWERING PLANTS ASSISTANT PROFESSOR ROSENDAHL  
 Six credits (six hours per week) Both semesters  
 Open to those who have completed courses 1 and 2; the laboratory fee is three dollars per semester.

The course is designed to afford the student an opportunity to become proficient in the determination of plant species and plant types, as well as to show the genetic development and relationships of the flowering plants. Lectures, reference reading, laboratory, greenhouse and herbarium work, together with field work in the fall and spring.

8. ECOLOGY PROFESSOR CLEMENTS  
 Six credits (six hours per week) Both semesters  
 Open to those who have completed course 1, 2 and 3; the laboratory fee is three dollars per semester.

A critical study of plant habitats by means of instruments, and the adaptations produced by water and by light, together with a careful examination of the causes and reactions of plant formations. Class discussions and quizzes, field and greenhouse work.

9. PLANT PHYSIOLOGY PROFESSOR CLEMENTS  
 Six credits (six hours per week) Both semesters  
 Open to those who have completed courses 1, 2 and 3; the laboratory fee is three dollars per semester; alternates with course 8.

A study of the relations of factor, function and structure in the various organs of the plant, with special reference to absorption, transpiration, photosynthesis, respiration, irritability and reproduction. Class discussions and quizzes, greenhouse and field work.

10. CYTOLOGY ASSISTANT PROFESSOR ROSENDAHL  
 Six credits (six hours per week) Both semesters  
 Open to those who have completed courses 1 and 2; the laboratory fee is three dollars per semester.

The course includes a survey of cell structure and the various phenomena of division, fusion and metamorphosis, together with a review of the history of cytologic investigation. Methods of cytological research indicated in the laboratory. Laboratory work and collateral reading.

11. INDUSTRIAL BOTANY ASSISTANT PROFESSOR TILDEN  
 Six credits (six hours per week) Both semesters  
 Open to technical students who have completed courses 1 and 2; to academic students who have completed course 1 and 2; the laboratory fee is three dollars per semester.

A study of the origin, distribution and cultivation of plants yielding products of economic value, the nature and use of these products, and the processes by which they are obtained from the plants. Lectures, demonstrations, topics and laboratory work.

12. WOOD TECHNOLOGY PROFESSOR CLEMENTS AND MR. BUTTERS  
Six credits (six hours per week)  
Open to those who have had course 1; the laboratory fee is three dollars per semester.

A critical study of the most important woods, with especial reference to their structure, differences and uses and the life history and relationship of the various genera.

13. WATER SUPPLY BOTANY ASSISTANT PROFESSOR TILDEN  
Three credits (six hours per week) Second semester  
Open to those who have completed course 1; the laboratory fee is three dollars.

A technical course for municipal, sanitary and reclamation engineers involving the determination of the forms prevalent in storage waters and in water supplies, and their abundance, together with methods of control or prevention. Lectures and references, laboratory and field work.

14. TIMBER AND TIMBER DISEASES MR. HUFF  
Three credits (six hours per week) First semester  
Open to those who have completed course 1; the laboratory fee is three dollars.

A study of the source and structure of the important timbers with particular reference to their mechanical properties, together with a study of timber discases, and methods of timber preservation. Lectures, laboratory work, and references.

15. BOTANICAL MICROCHEMISTRY PROFESSOR CLEMENTS  
Six credits (six hours per week) Both semesters  
Open to those who have completed course 1; laboratory fee is three dollars.

A microscopical study by means of stains and reagents of the nature and structure of plant substances, in the natural condition as well as in the finished product. Lectures, laboratory and reference work.

16. PLANT STUDIES AND METHODS PROFESSOR CLEMENTS  
Six credits (six hours per week) Both semesters  
Open to those who have completed courses 1 and 2; the laboratory fee is three dollars per semester.

A course for teachers and for students intending to teach; the subjects of nature study and high school botany are presented as they are to be taught and not from the university point of view; the material is taken up in detail in its proper sequence, and training in method is afforded as far as possible by practice in the elementary school of the College of Education.

#### FOR GRADUATES

17. MORPHOLOGY AND TAXONOMY ASSISTANT PROFESSOR ROSENDAHL  
Both semesters  
Open to graduate students; other arrangements may be ascertained upon application to the department.

Important literature and necessary material will be provided for whatever research is entered upon, and the results of the investigations will be required to be prepared for publication. The course is an elastic one and will be adapted to the special training and requirements of those pursuing it.

18. PROBLEMS IN ALGOLGY ASSISTANT PROFESSOR TILDEN  
Both semesters  
Open to graduate students; other arrangements may be ascertained upon application to the department.

Research work may be done on special groups or along any of the following lines: The freshwater algae of Minnesota; the algae of the Minneapolis and St. Paul water supplies; the algae of hot springs; lime-depositing algae; arctic marine algae (material from Vancouver Island); tropical marine algae (material from the Hawaiian Islands). Special facilities for study are offered by the Minnesota Seaside Station on Vancouver Island, which is open during the summer vacation.

19. PROBLEMS IN PHYSIOLOGY AND ECOLOGY PROFESSOR CLEMENTS  
Both semesters  
Open to graduate students; other arrangements may be ascertained upon application to the department.  
Opportunity for research work in ecology and physiology is offered along the following lines: Critical investigation of the physical factors of the habitat by means of instruments; studies in plant functions and adaptations; the experimental production of new forms; investigations in the development and structure of vegetation, and especially in migration, competition, etc.
20. PROBLEMS IN CYTOLOGY AND EMBRYOLOGY PROFESSOR CLEMENTS  
Both semesters  
Open to graduate students; other arrangements may be ascertained upon application to the department.  
Research work may be taken along any of the following lines: The minute structure of the cell; microchemistry of the cell; development of sporangia and spores; fecundity; development of the embryo; origin and development of the primary tissues; development of organs; correlation, etc.

## CHEMISTRY

## FOR UNDERGRADUATES AND GRADUATES

4. QUANTITATIVE ANALYSIS (Gravimetric) PROFESSOR SIDENER  
Three credits (six hours per week) First semester  
Open to those who have completed course 3; the laboratory fee is five dollars.  
Lectures and laboratory work. The course includes an introduction to quantitative and a beginning of gravimetric analysis.
5. QUANTITATIVE ANALYSIS (Volumetric) PROFESSOR SIDENER  
Three credits (six hours per week) Second semester  
Open to those who have completed course 4; the laboratory fee is five dollars.  
Lectures and laboratory work. The course includes an introduction to volumetric analysis with a discussion of standard solutions and the necessary stoichiometric calculations.
6. ORGANIC CHEMISTRY PROFESSOR FRANKFORTER, ASSISTANT  
PROFESSORS DERBY AND HARDING  
Six credits (six hours per week) Both semesters  
Open to those who have completed course 3.  
Lectures and laboratory work. The course includes the aliphatic and aromatic series with a preparation of the more important compounds.
8. SPECIAL INORGANIC CHEMISTRY  
Open to graduate students; other arrangements may be ascertained upon application to the department.
9. ELECTRO-CHEMISTRY  
Open to graduate students; other arrangements may be ascertained upon application to the department.
10. ORGANIC CHEMISTRY  
Open to graduate students; other arrangements may be ascertained upon application to the department.
11. THE ALKALOIDS  
Open to graduate students; other arrangements may be ascertained upon application to the department.
12. ANALYTICAL CHEMISTRY  
Open to graduate students; other arrangements may be ascertained upon application to the department.

## FOR GRADUATES

No specific courses are offered to graduate students. A thesis may be chosen from one of the following lines of work provided the student has had sufficient preparation to enable him to pursue the work satisfactorily:  
General Inorganic Chemistry.  
Analytical Chemistry.  
Technological Chemistry.

Electro Chemistry.

Physical Chemistry.

General Organic Chemistry with the following special topics:

(a) The Alkaloids. (b) The Terpenes. (c) The Resins. Seniors who have specialized in any of these lines of work, may choose their undergraduate thesis from this list of topics.

### COMPARATIVE PHILOLOGY

This department, besides offering courses in the general principles of linguistic science, affords an opportunity for elementary studies in comparative Indo-European philology, and more particularly the investigation of Old Germanic dialects. Related courses in English philology will be found under English language and literature.

#### FOR UNDERGRADUATES AND GRADUATES.

5. INTRODUCTION TO TEUTONIC PHILOLOGY PROFESSOR KLAEBER  
 One credit (one hour per week) Second semester  
 Open to sophomores, juniors, and seniors, who have a fair knowledge of German; alternates with course 4.  
 History of Germanic philology, biographies of leading scholars (J. Grimm and others). Classification of the Germanic languages. Rapid survey of the various branches of the Teutonic group (Gothic, Norse, English, Frisian, Dutch, Low German, High German).
6. COMPARATIVE PHONOLOGY OF ENGLISH AND GERMAN PROFESSOR KLAEBER  
 Three credits (three hours per week) Second semester  
 Open to sophomores, juniors, and seniors who have a fair knowledge of German.  
 Elements of phonetics; history of English and German sounds; orthography. The lectures will be supplemented by practical exercises.

#### FOR GRADUATES

7. COMPARATIVE GRAMMAR OF THE GREEK, LATIN, AND GERMANIC LANGUAGES PROFESSOR KLAEBER  
 Open to graduate students who have taken an undergraduate major in a linguistic subject; other arrangements may be ascertained upon application to the department.  
 A general survey of the field of Indo-Germanic philology will be included.
8. GOTHIC PROFESSOR KLAEBER  
 Open to graduate students who have taken an undergraduate major in a linguistic subject; other arrangements may be ascertained upon application to the department.  
 The relation of Gothic to other Germanic dialects will be particularly emphasized. Study of the grammar (Braune, J. Wright, Streitberg) and reading of the gospels (Heyne's *Ulfilas*, 10th edition).
9. URGERMANISCHE GRAMMATIK PROFESSOR KLAEBER  
 Open to graduate students who have completed course 8; other arrangements may be ascertained upon application to the department.  
 Lectures and study of standard works (Brugmann, Kluge, Noreen, Streitberg, etc.).
10. OLD SAXON PROFESSOR KLAEBER  
 Open to graduate students who have taken an undergraduate major in a linguistic subject; other arrangements may be ascertained upon application to the department.  
 Old Saxon Grammar and interpretation of the *Heliland*.
11. OLD HIGH GERMAN PROFESSOR KLAEBER  
 Open to graduates who have taken an undergraduate major in a linguistic subject; other arrangements may be ascertained upon application to the department.  
 Braune's *Althochdeutsche Grammatik*; Braune's *Althochdeutsches Lesebuch*.  
 This course is identical with German 14.

## ECONOMICS

## FOR GRADUATES AND UNDERGRADUATES

4. **ADVANCED ECONOMICS** PROFESSOR ROBINSON  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 1; required for a major  
 in economics.  
 An advanced course in general economics, devoted largely to a study of  
 recent theories of distribution.  
 Assigned readings, reports, and discussions.
5. **MONEY AND BANKING** DR. PHELAN  
 Three credits (three hours per week) Repeated each semester  
 Open to those who have completed course 1.  
 The history and theory of money; nature and uses of credit; functions  
 of banks, trust companies, and other financial institutions; foreign exchange  
 and the settlement of international balances. Lectures, text-book, assigned  
 readings, and discussions.
28. **FINANCIAL HISTORY OF THE UNITED STATES** DR. PHELAN  
 Three credits (three hours per week) Second semester  
 Open to those who have completed courses 1 and 5.  
 The main lines of our financial development, including our monetary and  
 banking history, are traced by means of lectures. Readings in the literature  
 of the subject and topics for investigation are assigned. Lectures, text-book,  
 assigned readings, topics, and discussions.
6. **PUBLIC FINANCE** PROFESSOR ROBINSON  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1.  
 The development of the state as an economic organism. Public expendi-  
 tures from the view point of public wants. Budget systems of the leading  
 countries with special emphasis on the United States. Public revenues from  
 public domains and industries. Principles, incidents, and administration of  
 taxation. The theory of public debts. Text-books, supplemented by lectures  
 and assigned readings.
7. **PROBLEMS IN TAXATION** PROFESSOR ROBINSON  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 6.  
 Study of tax systems, tax reforms, and special forms of taxation, such  
 as the mortgage, corporation, and inheritance taxes. Based on Seligman,  
*Essays in Taxation*, and reports of state tax commissions with lectures and  
 reports on special topics.
8. **ECONOMICS OF TRANSPORTATION AND COMMUNICATION** PROFESSOR ROBINSON  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 1 and to students in  
 the technical colleges.  
 A general course on the history and theory of transportation and com-  
 munication with special reference to the United States; early routes and  
 methods of migration and commerce; causes determining the location of  
 railways; effect of steam and electricity in the consolidation of industries  
 and of nations; signal systems, the post, telegraph and telephone; parcels  
 post and express service; economic functions and relations of highways,  
 interurban electric lines, steam railways, inland waterways, and ocean trans-  
 portation; the organization of ocean commerce. Lectures, assigned readings,  
 and discussions.
9. **RAILWAY ECONOMICS** PROFESSOR ROBINSON  
 Three credits (three hours per week) First semester  
 Open to those who have completed courses 1 and 8, and to  
 students in the technical colleges.  
 An advanced course devoted to the study of railway problems and  
 administration, including: (1) conditions affecting economy of operation;  
 (2) passenger and goods traffic; (3) economic principles underlying the  
 making of railway rates; (4) competition in relation to rate wars, discrim-  
 ination between persons, places, and commodities, pooling, and various forms  
 of combination; (5) the great railway systems of the United States; (6)

regulation by the states and the federal government; (7) government ownership and operation of railroads in Europe and Australasia. Lectures, assigned readings, and special topics.

11. THE MODERN BUSINESS CORPORATION PROFESSOR GRAY  
Three credits (three hours per week) First semester  
Open to those who have completed course 1.

The organizing, financing, and managing of corporations; the position of the corporation before the law; methods of accounting; the relation of the government to the corporation; the question of trusts in its various phases. Text-books: Ripley, *Trusts, Pools, and Corporations*, Meade's *Trust Finance*, Wyman's *Cases*. Lectures, class discussions, and reports.

10. MUNICIPAL INDUSTRIES PROFESSOR GRAY  
Three credits (three hours per week) Second semester  
Open to those who have completed course 1; if possible, should be preceded by course 11.

The causes and the social and economic effects of the recent rapid development of municipal industries. A comparison of the results of public and of private ownership of such industries. The general question of municipal ownership. Text-books, lectures, and quizzes.

12. ECONOMICS OF COMMERCE PROFESSOR ROBINSON  
Three credits (three hours per week) First semester  
Open to those who have completed course 1, 2, or 3.

Causes and characteristics of commercial crises; theory and mechanism of international commerce; free trade, reciprocity and protection; the balance of trade; economic causes of the contest for foreign markets; organization of the export trade, commercial treaties and foreign politics, the consular and diplomatic service as a factor in commerce. Lectures, assigned readings, and reports on special topics.

13. ECONOMICS OF COLONIZATION PROFESSOR ROBINSON  
Three credits (three hours per week) Second semester  
Open to those who have completed course 1, 2, or 3.

The economic causes of human migration; historical survey of colonization and classification of colonies with reference to their economic bases; existing colonial systems, with special attention to the outlying possessions of the United States; colonial commerce in relation to modern commercial and foreign policies; preferential tariffs and imperial federation. Lectures, assigned readings, and reports on special topics.

26. SOCIAL THEORIES DR. PHELAN  
Three credits (three hours per week) First semester  
Open to those who have completed course 1.

A survey of social Utopias from Plato to Henry George, with special attention to modern scientific socialism as a philosophy of industrial evolution and as a program of economic reform. Lectures, assigned readings, reports, and discussions.

27. THE STATE IN RELATION TO INDUSTRY  
Three credits (three hours per week) Second semester  
Open to those who have completed courses 1 and 26.

A study of the influence exercised by society and by the state on the production and distribution of wealth. The force of custom; effect of private property and other social institutions; the results of economic legislation designed to limit the freedom, or to raise the plane of competition. General survey of the relation of the state to industry. Lectures, assigned readings, and reports.

16. LABOR PROBLEMS: Part I DR. PHELAN  
Three credits (three hours per week) First semester  
Open to those who have completed course 1.

Labor unions, strikes, systems of wage payment, arbitration, poverty, child labor, etc. Efforts, public and private, to secure justice and social well-being. Lectures, text-book, assigned readings, and discussions.

17. LABOR PROBLEMS: Part II DR. PHELAN  
Three credits (three hours per week) Second semester  
Open to those who have completed course 1, but should also be preceded by course 16.

A study of races and immigrants in America, with reference to their economic and social contributions; the economic and social conditions in

foreign countries that lead to emigration; the general problem of immigration; the special problems of the Slav, the Italian, the negro, the Chinese and the Japanese. Lectures, text-book, topics, and discussions.

18. CHARITIES AND CORRECTIONS WITH SPECIAL REFERENCE TO ECONOMIC CONDITIONS IN AMERICAN CITIES MR. LIES  
 Three credits (three hours per week) First or second semester  
 Open to those who have completed course 1, course 3, or sociology 1; required in the six-year medical course.  
 A study of the causes of economic dependence in American cities, the standard of living, and the constructive agencies for economic betterment. Given by lectures with assigned readings and visits of inspection in the Twin Cities.
19. THE PRINCIPLES OF ACCOUNTING ASSISTANT PROFESSOR ROSTALL  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed course 1.  
 The theory and practice of accounting, with a view to general business efficiency. Methods employed in manufacturing, mercantile, banking, and railway accounting. Analysis of industrial, bank, and railway reports. Lectures and exercises.
20. ELEMENTS OF BUSINESS LAW DR. PHELAN  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 1.  
 The principles of law governing ordinary commercial transactions. The aim is to teach so much of the law as every educated man ought to know for his guidance in everyday business affairs. Assigned readings, lectures and quizzes.
22. BUSINESS ORGANIZATION ASSISTANT PROFESSOR ROSTALL  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 1.  
 A study of the internal organization and management of large-scale industry, covering typical manufacturing and mercantile concerns.  
 Based on Sparling's *Introduction to Business Organization*, with lectures, assigned readings, and discussions.
23. ECONOMICS OF FORESTRY AND IRRIGATION MR. COULTER  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1 or course 2.  
 Preliminary survey of forest controls and forest influences. In this connection, special attention to the progress of the national irrigation works in relation to economic development, land laws, and land tenure. Location and value of the extant forest resources of the United States. Intensive study of the forest industry, covering: (1) history and processes, (2) employees, (3) division into stages (logging, sawing, etc.), (4) internal organization of each, (5) transportation and marketing, (6) economic relations to other industries, (8) share of forest products in foreign commerce, (9) economic necessity of a scientific system of forestry. Lectures, assigned reading, and reports.
14. ECONOMICS OF AGRICULTURE MR. COULTER  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 1 or course 2, and to others by special permission of the instructor.  
 Preliminary survey and classification of industries as extractive, manufacturing, and distributive; and comparison of the several extractive industries in the United States, viz. fishing, forestry, grazing, farming, and mining. Historic development of agriculture and comparison of existing systems, with reference to stage of economic development and geographic conditions. Transition in the United States from extensive to intensive, and from general to specialized farming in relation to the law of decreasing returns. Markets, transportation facilities, and other causes affecting the value of land and the prices of farm products. The size, organization, labor-system, and ownership of farms as bearing on economic efficiency and social and political conditions. Lectures, assigned readings, reports on special topics, and quiz.

15. **ECONOMICS OF INSURANCE** ASSISTANT PROFESSOR ROSTALL  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1 and to others by  
 special permission of the department.  
 Economic functions of insurance: life, fire, marine, accident,  
 fidelity; history and theory of life insurance, forms of standard policies,  
 public supervision. The aim is to treat those aspects of insurance which  
 are of importance to practical men of affairs.
25. **ECONOMICS OF INVESTMENT AND SPECULATION** ASSISTANT PROFESSOR ROSTALL  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors who have completed course 5.  
 The causes affecting the values of securities; classes of investments and  
 methods of calculating income; bearings of investment on the formation of  
 social classes; the economic functions of speculation; organization and work-  
 ing of stock and produce exchanges; their relation to industry and to the  
 money market; the work of Wall Street. Lectures, assigned readings, and ex-  
 ercises in the interpretation of current quotations for securities.

#### FOR GRADUATES

29. **THEORY AND PRACTICE OF STATISTICS** ASSISTANT PROFESSOR ROSTALL  
 Two credits (two hours per week) First semester  
 Open to those who have completed six credits in economics.  
 An introduction to the theory and method of statistics; aspects of  
 economic and social life which are capable of statistical measurement; use  
 and limitations of index numbers; theory of prices and price levels; based  
 on the works of Bowley and Mayo-Smith, with lectures and practical exercises.
30. **HISTORY OF ECONOMIC THOUGHT** PROFESSOR ROBINSON  
 Two credits (two hours per week) First semester  
 Open to those who have completed six credits in economics.  
 A survey of economic thought, especially since Adam Smith. Emphasis  
 is placed on the most recent period. Lectures, assigned readings, and reports  
 on special topics.
24. **SCOPE AND METHODS OF ECONOMICS** PROFESSOR ROBINSON  
 Two credits (two hours per week) Second semester  
 Open to those who have completed six credits in economics.  
 Consideration of the successive views which have prevailed as to the  
 scope and logical method of economics; relation of economics to the other  
 social sciences and to ethics. Lectures, assigned readings, and discussions.
21. **SEMINAR IN ECONOMICS** PROFESSORS GRAY AND ROBINSON,  
 MR. GEROULD, ASSISTANT PROFESSOR ROSTALL,  
 DR. PHELAN AND MR. COULTER  
 Six credits (three hours per week) Both semesters  
 Open to graduate students and to seniors who have completed at  
 least twelve credits in economics and are capable of making  
 original investigations; both semesters must be completed be-  
 fore credit is given for the first semester.  
 A course in research and in methods of investigation. The course will  
 be conducted jointly by all the instructors, each striving to be of special  
 service to students who choose topics within the field of his special interests:  
 Professor Gray in connection with local public service corporations; Professor  
 Robinson in connection with taxation, transportation, and industries of im-  
 portance in this section, such as wheat and iron; Dr. Phelan in connection  
 with currency questions, labor, socio-economic theories, and taxation.

#### ECONOMIC ENTOMOLOGY

##### FOR GRADUATES

- SPECIAL PROBLEMS IN ECONOMIC ENTOMOLOGY PROFESSOR WASHBURN  
 EDUCATION

##### FOR UNDERGRADUATES AND GRADUATES

Preliminary Requirements: Students who desire to undertake graduate  
 work in education must have a general knowledge of psychology and of the



history of education, and some acquaintance with the theory of education. For a minor in education the candidate may pursue studies either in the theory and practice of elementary teaching, the organization and methods of secondary education, or in advanced educational theory and administration. Students who undertake a major in education are expected to do work in at least two of these fields. Selection will be made by the candidate on the approval of the head of the department from the following courses:

4. SECONDARY EDUCATION PROFESSOR JAMES  
 Three credits (three hours per week) First semester

Open to seniors who have completed courses 1 and 2.  
 A study of secondary education in the United States, with such references to the secondary schools of other countries as will lead to a clearer understanding of the place and function of the high school, its curriculum, the problems of present-day importance, and the relation of the high school to other parts of the system of public instruction. The course will be conducted by lectures, reports, and discussions.

5. PRINCIPLES AND ORGANIZATION OF ELEMENTARY TEACHING PROFESSOR RANKIN  
 Three credits (three hours per week) First semester  
 Open to seniors who have completed courses 1 and 2 and philosophy 1.

This course includes a consideration of the course of study of the elementary school and of the best methods of instruction. It is conducted by means of lectures, assigned readings, discussions and reports. It is planned for all students who expect to teach in the high school or to be principals or superintendents. No credit is given in this course to graduates of normal schools who have received one year's credit at the University.

6. PRINCIPLES AND ORGANIZATION OF SECONDARY TEACHING PROFESSOR RANKIN  
 Three credits (three hours per week) Second semester  
 Open to seniors who have completed courses 1 and 2, and who have completed course 4 or are pursuing course 10.

This course includes lectures on the general methods of secondary teaching, assigned readings, reports, and discussions. It is planned more particularly for those who expect to teach in high schools.

8. SCHOOL ADMINISTRATION PROFESSOR RANKIN  
 Three credits (three hours per week) First semester  
 Open to seniors who have completed courses 1 and 2.

An introductory study of school administration, conducted by lectures, reports, and discussions; the organization of school systems, the work of school boards, superintendents, principals, and teachers. This course is planned for students without any teaching experience, who hope later to do work in supervision.

9. SCHOOL SUPERVISION PROFESSOR RANKIN  
 Three credits (three hours per week) Second semester  
 Open to seniors; intended only for students with experience in teaching; credit will not be given both for course 8 and for course 9.

An advanced course treating of the duties of principals and superintendents.

10. COMPARATIVE STUDY OF SCHOOL SYSTEMS PROFESSOR JAMES  
 Three credits (three hours per week) Second semester  
 Open to seniors who have completed courses 1 and 2.

This course deals with the school systems of Germany, France, England, and the United States, with special reference to principles and methods of administration. Elementary, secondary, and higher institutions are examined with emphasis varying in successive years. The course is conducted partly by lectures and partly by assigned readings, reports, and discussions.

FOR GRADUATES

11. MODERN EDUCATIONAL THEORIES PROFESSOR JAMES  
 Three credits (three hours per week) Second semester  
 Open to seniors who have completed courses 1 and 2, and philosophy 1.

An advanced course in educational theory, dealing particularly with the contributions of Rousseau, Froebel, and Herbart, special emphasis being laid upon one of these writers in each successive year.

12. **CURRENT PROBLEMS IN ELEMENTARY TEACHING** PROFESSOR RANKIN  
Two credits (two hours per week) First semester  
Open to seniors and graduate students who have completed course 5.  
This is a seminar course, involving a general discussion of some current problems in elementary education, one or two of which are worked out practically by the student under the direction of the instructor through readings, the visiting of schools, and through class discussions.
13. **EDUCATIONAL CLASSICS** PROFESSOR JAMES  
Two credits (two hours per week) First semester  
Open to seniors who have completed courses 1 and 2, and to graduate students.  
A seminar course for the reading of selected educational classics and for the detailed study of corresponding periods in educational history.
14. **CURRENT PROBLEMS IN SECONDARY TEACHING** PROFESSOR RANKIN  
Two credits (two hours per week) Second semester  
Open to seniors and graduate students who have completed course 6.  
This is a seminar course for advanced students, preferably with teaching experience, or who wish to pursue a theoretical and a practical study of some current problems in connection with secondary teaching. The course will be conducted by lectures, class discussions, readings, and by the visiting of schools.
15. **PROBLEMS IN SCHOOL ADMINISTRATION** PROFESSOR JAMES  
Two credits (two hours per week) Second semester  
Open to seniors and graduate students who have completed courses 1 and 2.  
A research course for advanced students, preferably with teaching experience, who desire to take up the investigation of some question of educational administration. The course will be conducted by lectures, class discussions, assigned readings, and, when possible, by a study of actual school conditions falling within the proposed field.
16. **SCHOOL SANITATION** PROFESSOR RANKIN  
Two credits (two hours per week) First semester  
Open to seniors and graduate students.  
This course will be conducted by text, by lectures, and by investigations into problems of school lighting, heating, ventilation, and other questions of school architecture and management connected with the physical well-being of the pupils.
17. **ORGANIZATION OF HIGHER EDUCATION** PROFESSOR JAMES  
One credit (one hour per week) Second semester  
Open to seniors and graduate students who have completed courses 1 and 2.  
This course is intended for students who are interested in the general problems of educational administration and who look forward later to college teaching. It includes an historical sketch of the development of the American university, with discussions of modes of organization and administration problems of departmental teaching, and questions of class instruction.

## ELECTRICAL ENGINEERING

The courses offered by the department of electrical engineering are open to graduate students having the required preliminary training. Thorough courses in physics and mathematics are essential prerequisites. The laboratory, shop and library of the department provide facilities for a moderate amount of research work in addition to the regular courses of study.

*The laboratory equipment* includes about forty dynamo electric machines of various types and sizes for direct and alternating currents, such as constant current and constant potential direct current generators and motors, single phase and polyphase alternators, commutating induction and synchronous motors and rotary converters, each furnished with suitable regulating devices. A number of these machines have been equipped with special devices for experimental purposes. Lamps, rheostats, batteries, fans and brakes afford convenient and ample means for taking up the energy of dynamos and motors. To facilitate testing, there are a number of pairs of similar machines. A three-ton traveling crane facilitates handling the machines. Power is ob-

tained from a main shaft driven by the engines of the lighting plant, or by motors connected with the University power circuits, with a storage battery or with the circuits of The Minneapolis General Electric Company, which supplies direct current at 500 volts and alternating current at 2,250 volts. The laboratory has equipment for obtaining low voltage direct or alternating current up to 2,000 amperes, for continuous EMF up to 2,000 volts and for alternating EMF up to 40,000 volts. An excellent assortment of instruments of well-known American and foreign makers is available for laboratory use. A well equipped standardizing laboratory furnished with certain standards of current electromotive force and resistance, allows the frequent checking of instruments, so that students may work to any desired degree of refinement. The meter and lamp testing laboratories are furnished with a wide variety of arc and incandescent lamps and meters with all necessary standards and other accessories. The electro-chemical laboratory provides facilities for the construction and testing of various cells, for electro-plating and other electrolytic processes and for the formation and study of electric furnace products. Alternators, rotary converters, transformers, lamps, motors, condensers, special apparatus and suitable instruments afford facilities for the experimental study of alternating currents. Telephone transmitters, receivers and accessories provide for practice in assembling and testing the ordinary telephonic apparatus and circuits and for investigation.

The department library contains an excellent collection of electrical and allied works, including a full set of United States Patent Office Gazettes. New books and trade publications are being added continually. Files of twenty-two journals are nearly complete and others are being collected and bound. These, with the files in the general and other departmental libraries of the University, offer excellent facilities for research work. The reading room receives regularly the leading American and foreign periodicals devoted to electrical engineering and allied interests.

#### FOR UNDERGRADUATES AND GRADUATES

1. **APPLIED ELECTRICITY** PROFESSOR SHEPARDSON  
 Three credits (three hours per week) Second semester  
 Required of juniors E. E. course.  
 Preparation, course 5 P.  
 Outline of industrial uses of electricity; applications of Ohm's law; methods and calculation of wiring.
2. **ELECTRICAL MACHINERY** PROFESSOR SPRINGER  
 Three credits (six hours per week) First and second semesters  
 Preparation, courses E. E. 1, P. 5, 6, and M. 5, 6.  
 Electrical engineering measuring instruments and their use; units; theory of dynamo electric machinery; methods of regulation, construction and operation of generators and motors; methods of testing.
6. **ALTERNATING CURRENTS** PROFESSOR SHEPARDSON  
 Two or three credits (two or three hours per week) First and second semesters  
 Post senior year. Preparation: courses 1, 2.  
 Phenomena, measurement and use of alternating currents; theory of line, transformer, generator and motor; types of apparatus.  
 Text-book: Steinmetz, Alternating Current Phenomena.
7. **ELECTRICAL ENGINEERING PRACTICE. Batteries** MR. RYAN  
 One credit (one hour per week) First semester  
 Post senior year. Preparation: course 2.  
 General theory of primary and secondary cells; types and methods of construction; commercial applications; operation of battery plants; construction and test of cells by students; test of a commercial plant. Text-book: Lyndon, Storage Battery Engineering.
8. **ELECTRICAL ENGINEERING PRACTICE. Lighting** PROFESSOR SHEPARDSON  
 One credit (one hour per week) First semester  
 Post senior year. Preparation: course 2.  
 Comparison of different sources of light; photometry; physics of the arc; history, design and regulation of arc lamps; adaptation to constant current, constant potential and A. C. circuits; carbons; history, manufacture and economy of incandescent lamps; distribution of light.

9. **ELECTRICAL ENGINEERING PRACTICE.** Central stations MR. RYAN  
 Two credits (two hours per week) First or second semester  
 Post senior year. Preparation: courses 2 and 6 E. E.  
 Preliminary surveys; choice of electrical systems; load diagrams;  
 best units of power; comparison of steam, gas and water  
 power; location, design and erection of station buildings; boilers,  
 engines, dynamos, storage batteries, switch board and  
 lines; operation and regulation; maintenance of plant; emer-  
 gencies; examination of stations in Minneapolis and St. Paul.
10. **ELECTRICAL ENGINEERING PRACTICE.** Railways PROFESSOR SPRINGER  
 One credit (one hour per week) Second semester  
 Post senior year. Preparation: E. E. 2 or E. E. 4.  
 History and development; different systems of distribution; loca-  
 tion and calculation of feeders; line and track construction;  
 choice of motors, trucks, generators and engines; operation  
 and repairs. Text-book: Gotshall, Electric Railway Economics.
11. **ELECTRICAL ENGINEERING PRACTICE.** Transmission PROFESSOR SHEPARDSON  
 One credit (one hour per week) Second semester  
 Post senior year. Preparation: courses 1, 2 and 5 E. E.  
 Utilization of natural forces; various methods of transmission;  
 theory of electric motor; power distribution with constant  
 current, constant potential and alternating systems; design of  
 line; study of particular plants.
12. **ELECTRICAL ENGINEERING PRACTICE.** Telegraph and telephone PROFESSOR SHEPARDSON  
 One or two credits (one or two hours per week) Second semester  
 Post senior year. Preparation: E. E. 1 and E. E. 5.  
 Various systems and instruments used in local and long distance  
 telegraphy and telephony; design and construction of switch-  
 boards and lines; protection from inductive and other dis-  
 turbances; police, fire alarm and district messenger systems.
13. **ELECTROCHEMISTRY** PROFESSOR SHEPARDSON  
 One or two credits (one or two hours per week) First or second semester  
 Post senior year.  
 Theoretical and experimental study of electrolytic and electro-  
 thermal processes.
14. **ELECTRICAL DESIGN** MR. RYAN  
 Three credits (six hours per week) First semester  
 Post senior year. Preparation: courses 1 and 2 P., courses E.  
 E. 1, 2 and M. E. 13.  
 Problems in designing circuits, electro-magnets and dynamos;  
 complete working drawings and specifications to accompany  
 each design.
15. **ELECTRICAL DESIGN** MR. RYAN  
 Three credits (six hours per week) Second semester  
 Post senior year. Preparation: courses 6 and 14 E. E.  
 Design of a transformer, switchboard and other problem.
16. **ELECTRICAL DESIGN** MR. RYAN  
 Two credits (four hours per week) Second semester  
 Post senior year. Preparation: courses 8 and 14 E. E.  
 Designs, specifications and estimates for an electric light or pow-  
 er plant.
17. **ELECTRICAL LABORATORY** PROFESSOR SPRINGER  
 Three credits (six hours per week) First and second semesters  
 Senior year. Preparation: courses P. 5, 6 and 1 and 2 E. E.  
 Tracing circuits and locating faults; electrical engineering  
 measurements; calibration of instruments; operation and char-  
 acteristic curves of generators and motors.
18. **ELECTRICAL LABORATORY** PROFESSOR SPRINGER  
 Three credits (six hours per week) First and second semesters  
 Post senior year.  
 Experimental study of alternating currents; regulation and effi-  
 ciency tests of alternators, transformers, motors and rotaries;  
 photometric tests of incandescent and arc lamps.

19. ELECTRICAL LABORATORY                      PROFESSOR SHEPARDSON, PROFESSOR SPRINGER  
One or two credits (two or four hours per week)                      First or second semester  
Post senior year. Efficiency tests and special problems
20. ELECTRICAL ENGINEERING MEASUREMENTS                      PROFESSOR SPRINGER  
Application of measurements to electrical engineering practice.  
Lectures and laboratory.
21. PLANT OPERATION    MR. RYAN, MR. DIXON  
One credit (equivalent to two hours per week)                      First or second semester  
Practice in operation and care of boilers, engines, motors, dynamos, battery and circuits of the University lighting plant.
22. JOURNAL READING (Post senior I and II (1))                      PROFESSOR SHEPARDSON  
One credit    First and second semesters  
Post senior year.  
Weekly discussion of current electrical periodicals. The class meets monthly with the Minnesota Section of the American Institute of Electrical Engineers.
23. PRECISE ELECTRICAL ENGINEERING MEASUREMENTS                      PROFESSOR SPRINGER  
Preparation: course 19.  
Lectures and laboratory work. Precise measurements of resistance, voltage, current, self-induction and capacity; standardization of measuring instruments. Open to a limited number subject to approval.
24. ILLUMINATING ENGINEERING    PROFESSOR SHEPARDSON  
Lectures and laboratory work. Investigation of performance of electric and gas lamps, reflectors and diffusers; luminous efficiency, distribution, color characteristics, physiological phenomena, methods of determining location, kind and quantity of lights for obtaining desired illumination.
25. TELEPHONE ENGINEERING    PROFESSOR SHEPARDSON, PROFESSOR EDDY  
Lectures and laboratory work. Theoretical and experimental study of telephonic apparatus; lines and line phenomena, including induction, transportations, loading coils, etc.
26. ALTERNATING CURRENT PHENOMENA    PROFESSOR SHEPARDSON  
Lectures and laboratory work. Study of wave forms, transient phenomena; oscillographic investigations; tests of apparatus.

## ENGLISH LANGUAGE AND LITERATURE

### FOR GRADUATES AND UNDERGRADUATES

3. EARLY ENGLISH    PROFESSOR KLAEBER, ASSISTANT PROFESSOR BEACH  
Six credits (three hours per week)    Both semesters  
Open to sophomores, juniors and seniors; required of all who take a major or obtain a teacher's certificate.  
A study of the language and reading of representative selections of old English prose and poetry. The relation to the modern English will be particularly emphasized.
4. INTRODUCTION TO MIDDLE ENGLISH LANGUAGE AND LITERATURE    PROFESSOR KLAEBER  
Two credits (two hours per week)    First semester  
Open to sophomores, juniors, and seniors, who have taken the first semester of course 3; alternates with course 5.  
An outline of middle English grammar including the interpretation of selected texts.
5. PIERS THE PLOWMAN    PROFESSOR KLAEBER  
Two credits (two hours per week)    First semester  
Open to sophomores, juniors and seniors, who have taken the first semester of course 3; alternates with course 4; not given in 1908-9.  
A critical study of *Piers the Plowman*.

13. **THE BIBLE AS LITERATURE** ASSISTANT PROFESSOR POTTER  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors.  
 A literary study of the Old Testament with special attention to forms and the critical study of selected readings.
16. **CONSTRUCTION AND DEVELOPMENT OF THE MODERN DRAMA** ASSISTANT PROFESSOR PECK  
 Six credits (three hours per week) Both semesters  
 Open to seniors who have completed two years of work in English, which must include course 15.  
 First semester: a study of the theory of the drama, with the history of English drama to the middle of the nineteenth century. Second semester: a study of the inter-relation of the English with the continental drama in the late nineteenth century with special emphasis upon Ibsen.
19. **HISTORY OF LITERARY CRITICISM** PROFESSOR BURTON  
 Two credits (one hour per week) Both semesters  
 Open to juniors and seniors; both semesters must be completed before credit is given for the first semester.  
 This course traces the rise, growth and present condition of the principles of criticism as applied to literature.
23. **SENIOR SEMINAR IN ENGLISH** ASSISTANT PROFESSOR PECK  
 Two credits (one hour per week) Both semesters  
 Open to seniors who have taken courses 3 and 4 or any of the following courses: 6, 19, 20, 22.  
 Hakluyt's Voyages will be studied in 1908-9. The work will consist of an inquiry into the vivid and dramatic sources of the language and literature found in this "prose epic" of the Elizabethan seamen.

## FOR GRADUATES

24. **ANGLO-SAXON** PROFESSOR KLAEBER  
 First semester  
 Open to graduates who have taken an undergraduate major in English; other arrangements may be ascertained upon application to the department.
25. **BEOWULF** PROFESSOR KLAEBER  
 Second semester  
 Open to graduate students who have taken an undergraduate major in English; other arrangements may be ascertained upon application to the department.
26. **PRINCIPLES OF CRITICISM** MR. FIRKINS  
 Open to graduate students who have taken an undergraduate major in English; other arrangements may be ascertained upon application to the department.  
 This course comprises a brief treatment of the elements or forces in literature, e. g., clearness, vigor, beauty, precision, art, taste, humor, truth, ethics, and the like; an exposition of literary types, e. g., lyric, epic, drama, short story, novel, biography, etc., in relation to the standards and methods of judging each.
27. **SHAKESPEARE** ASSISTANT PROFESSOR POTTER  
 Open to graduate students who have taken an undergraduate major in English; other arrangements may be ascertained upon application to the department.
28. **THE DRAMA AS A LITERARY FORM** PROFESSOR BURTON  
 Both semesters  
 Open to graduate students who have taken an undergraduate major in English; other arrangements may be ascertained upon application to the department.
29. **THE DRAMA AS A LITERARY FORM** PROFESSOR BURTON  
 Both semesters  
 Open to graduate students who have taken an undergraduate major in English; other arrangements may be ascertained upon application to the department.

## FORESTRY

**Equipment:** The vast lumbering operations in the northern part of Minnesota offer the best of opportunities for a study of that branch of forestry. The establishment of the Chippewa Forest Reserve and its management by the Forest Service gives opportunities which few other sections possess to study the best methods of forest management. The state has twenty-one thousand acres of timber land to be used as a forest and game preserve, on which student help will be largely used. In addition Itasca state park, consisting of 22,000 acres, is used by the Forestry School as a demonstration forest and experiment station. Every student spends about twelve months in the park during his course and does practical work in all branches. The use of this park gives the Minnesota Forestry School a forest equipment which is unsurpassed anywhere.

Graduate work is offered to those who have sufficient preparation to pursue it to advantage. Two courses are offered but others may be given if conditions seem to make it desirable.

1. FOREST MANAGEMENT AND ECONOMICS PROFESSOR GREEN  
A general course in economics as applied to the problem of properly handling forest wealth.
2. WORKING PLANS FOR FORESTS PROFESSOR GREEN  
The study and discussion of the working plans in use in foreign countries. Criticism of working plans in the United States.

## EXPERIMENTAL ENGINEERING

## FOR GRADUATES AND UNDERGRADUATES

1. MATERIALS TESTING LABORATORY PROFESSOR KAVANAUGH, MR. SHOOP  
Two credits (lecture and laboratory) First semester  
Required of seniors. Open to those pursuing course M. 7.  
Investigation of the strength and physical qualities of iron, steel, brass, copper, wood, belting, ropes, chains and cement. Supplemented by lectures on the various materials of construction and standard methods of testing.
2. STEAM LABORATORY PROFESSOR KAVANAUGH, MR. SHOOP  
Two credits (lecture and laboratory) Second semester  
Required of senior E. E. Open to those pursuing course 20 M. E.  
Valve setting, indicator practice, calibration of gages, calorimetry, efficiency of screws, hoists and other machines.
3. HYDRAULIC LABORATORY PROFESSOR KAVANAUGH, MR. SHOOP  
Two credits (lecture and laboratory) Second semester  
Required of senior C. E. Open to those pursuing course M. 8.  
Hydraulic measurements calibration of weirs, nozzles, orifices and meters. Tests of water motors, rams, pulsometers, steam and power pumps and other hydraulic apparatus.
6. EXPERIMENTAL LABORATORY PROFESSOR KAVANAUGH  
Three credits First semester  
Required of post senior M. E.; preparation: course 4.  
Calibration of dynamometers and measurement of power. Testing lubricating value of oils. Tests of injectors and ejectors. Tests of steam-turbines, steam-engines and boilers, and complete power and lighting plants.
7. EXPERIMENTAL LABORATORY PROFESSOR KAVANAUGH  
Two credits First semester  
Required of post senior E. E. Preparation: courses, 8 mathematics and mechanics and 20 M. E.  
Hydraulic measurements. Tests of water motors, rams, steam and power pumps. Measurement of power. Tests of gas and steam engines, boilers and complete power and lighting plants.

8. EXPERIMENTAL LABORATORY PROFESSOR KAVANAUGH  
Three credits First semester  
Elective for post seniors. Preparation: course 1. Tests of the properties of cements, concrete, and reinforced concrete. Strength of beams, columns, joints and framed structures.
9. GAS ENGINE LABORATORY PROFESSOR KAVANAUGH  
Three credits Second semester  
Required of post senior M. E. Preparation: courses 21 M. E. and 6 Ex. E. A continuation of course 6, also tests of gas, gasoline and hot-air engines, gas producers, air compressors, automobile and locomotive testing and special work.
10. EXPERIMENTAL LABORATORY PROFESSOR KAVANAUGH  
Two or four credits Second semester  
Elective for post seniors. Special research work and commercial tests.

## FRENCH AND ITALIAN

### FOR UNDERGRADUATES AND GRADUATES

5. THE CLASSICAL PERIOD OF FRENCH LITERATURE PROFESSOR BENTON  
Six credits (three hours per week) Both semesters  
Open to those who have completed course 2 or course 3; both semesters must be completed before credit is given for the first semester.  
The reading of works and selections produced during the classical period of French literature and conversations in French concerning the same. The works of Corneille, Racine, Molière, La Fontaine, etc. Compositions.
6. ADVANCED FRENCH CONVERSATION PROFESSOR BENTON  
Four credits (two hours per week) Both semesters  
Open to those who have completed course 2 or course 3; both semesters must be completed before credit is given for the first semester.  
Conversations on French history, literature, the drama, etc.
7. FRENCH LITERATURE OF THE NINETEENTH CENTURY PROFESSOR BENTON  
Six credits (three hours per week) Both semesters  
Open to those who have completed course 2 or course 3 and course 5; both semesters must be completed before credit is given for the first semester.  
Lectures in French on the history of modern literature. Select works of some of the authors read and discussed. Compositions and essays.
8. TEACHERS' COURSE IN FRENCH PROFESSOR BENTON  
Two credits (one hour per week) Both semesters  
Open to those who have completed course five; both semesters must be completed before credit is given for the first semester.  
Special practice in pronunciation. Discussion in French of methods of teaching the French language and literature.
9. ROMANCE PHILOLOGY PROFESSOR BENTON  
Two credits (one hour per week) Both semesters  
Open to those who have completed course 5; both semesters must be completed before credit is given for the first semester.  
Lectures on the phonetical development of the French and other Romance languages from popular Latin. Reading of old French texts.
10. ITALIAN LITERATURE PROFESSOR BENTON  
Two credits (one hour per week) Both semesters  
Open to those who have completed course 5; both semesters must be completed before credit is given for the first semester.  
Edgren's *Italian Grammar*, Dante's *Divine Comedy*.
14. ROMANCE LANGUAGES: OLD FRENCH PROFESSOR BENTON  
Both semesters  
Open to graduate students; other arrangements may be ascertained upon application to the department.  
Comparative phonetics and grammar of French and other romance languages. Some of the oldest monuments of the French language are studied



and the phonetic changes compared with modern French and English. Special attention is given to the period when French words came into the English language.

15. HISTORY OF FRENCH LITERATURE PROFESSOR BENTON  
Two credits (one hour per week) Both semesters  
Open to graduate students; both semesters must be completed before credit is given for the first semester.  
A discussion of the evolution of the various schools and doctrines in French literature.
16. ITALIAN LITERATURE PROFESSOR BENTON  
Two credits (one hour per week) Both semesters  
Open only to graduate students who have completed course 5; both semesters must be completed before credit is given for the first semester.  
History of Italian Literature, special: *The Divine Comedy*.

## GEOLOGY

## FOR UNDERGRADUATES AND GRADUATES

3. INDUSTRIAL GEOGRAPHY ASSISTANT PROFESSOR LEHNERTS  
Three credits (three hours per week) Second semester  
Open to juniors and seniors who have completed course 1 or 2.  
The structural features of the North American continent outlined as an introduction. Following this is a study of the types of soil and dominating climatic characters of the several agricultural regions of the continent, a discussion of the geography of industries as they have grown up within the past 100 years and their dependence upon physiographic conditions; a study of local industries effected through excursions and reports. A brief survey of industries in other parts of the world parallels the more detailed study of North America. Throughout the course cause and effect are kept in view.
8. PALEONTOLOGY ASSISTANT PROFESSOR SARDESON  
Six credits (three hours per week) Both semesters  
Open to juniors and seniors who have taken or are taking courses in geology or biology.  
The chief types of organisms as represented by fossils will be studied successively. The leading fossils and their phylogenetic history will be treated with considerable detail. Lectures and demonstrations.
9. PALEONTOLOGIC PRACTICE ASSISTANT PROFESSOR SARDESON  
Six credits (three hours per week) Both semesters  
Open to juniors and seniors who have completed course 8; may be taken by students pursuing courses in geology and biology in conjunction with course 7.  
The collection, preparation, and study of materials, examination of collections, and reading will be carried on with a view to more complete knowledge of the groups of fossil organisms as presented in course 7.
11. PETROGRAPHY MR. GROUT  
Three credits (three hours per week) Second semester  
Open to juniors and seniors who have completed course 10.  
The identification of rocks through the optical study of the component minerals; rock structures as seen under the microscope; alterations of rocks, and stratigraphic relations are studied. Preparation of material for study, its collection in the field, and an examination of some group of Minnesota crystalline rocks are features of the course. Laboratory, lectures, reference reading, and field work.
13. ORE DEPOSITS PROFESSOR HALL  
Three credits (three hours per week) First semester  
Open to seniors who have completed geology 1 and mineralogy 1.  
History of mineral discovery and development in the Americas; a discussion of the origin and distribution of ore deposits, embracing the chemical processes involved in their formation and subsequent alterations; a description of the geology and mineralogy of ore bodies, particularly those yielding gold, silver, copper, iron, lead, and zinc.

14. SPECIAL PROBLEMS PROFESSOR HALL  
Two credits (two hours per week) Second semester  
Open to seniors who have completed course 1 or 13.  
The investigation by individual students of particular problems, involving the field work of an investigation of some particular formation and the laboratory investigation and reading incident to the study of the material collected. The methods of systematically recording and interpreting geological and mineralogical data as observed in the field, the keeping of note-books, and the preparation of geological maps, profiles, and sections will be taught.

## FOR GRADUATES

18. PETROGRAPHICAL PROBLEMS PROFESSOR HALL AND MR. GROUT  
Both semesters  
Open to graduate students; other arrangements may be ascertained upon application to the department.  
A study of rocks as geological bodies; the genesis of rocks and their chemical and dynamical alterations, illustrated in the gneisses and gabbro schists of the Minnesota river valley or the granites and basic eruptives of central Minnesota.
19. THE KEWEENAWAN ERUPTIVES PROFESSOR HALL AND MR. GROUT  
Both semesters  
Open to graduate students; other arrangements may be ascertained upon application to the department.  
This course treats first, eastern and northwestern Minnesota, their stratigraphic relations, textural and structural characters; second, other problem in the Keweenawan to be selected on consultation.
20. GLACIAL GEOLOGY PROFESSOR HALL  
Both semesters  
Open to graduate students; other arrangements may be ascertained upon application to the department.  
The local features of glacial phenomena. Field work will form the special feature of this course, embracing the formations at Minneapolis or some area accessible from it, as a survey of the glacial lakes in the vicinity, the gorge of the Falls of Saint Anthony, the Dalles of the Saint Croix, and other problems. The special field to be selected on consultation.
21. PALEONTOLOGIC GEOLOGY ASSISTANT PROFESSOR SARDESON  
Three credits (three hours per week)  
Open to graduate students who have completed courses 1, 6, and 8.  
A study of the Ordovician fauna with special illustrations from the Ordovician of Minnesota and neighboring states.
22. ADVANCED PALEONTOLOGY ASSISTANT PROFESSOR SARDESON  
Six credits (three hours per week) Both semesters  
Open to graduate students who have completed course 8.  
The study of a selected group of fossils; a practical acquaintance with the forms and literature of the group is sought. The class work is to be supplemented by a thesis.

## GERMAN

## FOR UNDERGRADUATES AND GRADUATES

6. THE DRAMA PROFESSOR SCHLENKER, ASSISTANT PROFESSORS  
WILKIN AND JUERGENSEN, AND MR. BURKHARD  
Six credits (three hours per week) Both semesters  
Open to those who have taken courses 1 and 2, or course 4;  
both semesters must be completed before credit is given for the first semester. This course may be supplemented by course 8.  
First semester: Modern drama. Play of Hebbel, Hauptmann, or Sudermann. Study of the present-day drama in Germany. Assigned readings and reports. Second semester: Classic drama. Play of Lessing, Goethe, or Schiller. Study of dramatic structure. History of the German drama in the eighteenth century.

9. GERMAN LITERATURE OF THE CLASSIC PERIOD PROFESSOR MOORE  
Six credits (three hours per week) Both semesters  
Open to those who have completed courses 1 and 2 (by special permission) or 3 and 7, or 4 and 6; both semesters must be completed before credit is given for the first semester; required of those who obtain a teacher's recommendation in German.  
First semester: Goethe's *Faust*; its genesis; the Faust legend; its treatment in literature before and since Goethe's time; plan of Goethe's *Faust*; solution of the Faust problem in part two. Lectures and collateral reading; essays by the class. Schiller's ballads, and other representative poems of this period. German versification. Second semester: Reading and discussion of Lessing's more important critiques, the *Laocoon*, and *Dramaturgie*.
10. MODERN AUTHORS PROFESSOR MOORE  
Six credits (three hours per week) Both semesters  
Open to those who have completed courses 1, 2, and 9 (by special permission), or 4, 6, and 9, or 3, 7, and 9; both semesters must be completed before credit is given for the first semester; required of those who obtain a teacher's recommendation in German.  
First semester: Romantic school and *Junge Deutschland*. Second semester: German literature since 1848.
12. HISTORY AND LITERATURE OF THE REFORMATION PROFESSOR MOORE  
Four credits (two hours per week) Both semesters  
Open to seniors and graduates who have completed course 9 or course 10; both semesters must be completed before credit is given the first semester.  
Brandt, Luther, Hutten, Sachs, Murner, and Fischart. Selections from Jansen and Egelhaaf.
13. MIDDLE HIGH GERMAN PROFESSOR SCHLENKER  
Four credits (two hours per week) Both semesters  
Open to seniors and graduates who have completed course 9 or course 10; both semesters must be completed before credit is given for the first semester.  
Study of the language and literature of the period. Paul's *Mittelhochdeutsche Grammatik*. Selected readings from Arner *Heinrich*, *Nibelungen Lied*, *Gudrun*, the poems of Walter von der Vogelweide, *Parsifal*, etc.
17. HISTORY OF GERMAN LITERATURE ASSISTANT PROFESSOR JUERGENSEN  
Four credits (two hours per week) Both semesters  
Open to seniors and graduates who have completed course 9; both semesters must be completed before credit is given for the first semester.  
Lectures in German on the history of German literature. Reviews and topical research on the part of the students.

## FOR GRADUATES

14. OLD HIGH GERMAN PROFESSOR KLAEBER  
Four credits (two hours per week) Both semesters  
Open to seniors who have taken course 9 or course 10; both semesters must be completed before credit is given for the first semester.  
This course is identical with comparative philology 11.
15. SEMINAR IN GERMAN DRAMA PROFESSOR SCHLENKER  
Two credits (one hour per week) Both semesters  
Open to graduates and by permission of the department to undergraduates but without credit.  
An outline of the history of German dramatic literature from its beginning to and including the so-called classic drama. Assigned readings, reports, and discussions.
16. THE GERMAN VOLKSLIED MR. WILLIAMS  
Two credits (two hours per week) Second semester  
Open to graduate students who have completed course 9 or course 10.  
Outline of the history and development of the *Volkslied*. Study of selected numbers in Uhland's *Volkslieder* with references to other general and special collections. Influence of the *Volkslied* upon lyric and ballad writers.

18. SEMINAR IN SCIENTIFIC READING ASSISTANT PROFESSOR JUERGENSEN  
 Four credits (two hours per week) Both semesters  
 Open to graduate students who have completed course 9 or 10,  
 and (by permission of the department) to undergraduates who  
 have completed course 9 or 10; both semesters must be com-  
 pleted before credit is given for the first semester.  
 1908-9 The literature of evolution (Haeckel, Reinke, etc.)  
 1909-10 Chemistry and physics (Ostwald, Helmholtz, etc.)  
 1910-11 Psychology and philosophy (especially Wundt.)  
 For courses in Germanic philology see the statement of the department  
 of comparative philology.

## GREEK

## FOR GRADUATES

18. SEMINAR IN GREEK TRAGEDY PROFESSOR BROOKS  
 One credit (one hour per week) Second semester  
 Open to juniors and seniors who have completed course 5.
19. ADVANCED COURSE IN EPIC POETRY PROFESSOR HUTCHINSON  
 Open to graduate students only; other arrangements may be  
 ascertained upon application to the department.
20. ADVANCED COURSE IN GREEK DRAMATIC POETRY PROFESSOR BROOKS  
 Open to graduate students only; other arrangements may be  
 ascertained upon application to the department.
21. ADVANCED COURSE IN GREEK ORATORY ASSISTANT PROFESSOR SAVAGE  
 Open to graduate students only; other arrangements may be  
 ascertained upon application to the department.
22. LATER GREEK (322 B. C. to 200 A. D.) PROFESSOR HUTCHINSON  
 Open to graduate students only; other arrangements may be  
 ascertained upon application to the department.
23. ADVANCED COURSE IN MODERN GREEK PROFESSOR BROOKS  
 Open to graduate students only; other arrangements may be  
 ascertained upon application to the department.

## HISTOLOGY AND EMBRYOLOGY

## FOR UNDERGRADUATES AND GRADUATES

1. GENERAL VERTEBRATE MORPHOLOGY AND HISTOLOGY  
 PROFESSOR LEE, ASSISTANT PROFESSOR NICKERSON  
 Four and one-half credits (six lectures and recitations, three  
 laboratory periods) First quarter
2. MICROSCOPIC ANATOMY OF MAN AND VERTEBRATES  
 PROFESSOR LEE, ASSISTANT PROFESSOR NICKERSON  
 Four and one-half credits (six lectures and recitations, three  
 laboratory periods) Second quarter
3. MICRO-TECHNIQUE AND THE MORPHOLOGY OF THE SPECIAL SENSE  
 PROFESSOR LEE  
 ORGANS  
 Four and one-half credits (six lectures and recitations, three  
 laboratory periods) Third quarter
7. CYTOLOGY AND HISTOGENESIS  
 PROFESSOR LEE  
 Two credits (four lectures and recitations, two laboratory  
 periods) Third quarter  
 Prerequisite courses 3 and 13 or equivalent.
10. RESEARCH WORK IN HUMAN AND VERTEBRATE MORPHOLOGY  
 PROFESSOR LEE  
 Properly qualified students will be provided every facility for  
 original investigation of anatomical problems.
11. ELEMENTS OF VERTEBRATE EMBRYOLOGY PROFESSOR LEE,  
 ASSOCIATE PROFESSOR JOHNSTON  
 Four and one-half credits (six lectures and recitations, three lab-  
 oratory periods) First quarter

12. **ADVANCED VERTEBRATE EMBRYOLOGY** PROFESSOR LEE,  
ASSOCIATE PROFESSOR JOHNSTON  
Three credits (six lectures and recitations, three laboratory  
periods) Second quarter
13. **SPECIAL EMBRYOLOGY OF MAN AND VERTEBRATES** PROFESSOR LEE  
Four and one-half credits (six lectures and recitations, three  
laboratory periods) Third quarter
17. **EXPERIMENTAL EMBRYOLOGY** PROFESSOR LEE  
Two credits (four lectures and recitations, two laboratory  
periods) Fourth quarter  
Prerequisite courses 3 and 13 or equivalent.
20. **THE ANIMAL PARASITES OF MAN** ASSISTANT PROFESSOR NICKERSON  
One credit (hours to be arranged) Third quarter
21. **ELEMENTS OF MAMMALIAN NEUROLOGY** ASSOCIATE PROFESSOR  
JOHNSTON, DR. INGBERT  
Three credits (two lectures and recitations, one laboratory  
period) Second quarter
22. **THE HUMAN NERVOUS SYSTEM** ASSOCIATE PROFESSOR JOHNSTON  
DR. INGBERT  
Four and one-half credits (six lectures and recitations, three  
laboratory periods) First quarter
23. **SPECIAL AND APPLIED NEUROLOGY** ASSOCIATE PROFESSOR JOHNSTON  
DR. INGBERT  
One credit (hours to be arranged) Fourth quarter
24. **NEUROLOGICAL TECHNIQUE** ASSOCIATE PROFESSOR JOHNSTON  
Two credits (hours to be arranged) Fourth quarter
26. **THE NERVOUS SYSTEM AND MENTAL LIFE** ASSOCIATE PROFESSOR JOHNSTON  
One credit (hours to be arranged) Second quarter
27. **COMPARATIVE NEUROLOGY OF VERTEBRATES** ASSOCIATE PROFESSOR JOHNSTON  
One to three credits (hours to be arranged) Second quarter  
Intended for graduates; open by special permission to seniors  
who meet the requirements. Prerequisite courses 1 and 2, or 3  
in Animal Biology, or courses 2 and 12 in Histology and  
Embryology.
30. **RESEARCH IN NEUROLOGY** ASSOCIATE PROFESSOR JOHNSTON  
Problems and special work in vertebrate Neurology. Open only  
to those who are qualified to carry on investigation.
40. **ANATOMICAL JOURNAL CLUB AND SEMINAR**  
Weekly meetings during year for reviews of the current literature  
and discussion of special topics in Anatomy, Histology, Em-  
bryology and Neurology, and of the research work being car-  
ried on in the department. The department library, which is  
large and rapidly growing, receives all the leading anatomical  
journals.

## HISTORY

### FACILITIES

The department of history is equipped with library material for "practice courses" in research in American History, especially the colonial and revolutionary periods, in English and French medieval history, in the French Revolution, and in certain phases of European Nineteenth Century history. Valuable additions to the University resources in some of these lines are to be found in the excellent library of the State Historical Society, and in the State Library at the Capitol in St. Paul (thirty minutes distant), and in the City and Athenaeum libraries in Minneapolis.

In none of the lines mentioned, however, is the department satisfactorily prepared to give more than two years of graduate work, with due regard for economy of the student's time and energy. Therefore, if a student desires to take his doctorate in history here, he must be prepared, until the library facilities are materially improved, to do at least a third of his work in libraries elsewhere, under direction of the department.

## COURSES OF INSTRUCTION

The following are "general courses" (lectures and reading, with study of selected documents and some research work). They are open to upper classmen in the undergraduate college who have completed one or two elementary courses there; and they may be taken as minors, or parts of minors, for the master's degree. Any one of them may be taken, also, for part of a major towards the master's degree, provided, (1) that the applicant has made large general preparation in other fields of history, and, (2) that the course chosen be accompanied by sufficient work in more intensive courses in the same field. Thus if an applicant is well prepared in European history, including English constitutional history, but has had little American history, he might be allowed a major in 5 followed by two, three, or four courses selected from 7-14.

## FOR UNDERGRADUATES AND GRADUATES

3. THE RENAISSANCE AND REFORMATION PROFESSOR WHITE  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1 or course 2.

The Renaissance and Reformation will be studied as general European movements, with the emphasis upon the work of individual men and upon ideas rather than upon politics and institutions. The purpose of the course will be to show how the medieval world became the modern world.

4. EUROPE SINCE 1789 PROFESSOR ANDERSON  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed course 1 or 2.

The history of France occupies the most prominent place in the course, that of other countries being grouped about it, as far as possible. Much attention is given to international affairs, the principal territorial changes being illustrated with a series of wall maps prepared for the course under the direction of the instructor. A special effort is made to put the students into a position to understand the present governments and politics of the leading European states. The entire class meets twice each week for lectures or recitations. The third exercise is devoted to the study of important historical documents, drawn principally from Anderson's *Constitutions and other Select Documents Illustrative of the History of France 1789-1901*. This work is done in small groups which meet in the European history seminar room.

5. AMERICAN CONSTITUTIONAL HISTORY TO 1840 PROFESSOR WEST  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed course 2; required for courses 6 to 9 inclusive, 11, 13, 14, and 19, and therefore to students who intend to specialize in history recommended for the sophomore year.

The aim is to make this a "practice course"; the work is done partly by co-operative topical reports, and students are expected to consult primary sources to a greater degree than is possible in most undergraduate courses. During part of the year the class will meet once a week in small sections for the study of documents.

6. AMERICAN CONSTITUTIONAL HISTORY, 1841-1885 PROFESSOR WEST  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 2 and at least the first semester of course 5; given in 1908-9, and in alternate years thereafter.

Special attention is given to the development of the slavery issue in politics, the political history of the civil war, and reconstruction.

15. HISTORICAL METHOD AND BIBLIOGRAPHY PROFESSOR WHITE  
 Two credits (two hours per week) Second semester  
 Open to those who have completed course 1 or course 2, but designed only for those who intend to specialize in history.

This course aims to make clear to the student the genesis of the modern historical method and to introduce him in a practical way to the use of the best tools in historical study. The work divides naturally as follows:

1. Exercises in historical criticism and interpretation. One or more important historical sources will be studied intensively by the class.

2. History of historical writings; especially the work of Ranke and his followers and the origin of the seminar system. Some account will be taken of present methods and advantages of study in Germany and France.

3. Bibliography. Purpose, to gain a working knowledge of existing helps to historical study, such as standard bibliographies, historical magazines, source material, etc.

While the knowledge of Latin or the modern languages is an advantage, it is not a necessity in this course.

20. ENGLAND SINCE 1815 PROFESSOR ANDERSON  
Three credits (three hours per week) Second semester  
Open to those who have completed course 2; may be taken to advantage in connection with course 4; not given in 1908-9.

The course opens with a rapid survey from the point where course 1 stops down to 1815. From there on the work is more intensive. Through topics and assigned readings an opportunity is afforded to become acquainted with the principal British reviews and with two or three of the leading British newspapers.

21. HISTORY OF GREECE ASSISTANT PROFESSOR WESTERMANN  
Three credits (three hours per week) First semester  
Open to those who have completed course 1 or course 2.

The course is general in its nature and will cover the political and social development of the Greek states to the time of their incorporation into the Roman Empire, with particular emphasis upon the later part of the period. Especial attention will be given to the permanent influence of Greek civilization.

#### FOR GRADUATES

The following courses are "intensive" or "advanced" courses. Each one of them requires the completion of the corresponding "general" course in the list above. They may be taken, in proper combination, for majors for the master's degree, or, by ones or twos, for minors.

7. THE MAKING OF THE CONSTITUTION PROFESSOR WEST  
Six credits (three hours per week) Both semesters  
Open to juniors, seniors, and graduates, who have completed course 5, but only on approval of the instructor; both semesters must be completed before credit is given for the first semester.

Each member of the class studies in detail the transition in one of the original American colonies to commonwealth government, with the constitution of his chosen state. The work of the Philadelphia convention is then taken up and the accounts of later writers are compared with the sources. "We the people," the "compact" theory, and the province of the Supreme Court as "final arbiter," are topics especially investigated, with such further aids as the writings of the day and the discussions of the ratifying state conventions afford. Besides the class work each student will present a written report upon the history of some important bill providing for the admission of a state, and some constitutional question in connection with congressional legislation.

8. AMERICAN HISTORY SINCE 1789 AS SHOWN IN THE DEVELOPMENT OF CONSTITUTIONAL LAW PROFESSOR WEST  
Three credits (three hours per week) First semester  
Open to seniors and graduate students who have completed courses 2, 5, 6, and 7; not given in 1908-9.

This course is not designed to be a systematic treatment of either history or constitutional law. It consists of a careful analysis of cases selected from *Thayer's Cases on Constitutional Law*, studied in their historical setting and with reference to the course of development.

9. STUDIES IN AMERICAN STATESMEN PROFESSOR ANDERSON  
Three credits (three hours per week) Second semester  
Open to juniors, seniors, and graduate students, who have completed course 2 and at least the first semester of course 5.

A research course. Each member of the class makes a study of some prominent American statesman who has left a considerable body of materials valuable for information upon his own career and the general history of the United States. The greater part of the work consists in the sifting of these materials and the preparation of brief reports in regard to points assigned for investigation. The class exercises are chiefly devoted to the criticism of these reports and the synthesis of the results thus obtained. Only a limited period is traversed. In 1908-9 the work will be confined to the period of the Federalist supremacy, 1789-1801.

10. A CRITICAL STUDY OF A HISTORICAL MASTERPIECE PROFESSOR ANDERSON  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 5.  
 The object of this course is to develop the habit of reading history critically. Each year a masterpiece of historical literature will be minutely and critically studied. Each student will be required to read critically the entire work studied and, in addition, to analyze and report upon assigned portions of it. These reports will be made the basis of the class work, which will consist mainly of discussions carried on by the students under the direction of the instructor. In 1908-9 Rhodes' *History of the United States from the Compromise of 1850 to the Restoration of Home Rule in the South in 1877* will be read.
11. THE HISTORY OF AMERICAN DIPLOMACY PROFESSOR ANDERSON  
 Three credits (three hours per week) First semester  
 Open to seniors and graduates who have completed course 5.  
 A research course dealing principally with the more important features of American foreign policy during the earlier years of the federal government.
12. THE HISTORY OF EUROPEAN DIPLOMACY SINCE 1789 PROFESSOR ANDERSON  
 Three credits (three hours per week) Second semester  
 Open to seniors and graduates who have completed or are taking course 4; ability to read easy French is required.  
 This course centers about the critical reading of the principal treaties and numerous state papers dealing with international relations.
13. COLONIAL EXPANSION AND ADMINISTRATION PROFESSOR WEST  
 Three credits (three hours per week) Second semester  
 Open to seniors and graduates who have completed course 4 or course 5; given in alternate years; not offered in 1908-9.  
 The history of the colonial acquisitions of the great nations will be surveyed rapidly and colonial institutions and governments will be studied and compared in detail.
14. A CRITICAL STUDY OF AUTHORITIES FOR EARLY NEW ENGLAND HISTORY PROFESSOR WEST  
 Four credits (two hours per week) Both semesters  
 Open to seniors and graduates who have completed eighteen credits, including course 5; both semesters must be completed before credit is given for the first semester; given in alternate years.  
 This is primarily a course in historical criticism, based on a minute study of Winthrop's *History of New England*. Each member of the seminar has a group of secondary authorities assigned him which he is to criticize in the light of the original sources. The study involves also a careful comparison of the chief sources with one another, and incidentally it leads to a minute treatment of political, social, and economic development in early New England. The number admitted to the course is limited to seven.
18. ORIGIN OF THE ENGLISH JUDICIAL SYSTEM PROFESSOR WHITE  
 Three credits (three hours per week) Second semester  
 Open to juniors, seniors, and graduates, who have completed six credits, including course 2, and obtain the permission of the instructor; students must be able to read medieval Latin, and course 9 in the Latin department is recommended to give this preparation.  
 The work will consist of detailed study in the sources of the twelfth and thirteenth centuries, and will aim to show how the kings' court, from which the present judicial system has grown, superseded the older communal and private courts, the development of the primitive king's court into a system of courts, and the growth in it of a new procedure. In this last connection the critical stages in the early history of the jury will receive special attention.
19. THE EXPANSION OF AMERICA, STUDIED IN ITS HIGHWAYS OF EMIGRATION  
 Six credits (three hours per week) Both semesters  
 Open to seniors and graduates who have completed course 5; both semesters must be completed before credit is given for the first semester; not given in 1908-9.  
 This is a study of roads and methods of pioneer travel in that westward movement of population which extended the inhabited area of the United States from the seaboard to the Mississippi.



22. GREEK POLITICAL INSTITUTIONS ASSISTANT PROFESSOR WESTERMANN  
 Three credits (three hours per week) Second semester  
 Open to juniors, seniors, and graduates, who have completed  
 courses 1 or 2, 21, and six additional credits.  
 A study of the development of Greek political forms and of their operation  
 as seen in typical oligarchic, democratic, federal, and monarchic states.
23. ROMAN IMPERIAL ORGANIZATION ASSISTANT PROFESSOR WESTERMANN  
 Three credits (three hours per week) Second semester  
 Open to juniors, seniors, and graduates, who have completed  
 twelve credits.  
 This course will survey the development and organization of the imperial  
 system from the beginning of Roman expansion outside of Italy to the time  
 of the Germanic invasion. Special attention will be given to the administration  
 of the municipalities and provinces under the Empire and to the develop-  
 ment of despotism.

## HORTICULTURE

Equipment. The library of the division of horticulture is well equipped with literature and periodicals devoted to this subject, all of which are well indexed. The campus, orchards, nurseries, fruit gardens and greenhouses at the University farm afford good illustrations and opportunities for study and experiment work. The new fruit breeding farm offers the best of facilities for the study of this important line of work.

Graduate work is offered to those who are prepared to pursue it to advantage. Two courses are offered but others will be given if conditions seem to make it desirable.

1. GENERAL POMOLOGY PROFESSOR GREEN  
 A general course in the study of cultivated fruits.
2. PLANT BREEDING PROFESSOR GREEN  
 A general course in the study of the origin and development of  
 cultivated varieties.

## LATIN

### FOR UNDERGRADUATES AND GRADUATES

6. ADVANCED COURSE IN CAESAR PROFESSOR PIKE  
 Three credits (three hours per week) First semester  
 Open to those who have completed courses 1 to 4 inclusive; re-  
 quired for a teacher's recommendation in Latin.  
 Selections from books five to seven of the Gallic War and from the Civil  
 War. Thorough study of the principles of indirect discourse. Intermediate  
 Latin composition. An amount of time approximately equal to one hour for  
 one-half semester will be spent upon the technical portions of the work, e. g.,  
 class drill work and discussion of various problems connected with secondary  
 school work in Latin.
7. ADVANCED COURSE IN VIRGIL PROFESSOR PIKE  
 Three credits (three hours per week) Second semester  
 Open to those who have completed courses 1 to 4 inclusive; re-  
 quired for a teacher's recommendation in Latin.  
 An interpretation of selections from books seven and twelve of the  
 Aeneid; a study of the quantitative method of pronouncing Latin verse;  
 practice in the metrical rendering of selected passages. An amount of time  
 approximately equal to one hour for one-half semester will be spent upon the  
 strictly technical portions of the subject.
8. PLINY'S LETTERS PROFESSOR PIKE  
 Two credits (two hours per week) First semester  
 Open to those who have completed courses 1 to 4 inclusive.  
 Selections from the correspondence of Pliny the Younger with a study  
 of his times.
10. LATIN COMPOSITION PROFESSOR PIKE  
 Two credits (two hours per week) Second semester  
 Open to those who have completed course 1 to 4 inclusive.  
 A course in advanced Latin composition and a study of Latin prose style.

11. ROMAN ELEGIAC POETRY PROFESSOR CLARK  
 Three credits (three hours per week)  
 Open to those who have completed courses 1 to 4 inclusive.  
 Selections from Catullus, Tibullus, Propertius, and Ovid, with a study of the rise, development, and characteristics of Roman elegiac poetry.
12. CORRESPONDENCE OF CICERO PROFESSOR CLARK  
 Two credits (two hours per week) First semester  
 Open to those who have completed courses 1 to 4 inclusive.  
 Selections from the letters of Cicero, with a study of his life and the history of his times.
13. ROMAN SATIRE PROFESSOR CLARK  
 Three credits (three hours per week) Second semester  
 Open to those who have completed courses 1 to 4 inclusive.  
 Selections from Juvenal, Persius, Horace, and from early satire, with a study of the rise, development, and characteristics of Roman satire.  
 Courses 6 and 7 are open as minors only on permission of the professor in charge.

## FOR GRADUATES

17. LUCRETIUS PROFESSOR CLARK  
 Three credits (two hours per week) Both semesters  
 Open to graduate students; other arrangements may be ascertained upon application to the department.  
 The course consists of the reading and interpretation of the text of Lucretius with a study of his philosophy and its sources.
18. SENECA PROFESSOR PIKE  
 Three credits (two hours per week) Both semesters  
 Open to graduate students; other arrangements may be ascertained upon application to the department.  
 Reading, interpretation and annotation of the *de Beneficiis* of Seneca with a study of Stoicism at Rome.
19. THE HISTORY AND THEORY OF ROMAN ELOQUENCE ASSISTANT PROFESSOR GRANRUD  
 Three credits (two hours per week) Both semesters  
 Open to graduate students; other arrangements may be ascertained upon application to the department.  
 The *Brutus* of Cicero will form the basis of the work during the first semester and the *Orator* during the second semester.

## LAW

## FIRST GRADUATE COURSE

1. PHILOSOPHIC BASIS OF JURISPRUDENCE DEAN PATTEE  
 For the degree of Master of Laws. This course constitutes an inquiry into the nature of law in its most general signification. It considers the truths of reason, the "laws of nature," so-called, and the positive law or jurisprudence. It considers the nature of international and municipal law, and illustrates by means of judicial authorities how the primary truths of reason operate in the realm of human law.
2. SCIENCE OF THE STATE  
 This course considers the segregation from the comprehending science of politics, and the co-ordinate sciences of government and jurisprudence. The citizen and subject population; the territory, its existence and content, subdivisions, relation of people to the land, comparison of great and small states; theories of the state; liberty and opportunity as the ends of the state; the state as the organ of power, and guardian of rights; the *essentia* of constitutions.
3. CONSTITUTIONAL HISTORY AND JURISPRUDENCE.  
 This course is devoted to a critical study of the "dual system" of constitutional government of which the American Republic is the conspicuous example. The Federal constitution and the State constitutions are illustrated separately in both their historical and their legal aspects, as distinct parts of one system, but which are designed to work harmoniously in unison, and are

both necessary to the successful operation of the system. The Federal courts are shown to have so conducted the administration of their high duties as to have contributed to the proper development of the State side of the system, and to have made the Federal Government the firm bulwark of local self-government in the States.

Those who enter this course as candidates for the degree must have already received the degree of bachelor of laws, from this or some other law college having a three years course of study. Those who spend the entire year in the work prescribed for this course, and pass a satisfactory examination upon the subjects taken, will be entitled to the degree of master of laws.

But no graduate of another law school, who has not been admitted to the bar of Minnesota, will be matriculated in this course as a regular student for the degree of LL. M.; but any person who possesses the requisite legal learning may enter the course as a special student and pursue any or all of the studies offered.

## SECOND GRADUATE COURSE

Students who have received the degree of LL. B., from this or some other law school requiring three years' study of law for said degree, and who have also received the degree of LL. M., from this or some other school after not less than one year of graduate study, and who have taken high rank in all the studies leading to these degrees, may apply to the faculty for the degree of Doctor of Civil Law. A knowledge of French or German, as well as of Latin is required, and special proficiency in Roman history is necessary to entitle a student to candidacy for such degree.

There is no prescribed time within which students are required to do their work in this course, but they must make themselves proficient in the subjects of Roman law, political science, comparative constitutional law, and the philosophy of jurisprudence before any thesis will be accepted from them.

None of the aforementioned degrees will be conferred until a satisfactory thesis is presented to the faculty by the student, and the thesis for the doctor's degree must be one evincing original investigation and special excellence.

Whether a class will be organized in this course during the current academic year will depend upon the number of applicants for admission.

## MATHEMATICS

### FOR UNDERGRADUATES AND GRADUATES

10. DIFFERENTIAL EQUATIONS PROFESSOR DOWNEY  
Three credits (three hours per week) Second semester  
Open to those who have completed courses 3 to 7 inclusive.  
Text and lectures.
11. ADVANCED COURSE IN PLANE ANALYTICAL GEOMETRY PROFESSOR BAUER  
Three credits (three hours per week) First semester  
Open to those who have completed courses 3 to 6 inclusive.  
Supplementary to course 5, treating more fully some of the subjects of that course and taking up additional subjects.
12. SOLID ANALYTICAL GEOMETRY PROFESSOR BAUER  
Three credits (three hours per week) Second semester  
Open to those who have completed courses 3 to 8 inclusive.  
A lecture course. Elementary theorems of projection, co-ordinates, the plane, the line in space, quadric surfaces, transformation of co-ordinates, tangents, poles and polars, the general equation of the second degree. Numerous examples are assigned to illustrate the theory.
14. METHOD OF LEAST SQUARES PROFESSOR LEAVENWORTH  
Two credits (two hours per week) Second semester  
Open to those who have completed courses 3 to 7 inclusive.  
A study of the combination and adjustment of observations and the discussion of their precision as applied especially to engineering physics, and astronomy.
16. ADVANCED DIFFERENTIAL AND INTEGRAL CALCULUS PROFESSOR DOWNEY  
Four credits (two hours per week) Both semesters  
Open to graduate students who have completed courses 3 to 7 inclusive.  
This course goes farther into some of the subjects treated in courses 6 and 7 and takes up some important subjects not included in those courses.

17. THEORY OF CURVES AND SURFACES PROFESSOR BAUER  
 Four credits (two hours per week) Both semesters  
 Open to graduate students who have completed courses 3 to 7  
 inclusive and 10 and 12.  
 This is a course in differential geometry. The fundamental equations  
 of the theory of curves and of surfaces will be developed. The work will be  
 based upon Scheffer's *Theorie der Curven und Flachen*.
18. THE GALOIS THEORY OF EQUATIONS ASSISTANT PROFESSOR BUSSEY  
 Four credits (two hours per week) Both semesters  
 Open to graduate students who have completed courses 3 to 9  
 inclusive.
19. THEORY OF FUNCTIONS OF A COMPLEX VARIABLE DR. MANCHESTER  
 OR MR. DALAKER Both semesters  
 Four credits (two hours per week)  
 Open to graduate students who have completed courses 1 to 10  
 inclusive.  
 Lectures, readings, and problems.
20. PROJECTIVE GEOMETRY ASSISTANT PROFESSOR BUSSEY  
 Four credits (two hours per week) Both semesters  
 Open to graduate students who have completed courses 3 to 7  
 inclusive and courses 11 and 12.

## MATHEMATICS AND MECHANICS

### FOR GRADUATES AND UNDERGRADUATES

15. DESCRIPTIVE GEOMETRY PROFESSOR KIRCHNER  
 Four credits (two hours per week) Both semesters  
 Open to those who have completed courses in drawing 3 to 5  
 inclusive; both semesters must be completed before credit  
 is given for the first semester.  
 Problems relating to points, lines, planes, solids, surfaces of revolution  
 and warped surfaces; orthographic, isometric, horizontal, oblique, and  
 perspective projections; shades and shadows. Recitations, lectures, and  
 practice.
- 7'. STRENGTH AND RESISTANCE OF MATERIALS PROFESSOR EDDY  
 Five credits (five hours per week)  
 Required of all juniors in the civil engineering course. Before  
 registration for this course the student must pass the re-  
 quired physics of sophomore year in addition to the required  
 mathematics of the two preceding years. Bars, beams,  
 shafts, columns, reinforced concrete, hollow cylinders and  
 spheres, rollers, and plates and the general theory of internal  
 stress.
- 7a'. APPLIED MECHANICS PROFESSOR BROOKS, ASSISTANT PROFESSOR  
 NEWKIRK  
 Five credits (five hours per week) First semester  
 Required of all juniors in the mechanical and electrical en-  
 gineering courses. Prerequisites the same as course 7. The  
 principles of statics and dynamics, and the mechanics of the  
 materials of construction.
- 8'. HYDRAULICS AND PUMPING MACHINERY PROFESSOR EDDY, PROFESSOR  
 BROOKE, ASSISTANT PROFESSOR NEWKIRK  
 Five credits (five hours per week) Second semester  
 Required of all juniors. Prerequisite course 7 or 7a. Laws  
 of the equilibrium, pressure and flow of liquids; theory of  
 the action of pumps, compression and flow of gases.
- 9'. THERMODYNAMICS OF STEAM AND GAS ENGINES PROFESSOR EDDY  
 Three credits (three hours per week) First semester  
 Required of all candidates for degrees in mechanical and  
 electrical engineering. Prerequisite, course 8'. The mechan-  
 ical theory of heat as applied to steam, oil, gas and hot air  
 engines and to compressors, including the use of steam tables,  
 entropy diagrams, etc.

- 10'. WATER TURBINES  
Two credits (two hours per week)  
Required of all candidates for degrees in mechanical and electrical engineering, except those who elect either railway engineering or telephony. Theory of the operation, construction and regulation of turbine wheels.
- PROFESSOR EDDY  
First semester
- 11'. STEAM TURBINES  
Two credits (two hours per week)  
Open to all who have had courses 9 and 10  
Various types of turbines, velocity, impulse and reaction; nozzles, vanes, discs, bearings, governors, thermodynamic analysis and efficiency.
- PROFESSOR EDDY  
Second semester
- 12'. REFRIGERATING MACHINERY  
(Two credits, two hours per week)
- PROFESSOR EDDY  
Second semester

## FOR GRADUATES

26. PERSPECTIVE  
Three credits (three times per week)  
The principles and practice of perspective, including shadows, reflections, distortions, corrections, systems, methods, the practical problem, and inverse constructions.
- PROFESSOR KIRCHNER
27. HISTORY OF MATHEMATICS  
Two credits (twice per week)  
Lectures and reading, under direction of works in the mathematical library on the ancient and modern development of mathematics.
- PROFESSOR HAYNES
28. ELLIPTIC INTEGRALS  
Four credits (two hours per week)  
Courses in the following related subjects in mathematics, mathematical physics and theoretical mechanics are open to those who have had sufficient preparation.
- ASSISTANT PROFESSOR BROOKE  
Both semesters
13. DIFFERENTIAL EQUATIONS.
14. ANALYTICAL STATICS AND POTENTIAL FUNCTIONS.
15. SPHERICAL HARMONICS.
16. THEORY OF ELECTRICITY AND MAGNETISM.
17. ANALYTICAL THEORY OF THE CONDUCTION OF HEAT.
18. THEORY OF ELASTICITY AND SOUND.
19. ELECTRO-MAGNETIC THEORY OF LIGHT.
20. HYDRODYNAMICS AND FLUID MOTION.
21. DYNAMICS OF RIGID BODIES.
22. ELLIPTIC FUNCTIONS.
23. THEORY OF FUNCTIONS OF THE COMPLEX VARIABLE.
24. DIRECTIONAL CALCULUS, VECTOR ANALYSIS, DETERMINANTS
25. KINETIC THEORY OF GASES.

## MECHANICAL ENGINEERING

## FOR UNDERGRADUATES AND GRADUATES

9. SHOP ECONOMICS  
Two credits (two hours per week)  
Senior elective.  
Shop and factory organization and management; cost systems.
- PROFESSOR FLATHER  
Second semester
13. MACHINE DESIGN  
Five credits (ten hours per week)  
Required of seniors. M. E. and E. E. courses. Open only to students pursuing course M. 7.  
Calculation and design of such machine parts as fastenings, bearings, rotating pieces, pulleys and spur gearing. Recitations, lectures and drawing-room practice.
- PROFESSOR FLATHER AND MR. MARTENS  
First semester

14. **MACHINE DESIGN** PROFESSOR FLATHER, MR. MARTENIS  
 Three credits (six hours per week) Second semester  
 Required of seniors, M. E. course. Open only to those pursuing  
 course 20.  
 Continuation of course 13. Rope driving; bevel gears, spiral  
 gears. Also application of graphical methods to the design  
 of valve gears and link motions. Zeuner diagrams, indicator  
 cards. Lectures and drawing-room practice.
15. **MACHINE DESIGN** PROFESSOR FLATHER  
 Four credits (eight hours per week) First semester  
 Required post senior year, M. E. course. Preparation: courses 14  
 and 19.  
 Steam engine. Calculations and working drawings for a high  
 speed automatic steam engine. Theoretical diagrams and de-  
 termination of details.  
 Gas engine. An alternative course in gas engine design is offered  
 those who have completed course 21.
16. **MACHINE DESIGN** PROFESSOR FLATHER  
 Four credits (eight hours per week) Second semester  
 Required, post senior year, M. E. course. Preparation: course  
 13.  
 Original designing, including machinery for changing size and  
 form. Boiler design, cranes, pumping and transmission ma-  
 chinery and engineering appliances. Lectures, problems and  
 drawing-room practice.
17. **TOOL DESIGN** PROFESSOR FLATHER  
 Two to four credits (four or eight hours per week) First or second semester  
 Elective. Preparation: courses 6, 13.  
 Design of special tools for manufacturing interchangeable parts;  
 jigs and milling fixtures.
18. **ENGINEERING DESIGN** PROFESSOR FLATHER  
 Two or four credits (four or eight hours per week) First or second semester  
 Elective. Preparation: courses 19, 20.  
 Problems, designs and estimates for power plants, central sta-  
 tions and factory equipment. Selection of motive powers, re-  
 lative advantages of steam and producer gas plants; choice of  
 engines and boilers; water powers; power distribution, dyna-  
 mos and motors; pumps, shafting, piping and accessory plant.
19. **STEAM BOILERS** MR. SHOOP  
 One credit (one hour per week) First semester  
 Senior year. Open only to students pursuing course M. 7.  
 Application of theory and practice in the design and con-  
 struction of steam boilers, chimneys, boiler settings, and ac-  
 cessories, smoke prevention, mechanical stokers; methods of  
 operating boilers with safety and economy.
20. **STEAM ENGINE** PROFESSOR FLATHER  
 Three credits (three hours per week) Second semester  
 Senior year, preparation: course 7 M.  
 Mechanics of the steam engine. Work in the cylinder; effect  
 of reciprocating parts; steam distribution. Mechanism of the  
 steam engine. A study of the details of modern steam engines,  
 valves and valve gears. A study of the slide valve, link mo-  
 tions, and other reversing gear; automatic cut-off gears and  
 the Zeuner diagram. The steam engine indicator. Principles  
 and operation of the instrument, indicator rigging; indicator  
 cards; compounding.
21. **GAS ENGINES AND PRODUCERS** MR. SHOOP  
 Two credits, (two hours per week) Second semester  
 Senior year. Open only to students pursuing course C. 6.  
 Principles of operation of two cycle and four cycle engines;  
 cylinder construction and arrangement; valve gears and start-  
 ing mechanisms; system of speed control, ignition and cooling.  
 Application of the indicator and consideration of indicator dia-  
 grams.

A study of the power gas producer including suction and pressure types for various fuels; construction and operation of the generator and accessory apparatus. Application to various industrial purposes. Recitations and lectures.

22. MECHANICAL ENGINEERING PROFESSOR FLATHER  
 Two credits (two hours per week) First semester  
 Post senior, preparation: course 8 M.  
 MEASUREMENT OF POWER. A study of the methods employed in measuring power. Dynamometers. Prony brakes; measurement of water power; water meters; weir measurement, flow of water in pipes; measurement of electric power, efficiency of motors, power required to drive machine tools and shafting. Recitations and lectures.  
 Two credits (two hours per week) Second semester  
 Preparation: course M. 8.  
 Air compressors and motors, and the transmission of power by compressed air. Recitations and lectures.

23. MECHANICAL ENGINEERING MR. MARTENIS  
 Three credits (six hours per week) First semester  
 Elective. Post senior year.  
 Heating and ventilation. Principles of heating and ventilation. Construction and operation of heating apparatus. Steam, hot water, exhaust, vacuum and fan systems. Lectures, recitations and design.  
 SEMINAR. Open to the seniors and post seniors once a week.

The following courses are available to students desiring to prepare themselves for special work in railway engineering.

24. RAILWAY TECHNOLOGY MR. MARTENIS  
 Two credits (four hours per week) First semester  
 Post senior. Railway M. E. course.  
 The object of this course is to familiarize the student with the principal details of construction of locomotives, and consists in part of a systematic course of visits to the various railroad shops in the vicinity; lectures and recitations.

25. RAILWAY DESIGN PROFESSOR FLATHER  
 Four credits (eight hours per week) First and second semesters  
 Post senior. Preparation: course 24.  
 (a) Of link and valve motions. Continuation of course 12 with special applications of the Stephenson link.  
 (b) Of locomotive and car details.  
 (c) Of the locomotive boiler.  
 (d) Of assembled parts.

26. LOCOMOTIVE CONSTRUCTION PROFESSOR FLATHER  
 Two credits (two hours per week) Second semester  
 Post senior. Preparation: course 24.  
 Lectures, reading and recitations on design and construction of locomotives, supplementing course 24. This treats:  
 (a) Of parts not involving the boiler and the use of steam; but including the carriage, as frames, springs and equalizing arrangements, running gear, brakes, trucks, lubrication.  
 (b) Of locomotive boilers and connected parts. Types, proportions, grates, flues, smoke-box arrangements and stacks, riveted joints, bracing and staying. Lagging, smoke prevention.  
 (c) Of the locomotive engine. Details, heat insulation, cylinder proportion for various types, weight on drivers, special service; crank effort diagrams with inertia of reciprocating parts, cylinder and receiver ratios for compound engines, starting valves for compounds.

27. LOCOMOTIVE ROAD TESTING PROFESSOR FLATHER  
 Post senior. Second semester

28. SPECIFICATIONS PROFESSOR FLATHER  
Second semester  
 One credit (one hour per week)  
 Post senior year, M. E. course.  
 A study of engineering specifications. Classes of specifications;  
 essential features; clauses; details. Examples. Lectures, reci-  
 tations and practice in writing specifications.

## FOR GRADUATES.

Courses are offered in:  
 Engineering design.  
 Experimental investigation.  
 Railway engineering.

## MINERALOGY

## FOR UNDERGRADUATES AND GRADUATES

4. OPTICAL MINERALOGY Mr. GROUT  
Second semester  
 Three credits (six hours per week)  
 Open to juniors and seniors who have completed course 1.  
 A study of the microscopic structure of crystals and crystal grains.  
 An application of methods used in determining minerals by their optical  
 properties; goniometric and stauroscopic practice, embracing the elements  
 of lithology. Lectures and laboratory work.
5. THE MORPHOLOGY OF MINERALS Mr. GROUT  
First semester  
 Three credits (three hours per week)  
 Open to juniors and seniors.  
 A study of crystallography, embracing projection and the geometric  
 relations of crystal planes. The identification of minerals from crystal  
 measurement and mathematical calculation. Crystal nomenclature.
6. PHYSIO-CHEMICAL METHODS WITH THEIR APPLICATIONS Second semester  
 Three credits (three hours per week)  
 Open to seniors.  
 The method of micro-chemical analysis described and demonstrated;  
 the leading elements found in minerals are determined through the aid of  
 crystalline precipitates of known compounds. Special attention is given to  
 the study and determination of the rock-making minerals.
7. AN OUTLINE OF MINERALOGY Mr. GROUT  
Both semesters  
 Two credits (one hour per week)  
 Open to juniors and seniors.  
 A study of methods of identification of minerals, with their applications.  
 Conferences, reading, and demonstrations.

## FOR GRADUATES

8. ORIGINAL PROBLEMS IN MORPHOLOGICAL AND PHYSICAL MINERALOGY PROFESSOR HALL AND MR. GROUT  
Both semesters  
 Open to graduate students; other arrangements may be ascer-  
 tained upon application to the department.  
 Investigations in mathematical crystallography and its application to  
 crystal development and structure. Further applications than are made in  
 course 4 of the optical characters of minerals in identification of mineral  
 species.
9. SPECIAL INVESTIGATIONS IN CHEMICAL AND PHYSICAL MINERALOGY Mr. GROUT  
 Open to graduate students; other arrangements may be ascer-  
 tained upon application to the department.  
 Special attention is here given to tenacity and electrical properties and  
 their relation to crystal form, cleavage and fracture. Dimorphous compounds  
 are investigated and the conditions governing their formation studied. The  
 physical properties of artificial mineral compounds are compared with those  
 of natural minerals.



## 10. MINERAL OCCURRENCES AND ASSOCIATION PROFESSOR HALL AND MR. GROUT

Both semesters

Open to graduate students; other arrangements may be ascertained upon application to the department.

A discussion of genetic relationships. Field work in connection with the different phases of the particular problem in hand.

The equipment of the department of geology and mineralogy is sufficient for many lines of graduate work. The department has collected from many localities, both within and without the state, and the Geological Survey made extensive collections during the years of its active field work. The material thus gathered, the published literature on the state and the field within easy access from the University afford suggestions of unsolved problems in a number of different geological lines.

## PATHOLOGY AND BACTERIOLOGY

The present courses in general pathology and bacteriology for medical and engineering students are offered as minors for Ph. D. and as majors for the master's degree.

A major for the Ph. D. shall consist of research in pathology for medical or experimental medicine, prerequisite to which certain of the regular courses offered in this department must be satisfactorily completed.

Before entrance into any course offered in this department, a working knowledge of certain groups of subjects such as histology and embryology, animal biology, anatomy, physiology, botany, chemistry, physics, etc., must be had.

## 1. GENERAL BACTERIOLOGY PROFESSOR WESBROOK, ASSISTANT PROFESSOR

HILL AND DR. PRATT

Lectures and demonstrations. The general scope of bacteriology, the history of its development and the biological and chemical problems involved in the life history of bacteria will be dealt with. The classification of the various bacterial forms, the methods of isolation and culture and the composition and manufacture of culture media will be studied until a thorough knowledge of technique is acquired. General and special study of the various antiseptics, disinfectants and bactericidal substances and conditions will be undertaken.

Laboratory work, involving the making of their own culture media by the students, the study of bacteria in cultures and under the microscope, technique of staining and other methods, including observations of chemical and biological peculiarities, will be thoroughly carried out. Testing of various germicides—chemical and physical—and the use of bacteriological methods in the examination of drinking water will form an important part of the work. Bacterial activities concerned in sewage purification, etc., will receive attention. Twenty hours per week during the last eight weeks of the second semester, second year.

## 2. GENERAL PATHOLOGY PROFESSOR WESBROOK, DR. MULLIN AND

DR. ROBERTS

Twenty hours per week during the last eight weeks of the second semester, second year.

Lectures, demonstrations and laboratory work on the general processes involved in disease to include the study of inflammation, the degenerations and tumors.

## PHARMACY

## THE GRADUATE COURSE IN THE COLLEGE OF PHARMACY

In addition to its regular undergraduate course this college offers two graduate courses, the first continuing through one college year and leading to the degree of "master of pharmacy," and the second continuing through an additional year or longer, and leading to the degree of "doctor of pharmacy." The first graduate course, the one leading to the master's degree, is now in operation. It is intended that the curriculum shall include higher pharmaceutical chemistry, pharmaceutical assaying, higher organic chemistry, proximate and ultimate analysis, chemistry of food, spectroscopic work, therapeutics, and bacteriology, and a thesis of at least 3,000 words, embodying the results of original work, but this curriculum may be changed by the faculty if occasion or experience require.

The requirements for admission are a diploma from a Minnesota high school of the first grade, or an equivalent; a diploma from a college of pharmacy whose curriculum, extent and kind of work and length of undergraduate course are equal to those of the undergraduate work of this college; an acquaintance with either German or French sufficient to enable the student to read and understand the scientific literature of those languages, and a certificate of registration as pharmacist from any state board of pharmacy. The fees for this course will be seventy-five dollars, and, upon graduation, an additional fee of ten dollars for diploma. The rules relating to damage, waste and breakage in laboratories are the same as those applying to the undergraduate course.

The course leading to the doctor's degree will begin as soon as there are sufficient applicants.

## PHILOSOPHY AND PSYCHOLOGY

### FOR UNDERGRADUATES AND GRADUATES

3. EDUCATIONAL PSYCHOLOGY ASSISTANT PROFESSOR MINER AND MR. HAYNES  
Three credits (three hours per week) Second semester  
Open to those who have completed course 1.  
The study of mental developments in its relation to heredity and training. Lectures and student reports on the facts and theories of childhood and adolescence with special reference to their bearing on education.
5. EXPERIMENTAL PSYCHOLOGY: HIGHER MENTAL PROCESSES ASSISTANT PROFESSOR MINER  
Three credits (three hours per week) Second semester  
Open to juniors and seniors who have completed courses 1 and 4.  
A continuation of course 4 with experiments on affection, memory, attention, and such other processes as can be studied by laboratory methods. The quantitative phase of experimental psychology is taken up for special discussion.
6. OUTLINE OF EXPERIMENTAL PSYCHOLOGY ASSISTANT PROFESSOR MINER  
Three credits (three hours per week) Second semester  
Open to juniors and seniors who have completed course 1; not given in 1908-9.  
A study of the methods and accerdtied results of experimental investigation in psychology. Class-room demonstrations, lectures, and discussion.
7. PSYCHOLOGICAL INTERPRETATION ASSISTANT PROFESSOR MINER  
Three credits (three hours per week) First semester  
Open to juniors and seniors who have completed course 1.  
Unusual and pathological mental states are studied for the light they throw upon normal mental life. The student is given drill in the detecting of mental defects and in the psychological explanation of characters in history and literature. The subconscious, dreams, suggestibility, telepathy, nervous disorders, insanity, secondary personalities, and the crowd are among the topics treated.
8. PSYCHOLOGICAL PRINCIPLES ASSISTANT PROFESSOR SWENSON  
Three credits (three hours per week) Second semester  
Open to juniors and seniors who have completed courses 1 and 2.  
An advanced course treating in detail some of the more important theoretical problems connected with psychology. The discussions will center about the methods and aim of the science, its fundamental principles, and its relations to other sciences, regard being had to the general outlines of historical development in these respects.
9. ANCIENT AND MEDIAEVAL PHILOSOPHY PROFESSOR WILDE  
Three credits (three hours per week) First semester  
Open to juniors and seniors who have completed course 1 or course 2.  
This and the following course are designed to give such an outline of the history of thought as is desirable in a general education. Emphasis is placed upon the human significance of philosophy rather than upon its purely technical aspect. In this first semester the main work will be upon the philosophies of Plato and Aristotle, but the later development will be traced as far as the Renaissance.

10. MODERN PHILOSOPHY PROFESSOR WILDE  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 1 or  
 course 2.  
 Lectures on the representative systems of modern philosophy from the Renaissance to our own day, the purpose of the course being to prepare the student to understand the philosophical tendencies of the present. The work will include a study of Bacon, Descartes, Spinoza, Leibnitz, Locke, Berkeley, Hume, Kant, Mill, Schopenhauer.
11. PRINCIPLES OF ETHICS PROFESSOR WILDE  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors who have completed course 1 or  
 course 2.  
 An introductory course, comprising a study of the distinction between moral and non-moral phenomena, an analysis of voluntary conduct, and a discussion of the nature of conscience, the meaning of right and wrong, the purpose of life, human responsibility, and the authority of moral law.
12. PHILOSOPHY OF RELIGION PROFESSOR WILDE  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 1 or  
 course 2.  
 A study of the religious consciousness, its origin, development and significance; an analysis of the conception of God and a discussion of the place and function of religion in modern life.

## ADVANCED INTENSIVE COURSES

13. LOGIC OF SCIENCE ASSISTANT PROFESSOR SWENSON  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 2.  
 This course serves as an introduction to philosophy through the medium of the special sciences, its aim being to suggest a system of the sciences through a discussion of the nature and relations of their fundamental principles.

## FOR GRADUATES

Courses from the following list will be offered to graduates each year as determined by the needs and qualifications of the students presenting themselves. It is desirable that students consult with the department as early in the session as possible in order that the course and hours may be arranged to suit the greatest number.

14. PSYCHOLOGICAL PROBLEMS ASSISTANT PROFESSOR MINER  
Both semesters  
 Open to seniors and graduate students who have completed  
 courses 1, 4, and 5; other arrangements may be ascertained  
 upon application to the department.  
 Original work on special topics.
15. RESEARCH IN PSYCHOLOGY ASSISTANT PROFESSOR MINER  
 Six credits (three hours per week) Both semesters  
 Open to graduate students who have completed course 14; both  
 semesters must be taken before credit is given for the first  
 semester.  
 Minor or major research in experimental, educational, analytic, genetic,  
 or comparative psychology.
16. THE PHILOSOPHY OF DESCARTES, SPINOZA, AND LEIBNITZ ASSISTANT PROFESSOR SWENSON  
 Six credits (three hours per week) Both semesters  
 Open to seniors and graduates who have completed courses 1, 2,  
 9, and 10; both semesters must be completed before credit is  
 given for the first semester.  
 A study of the pre-critical period of modern philosophy. The work  
 will center in the discussion of the *Ethics* of Spinoza and *Monadology* of  
 Leibnitz.

17. **THE PHILOSOPHY OF KANT** ASSISTANT PROFESSOR SWENSON  
Six credits (three hours per week) Both semesters  
Open to seniors and graduate students who have completed courses 1, 2, 9, and 10; both semesters must be completed before credit is given for the first semester.  
A critical reading of the three Critiques; the relation of Kant to the development of modern philosophy.
18. **THE PHILOSOPHY OF HUME** ASSISTANT PROFESSOR SWENSON  
Six credits (three hours per week) Both semesters  
Open to seniors and graduates who have completed courses 1, 2, 9, and 10; both semesters must be completed before credit is given for the first semester.  
A critical reading of Hume's philosophical works; the position of Hume in the development of English philosophy.
19. **THE PHILOSOPHY OF HERBERT SPENCER** ASSISTANT PROFESSOR SWENSON  
Three credits (three hours per week) Second semester  
Open to seniors and graduate students who have completed courses 1 and 2.  
A critical reading of the *First Principles* with references to other important features of the *Synthetic Philosophy* and to the philosophical character of the modern scientific movement. The course is intensive, the aim being to develop the power of philosophical criticism in regard to such questions as the logical foundations of the theory of evolution, the relations of science and religion, and the place of the scientific interest among the other interests of life.
20. **METAPHYSICS** ASSISTANT PROFESSOR SWENSON  
Six credits (three hours per week) Both semesters  
Open to seniors and graduate students who have completed course 9 and course 10 or 11; both semesters must be completed before credit is given for the first semester.  
A critical and constructive discussion of theories of knowledge and reality.
21. **SYSTEMATIC ETHICS** PROFESSOR WILDE  
Six credits (three hours per week) Both semesters  
Open to seniors and graduate students who have completed courses 9, 10, and 11; both semesters must be completed before credit is given for the first semester.  
A detailed study of the principles of conduct and the basis of moral obligation.
22. **HISTORY OF ETHICS** PROFESSOR WILDE  
Six credits (three hours per week) Both semesters  
Open to seniors and graduate students who have completed courses 9, 10, and 11; both semesters must be completed before credit is given for the first semester.  
A critical study of the development of Greek, English, and German ethical thought. Chief attention will be paid to the work of Plato and Aristotle in ancient times, and to the relation between utilitarianism and idealism in modern philosophy.
23. **GERMAN IDEALISM** PROFESSOR WILDE  
Six credits (three hours per week) Both semesters  
Open to graduate students who have completed courses 9, 10, and 17; both semesters must be completed before credit is given for the first semester; a knowledge of German is required.  
A study of the development of German philosophy after Kant, especially as found in the writings of Fichte and Hegel.

## PHYSICS

### FOR UNDERGRADUATES AND GRADUATES

5. **ADVANCED GENERAL PHYSICS** PROFESSOR JONES, ASSISTANT PROFESSORS ANTHONY ZELENY AND ERIKSON  
Six credits (seven hours per week) First semester  
Open to sophomores, juniors, and seniors, who have completed mathematics 4, (trigonometry); the laboratory fee is three

dollars; adapted to those students who expect to specialize in physics, to teach the science, or to enter upon a technical course.

Mechanics of solids and fluids, the properties of matter, heat, and sound. This course is intended to give a thorough training in general physics and includes the solution of numerous problems. There will be two lectures, three recitations, and one laboratory (double) period each week.

6. **ADVANCED GENERAL PHYSICS** PROFESSOR JONES, ASSISTANT PROFESSORS ANTHONY ZELENY AND ERIKSON  
Six credits (seven hours per week) Second semester

Open to sophomores, juniors, and seniors, who have completed course 5; the laboratory fee is three dollars; intended for those students who wish to specialize in the science, to teach the subject, or to enter upon a technical course.

Light, electricity and magnetism. This course completes the work in general physics. There will be two experimental lectures, three recitations, and one (double) laboratory period each week.

7. **ELECTRICAL MEASUREMENTS** ASSISTANT PROFESSOR ANTHONY ZELENY  
Three credits (five hours per week) First semester  
Open to juniors and seniors who have completed courses 5 and 6; the laboratory fee is five dollars.

The course aims to give a thorough practical knowledge of electrical instruments and the fundamental electrical measurements. The system of electrical units is developed theoretically and experimentally. There will be two (double) laboratory periods each week, the class being divided into sections for that purpose.

8. **PHYSICAL MANIPULATION AND LABORATORY TECHNIQUE** PROFESSOR JOHN ZELENY  
Three credits (six hours per week) Second semester

Open to juniors and seniors who have completed courses 5 and 6; the laboratory fee is three dollars; especially valuable to those who intend to teach the science or to specialize in it.

The object of this course is to give the student a knowledge of the essential physical manipulations (such as the cleaning and distilling of mercury, soldering, glass blowing, glass cutting, glass grinding, making of quartz fibers, etc), and to acquaint him with the use of some instruments of precision (such as the cathetometer, the dividing engine, the balance, mercury air pumps and gauges, etc.)

9. **DYNAMICS** PROFESSOR JONES  
Three credits (three hours per week) First semester  
Open to juniors and seniors who have completed courses 5 and 6, and mathematics 6 and 7 (calculus).

A discussion of some problems in dynamics which are important in the study of advanced physics.

10. **ADVANCED PHYSICAL MEASUREMENTS** PROFESSOR JOHN ZELENY  
Three credits (six hours per week) First semester  
Open to seniors and graduate students who have completed courses 5 and 6; the laboratory fee is three dollars.

The course consists of individual work in the laboratory on topics specially chosen to serve best the needs and capacity of each student. The course is intended to introduce the student to some of the more intricate physical measurements and to teach him self-reliance.

11. **ADVANCED PHYSICAL MEASUREMENTS** PROFESSOR JOHN ZELENY  
Six credits (twelve hours per week) First semester  
Open to seniors and graduate students who have completed courses 5 and 6; the laboratory fee is five dollars.

The same as course 10 except that twice as much time is devoted to the subject.

12. **ELECTRICAL MEASUREMENTS OF PRECISION** ASSISTANT PROFESSOR ANTHONY ZELENY  
Three credits (six hours per week) Second semester

Open to seniors who have completed course 7; the laboratory fee is three dollars; intended for electrical engineering and scientific students who desire to specialize in electrical work of the highest precision.

The course is chiefly experimental and includes the following: making of standard cells; calibration of Wheatstone box bridge; adjustment of resistances, ammeters, and voltmeters; use of the potentiometer in measurements of highest precision; experimental problems involving capacity, inductance, and magnetic flux; measurement of temperatures by electrical methods.

## FOR GRADUATES

12. THE THEORY OF LIGHT PROFESSOR JONES  
 Three credits (three hours per week) Second semester  
 Open to graduate students who have completed courses 5 and 6,  
 and mathematics 6 and 7 (calculus).  
 A study of the important optical phenomena. Preston's *Theory of Light*  
 is used as a text.
14. RADIO-ACTIVITY MR. KOVARIK  
 Six credits (three hours per week) Both semesters  
 Open to graduate students who have completed courses 5 and 6.  
 The course consists entirely of lectures, experimental and descriptive.  
 The various theories and the methods of investigation are fully considered.
15. ADVANCED PHYSICAL MEASUREMENTS PROFESSOR JOHN ZELENY  
 Three credits (six hours per week) Second semester  
 Open to seniors and graduate students who have completed  
 courses 5 and 6; the laboratory fee is three dollars.  
 The course is the experimental study of some physical phenomena, the  
 nature or laws of which are not yet understood.
16. ADVANCED PHYSICAL MEASUREMENTS PROFESSOR JOHN ZELENY  
 Six credits (twelve hours per week) Second semester  
 Open to seniors and graduate students who have completed  
 courses 5 and 6; the laboratory fee is five dollars.  
 The same as course 5, except that twice as much time is devoted to the  
 subject.
17. THE KINETIC THEORY OF GASES ASSISTANT PROFESSOR ERIKSON  
 Three credits (three hours per week) Second semester  
 Open to graduate students who have completed courses 5 and 6,  
 and mathematics 6 and 7 (calculus).  
 This course is a study of Meyer's *Kinetic Theory of Gases*.
18. DISCHARGE OF ELECTRICITY THROUGH GASES PROFESSOR JOHN ZELENY  
 Three credits (three hours per week) First semester  
 Open to graduate students who have completed courses 5 and 6,  
 and mathematics 6 and 7 (calculus).  
 The course consists of lectures, with experimental illustrations, on the  
 conduction of electricity through gases. A study is made of the conductivity  
 imparted to gases by the action of X-rays, ultra-violet light, radioactive  
 substances, and glowing metals; of the discharge of electricity from points  
 and in vacuum tubes; and of the spark and arc discharges. The methods of  
 measuring the velocity of the ions and the charges carried by them are  
 studied in detail.
19. THE MATHEMATICAL THEORY OF ELECTRICITY AND MAGNETISM  
 PROFESSOR JOHN ZELENY  
 Three credits (three hours per week) Second semester  
 Open to graduate students who have completed courses 5 and 6,  
 and mathematics 6 and 7 (calculus).  
 This course consists in the study of J. J. Thomson's *Elements of the  
 Mathematical Theory of Electricity and Magnetism*.

## POLITICAL SCIENCE

## FOR UNDERGRADUATES AND GRADUATES

2. COMPARATIVE GOVERNMENT MR. ALLIN  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1.  
 A description and analysis of the government as the agent of the state;  
 a comparative study of the organization and working of the governments  
 of the great European powers of today, especially of France, Germany,  
 Great Britain and Italy. Text, with lectures and assigned readings.

3. **THE ELEMENTS OF JURISPRUDENCE** PROFESSOR SCHAPER  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1.  
 A study of those human relations requiring legal regulation considered from the American point of view; the nature and source of law, status, rights and wrongs, partnership, corporations, etc. The course is intended for active citizenship and for the study of law. The student will practice looking up cases and summarizing leading principles. The course is based on a text, with lectures and assigned reading.
7. **MUNICIPAL ADMINISTRATION** PROFESSOR SCHAPER  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 1.  
 A comparative study in modern city charters and methods of administration, the relation of the city to the state, the delimitation of its sphere of activity, its liability for tort, and an investigation into the causes of municipal corruption and merits of proposed reforms. A text, lectures, and special topics.
8. **THEORY OF THE STATE** PROFESSOR SCHAPER  
 Three credits (three hours per week) Second semester  
 Open to those who have completed courses 1 and 2.  
 A study in the theory of the state, its origin, nature, purpose and justification, the elements of population and territory. Important theories, like the divine, contract, modern socialistic, individualistic, and social welfare, are considered; also the question of state interference and state management of industries. This course includes a study of classification of law, governments, and states. A text-book, with lectures and topical readings.
9. **POLITICAL PARTIES** PROFESSOR SCHAPER  
 Two credits (two hours per week) First semester  
 Open to those who have completed courses 1 and 2.  
 An advanced course in political parties, their origin, development, and function. Such topics as methods of making nominations, securing minority representation, the recall, the initiative and referendum are taken up. Text, lectures, and special topics.
10. **DIPLOMACY** MR. ALLIN  
 Two credits (two hours per week) Second semester  
 Open to those who have completed course 1.  
 The object of this course is to outline the growth of international relations, the mode of conducting foreign affairs, the relation of the treaty-making power to legislation, the duties and immunities of diplomats, the consular service, the framing, interpretation, and termination of treaties and compacts, and the character and procedure of courts of arbitration. A survey will be made of the history of American diplomacy and of contemporary international politics. Text, lectures, and supplementary reading.
12. **COLONIAL ADMINISTRATION** MR. ALLIN  
 Three credits (three hours per week) Second semester  
 Open to those who have completed courses 1 and 2.  
 This course embraces a discussion of the principal classes of colonies, the causes of colonization, the social, economic, and political tendencies of colonial development, imperial relations, preferential trade, and independence. A study is made of the political systems of modern colonial governments, of the organization and administration of the Spanish, English, French, Dutch, German, and American colonies. Lectures, assigned reading, and special topics.
13. **TFACHER'S COURSE IN GOVERNMENT**  
 One credit (one hour per week) Second semester  
 Open to students of suitable preparation who intend to teach American government in the secondary schools.  
 Lectures and the examination of text-books, maps, and other materials useful to teachers.
15. **STATE AND LOCAL ADMINISTRATION** PROFESSOR SCHAPER  
 Two credits (two hours per week) Second semester  
 Open to those who have completed course 1.  
 A special course in the problems of our state and local governments; a comparative study of new experiments in legislation and administration, the workings of our courts, the jury system, and the new state police. Lectures, cases, and special topics.

## FOR GRADUATES

4. AMERICAN CONSTITUTIONAL LAW PROFESSOR SCHAPER  
 Four credits (two hours per week) Both semesters  
 Open to those who have completed courses 1, 2, and 8; both semesters must be completed before credit is given for the first semester; given in alternate years; not offered in 1908-9.  
 This is an advanced course in the study of the principles of our constitutional law based on important Supreme Court decisions and standard works.
5. INTERNATIONAL LAW MR. ALLIN  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed courses 1 and 2.  
 This course treats of the nature, sources, and sanction of international law; of the general principles as developed by positive agreement, common usage, and judicial decisions, in particular of the status of nations, the rules of peace, neutrality, and war, and the arbitration movement. Text, lectures, and supplementary reading.
11. SEMINAR IN POLITICAL SCIENCE PROFESSOR SCHAPER AND MR. ALLIN  
 Six credits (three hours per week) Both semesters  
 Open to graduate students and seniors of suitable preparation.  
 A seminar for research in the field of political science. A feature of the seminar is the discussion of current problems in politics and administration.
14. ADMINISTRATIVE LAW PROFESSOR SCHAPER  
 Two credits (two hours per week) Second semester  
 Open to those who have completed courses 1, 2, and 8, and to graduates.  
 A course dealing with administration as a science, its origin and development, the law of officers under the national government, the merit system, and the growth of special administrative tribunals. Text, lectures, and cases.

## SCANDINAVIAN

## FOR UNDERGRADUATES AND GRADUATES

5. OLD NORSE (Icelandic) PROFESSOR BOTHNE  
 Four credits (two hours per week) Both semesters  
 Open to those who have completed courses 1 and 2, or 3 and 4, and to other qualified students with the approval of the department.  
 Grammar and reading. *Gunnlaugs Saga Ormstungu*.
6. MODERN NORWEGIAN LITERATURE PROFESSOR BOTHNE  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed courses 1 and 2; both semesters must be completed before credit is given for the first semester.  
 History of Norwegian literature from 1814 to the present day. Special attention paid to Björnson and Ibsen.
7. SWEDISH LITERATURE PROFESSOR STOMBERG  
 Six credits (three hours per week) Both semesters  
 Open to qualified students upon the approval of the department; both semesters must be completed before credit is given for the first semester.  
 History of the literature and study of modern authors, including Selma Lagerlöf, Geijerstam, Strindberg.
8. IBSEN PROFESSOR BOTHNE  
 Two credits (two hours per week) First semester  
 Open to qualified students upon the approval of the department.  
 Lectures and readings.
9. HISTORY OF NORTHERN EUROPE PROFESSOR STOMBERG  
 Six credits (three hours per week) Both semesters  
 Open to juniors and seniors; no knowledge of the Scandinavian languages is required.  
 The course includes the history of the Scandinavian countries from the earliest period to recent times.



## FOR GRADUATES

12. MODERN SWEDISH LANGUAGE AND LITERATURE
13. HISTORY OF THE SCANDINAVIAN LANGUAGES  
For courses in Scandinavian philology, see the statement of the department of comparative philology.

## SEMITIC LANGUAGES

## FOR UNDERGRADUATES AND GRADUATES

1. ELEMENTARY HEBREW ASSISTANT PROFESSOR DEINARD  
Six credits (three hours per week) Both semesters  
Open to sophomores, juniors, and seniors; both semesters must be completed before credit is given for the first semester.  
First semester, Harper's *Elements of Hebrew* and reading of easy prose passages from the Old Testament; second semester, critical reading of some book of the Old Testament and a review of Hebrew grammar.
2. ELEMENTARY ARABIC ASSISTANT PROFESSOR DEINARD  
Six credits (three hours per week) Both semesters  
Open to those who have completed course 1; both semesters must be completed before credit is given for the first semester.  
First semester, Socin's *Arabic Grammar* and the reading of the prose sections contained in it; second semester, selected suras from the Koran and a review of Arabic grammar.
3. ELEMENTARY ARAMAIC OR SYRIAC ASSISTANT PROFESSOR DEINARD  
Three credits (three hours per week) Second semester  
Open to those who have completed course 1.  
The course is based upon Strach's *Grammatik des Biblischen Aramaisch* or Brockelman's *Syrische Grammatik*.
4. HISTORY OF THE HEBREWS TO THE CLOSE OF THE PERSIAN PERIOD ASSISTANT PROFESSOR DEINARD  
Six credits (three hours per week) Both semesters  
Open to sophomores, juniors, and seniors; no knowledge of any Semitic language is required.  
A survey of the political, social, and religious life of the Hebrews. The English Bible will be used as a text-book, a careful study of the Palestinian, Egyptian, and Assyro-Babylonian inscriptions will be made, and the works of some modern writers on Hebrew history will be consulted.

## FOR GRADUATES

1. CRITICAL STUDY OF ONE OF THE FOLLOWING OLD TESTAMENT BOOKS ASSISTANT PROFESSOR DEINARD  
Isaiah, The Minor Prophets, The Psalms, or Job.
2. EARLY ARABIC POETRY ASSISTANT PROFESSOR DEINARD  
And the relation of the Arabic, grammatically considered, to the Hebrew.
3. READING OF THE ARAMAIC PORTIONS OF THE OLD TESTAMENT ASSISTANT PROFESSOR DEINARD  
And a review of Aramaic grammar.
4. HISTORY, PROPHECY AND THE MONUMENTS ASSISTANT PROFESSOR DEINARD  
Studies in the early history of the Semites.

## SOCIOLOGY

## FOR UNDERGRADUATES AND GRADUATES

5. SOCIAL GROUPS PROFESSOR SMITH  
Three credits (three hours per week) First semester  
Open to those who have completed course 1.  
An examination of the clan and the village in primitive life, a study of demography to discover the effect of environment upon social organization, and a comparison with the nature of and reasons for the modern city.

6. **THE STUDY OF INSTITUTIONS** PROFESSOR SMITH  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1.  
 The genesis of custom and the beginnings of law with the geographical and race influence in the growth of states will be studied as well as the various forms of the family and their relation to forms of civilization.
7. **ANTHROPOLOGY** PROFESSOR JENKS  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors.  
 This is an elementary course studying the essential characteristics of mankind and the general features of the several races of men. It also investigates the origin and development of the series of activities and various institutions which have had their beginnings in primitive society. Text books, lectures, assigned readings, and thesis.
8. **ETHNOLOGY** PROFESSOR JENKS  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 1, 2, or 7, and to graduate students.  
 This is a study of the different races of men in America, Europe, Asia, Africa, and Oceania; the various historical classifications of men into races are presented; the causes of the origin and distribution of the several races and subraces are sought, and from historical perspective and present indications an attempt is made to judge of the future development of races; ethnological problems are also presented. Text-books, lectures, assigned readings, and thesis.
9. **THE PHILIPPINE PEOPLE** PROFESSOR JENKS  
 Three credits (three hours per week) Second semester  
 Open to juniors, seniors, and graduate students.  
 This course presents the geography, natural resources, and ethnology of the Philippine Islands. A careful comparative study of the four large ethnic and culture groups of people is made; tropical influences are noted; the present policy of the Insular Civil Government is outlined, so far as it tends to modify the natural characteristics and modern culture of the inhabitants, and to affect American home interests in the orient. This course aims to present a practical model for the investigator of human culture, and to introduce students to oriental race problems; it will also better fit students for government business or missionary service in the orient. Lectures, illustrated lectures, assigned readings, and thesis.
10. **PHYSICAL ANTHROPOLOGY** PROFESSOR JENKS  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 7 or 8, and to graduate students.  
 This course studies the physical variations in the human body. It pays special attention to those variations which distinguish one race or group of men from another; and it seeks the cause and significance of such variations. It also attempts to trace the physical evolution of the human body and to forecast its future, studying both its development and decline. Six lectures on the development and anatomy of the human brain are given by Dr. Charles A. Erdmann of the medical faculty. This course is of prime importance to advanced students preparing for the medical course. Lectures, laboratory work, assigned readings, and thesis.
11. **THE AMERICAN NEGRO RACE** PROFESSOR JENKS  
 Three credits (three hours per week) Second semester  
 Open to juniors, seniors, and graduate students; not given in 1908-9.  
 This course begins with a study of the negro's African tribal kinsmen, and traces the rise and development of the American negro race from the birth of American slavery. The present characteristics, traits, and conditions of the negro are especially considered. The developing tendencies of the negro are studied for the purpose of considering the probable future of the American negro race. Lectures, assigned readings, and thesis.
12. **THE AMERICAN PEOPLE** PROFESSOR JENKS  
 Three credits (three hours per week) First semester  
 Open to juniors, seniors, and graduate students.  
 This course presents the distribution in the United States of the different peoples of the world found here. It seeks the natural genius of the peculiar home development of these peoples, and notes the modifications of this development in America, thus portraying the ethnic contribution of each to

American civilization. It aims to discover the dominant physical, mental, and moral characteristics of each people, and attempts to determine the relative ethnic and culture importance of each to the nation.

13. **BIBLICAL SOCIOLOGY** PROFESSOR SMITH  
 Three credits (three hours per week) First semester  
 Open to juniors, seniors, and graduate students.  
 Lectures, and the Old Testament as a text book.
14. **MODERN SOCIAL INSTITUTIONS** ASSISTANT PROFESSOR REEP  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 7.  
 The fundamental social institution, the family, will be studied, as also the development of modern industrial, political, educational, and ecclesiastical institutions in their relation to human progress.

## STRUCTURAL ENGINEERING

### FOR UNDERGRADUATES AND GRADUATES

14. **STRUCTURAL DESIGN** PROFESSOR CONSTANT, MR. KESNER  
 Five credits (ten hours per week) First semester  
 Post senior. Open to students who have completed courses 12 and 13.  
 Theory and design of steel structure, including mill buildings, railway and highway bridges, standpipes and towers and other problems of structural interest. Lectures, problems and design. Merriman and Jacoby's Roofs and Bridges, Part III, Standard Specifications.
15. **STRUCTURAL DESIGN** PROFESSOR CONSTANT, MR. KESNER  
 Five credits (ten hours per week) Second semester  
 Post senior, continuation of course 14, C. E.  
 With special reference to the design of a steel railway bridge and the theory and design of steel arch bridges. Lectures, problems and designs. Merriman and Jacoby's Roofs and Bridges, Part IV.
17. **MASONRY CONSTRUCTION** PROFESSOR CONSTANT  
 Four credits First semester  
 Post senior, preparation required course 12, C. E.  
 Foundations, design and use of cribs, cofferdams and pneumatic caissons, pressure of earth, design of retaining walls, piers, abutments, dams and chimneys. Properties of stones, bricks, cement and concrete. Recitations and lectures, three hours per week; drawing room work, four hours per week. Fowler's Deep Foundations; Taylor and Thompson's Concrete and Reinforced Concrete; Howe's Retaining Walls for Earth, and current periodical engineering literature.

18. **REINFORCED CONCRETE** PROFESSOR CONSTANT  
 Three credits, (six hours per week) Second semester  
 Post senior. Preparation course 17, C. E., optional.  
 Theory and design of reinforced concrete beams, slabs and columns, application of reinforced concrete to buildings, dams, retaining walls and arches. Lectures, problems and design. Turneaure and Maurer's Principles of Reinforced Concrete.

### FOR GRADUATES

16. **SWING BRIDGES** PROFESSOR CONSTANT  
 Four credits, (eight hours per week) Second semester  
 Post senior, C. E. course.  
 Theory and design of swing and bascule bridges, with special attention to the design of the operating machinery. Moving structures. Lectures, problems and design. Merriman and Jacoby's Roofs and Bridges, Part IV. Reference works on machine design. Students intending to take this course are advised to elect machine design, 13 M. E., first semester, senior year.
19. **HIGHER STRUCTURES** PROFESSOR CONSTANT  
 Theory and design of cantilever, suspension and arch bridges. Analysis of indeterminate structures and complex portal bracing. General theory of flexure and application to special problems.

# Students

## CANDIDATES FOR DEGREES, JUNE, 1908

### FOR DOCTOR OF PHILOSOPHY—3.

- Henry Anton Erikson (B. E.E. '96), Minnesota ..... Minneapolis  
 Major, Physics; Minors, Physics, Mathematics.  
 Thesis: The Ionization of Gases at High Pressure.
- Frederick Casper Miller (B. A. '03, M. A. '07), Minnesota ..... St. Paul  
 Major, Political Science; Minors, History, Geology.  
 Thesis: History and Organization of the Police.
- Olaf M. Norlie (B. A. '98, St. Olaf; M. A. '01, Wisconsin) ..... Atwater  
 Major, English; Minors, Education, Scandinavian.  
 Thesis: The Principles of Expressive Reading, A Study of the Human Voice.

### FOR MASTER OF ARTS—21

- Donald C. Babcock (B. A. '07) Minnesota ..... Grand Forks, N. D.  
 Major, Sociology and Anthropology; Minors, Philosophy, Psychology.  
 Thesis: Origin and Development of Religious Experience.
- John M. Brendal (B. A. '06), Luther College, Iowa ..... Glenwood  
 Major, English; Minors, Comparative Philology, Scandinavian.  
 Thesis: Scandinavian Influence on English.
- Ernest J. Colberg (B. A. '06), Gustavus Adolphus College ..... St. Peter  
 Major, English; Minors, Scandinavian, Latin.  
 Thesis: The Dramas of August Strindberg; Some Aspects of their Ideas and their Technic.
- George Rupert Eichholzer (B. A. '07), Minnesota ..... Owatonna  
 Major, Political Science; Minors, History, Economics.  
 Thesis: The Merit System as Applicable to the various Administrative Departments of Minnesota.
- Lucius Arnold Frye (B. A. '07), Minnesota ..... St. Paul  
 Major, Political Science; Minors, Economics, Sociology.  
 Thesis: A Suggested Method of Controlling the Public Service Corporations of Minnesota.
- Grace Mitchell Groat (B. L. '99), Minnesota ..... Minneapolis  
 Major, English; Minors, French, Philology.  
 Thesis: The Psychology of English Rhythms.
- Howard H. Hare (B. A. '07), Minnesota ..... Minneapolis  
 Major, History; Minors, Philosophy, Greek.  
 Thesis: The Transition from a Provincial to a State Government in New Hampshire.
- Martin Hegland (B. A. '04), St. Olaf ..... St. Anthony Park  
 Major, English Philology; Minors, Education, Philosophy.  
 Thesis: An Historical and Semasiological Study of some Synonyms, Nouns, Verbs and Adjectives denoting Pleasure.
- Minnie L. Hills (B. A. '07), Minnesota ..... St. Paul  
 Major, English; Minors, Education, Sociology.  
 Thesis: A Comparison of Milton and Shakspeare as Thinkers and Writers.
- Albert Eddy Julien (A. B. '03), Hamline University ..... Brahm  
 Major, Neurology; Minors, Physiology, Pathology and Bacteriology.  
 Thesis: The Intrinsic and Efferent Fibers of the Cerebellum.
- Homer B. Latimer (B. A. '07), Minnesota ..... Minneapolis  
 Major, Animal Biology; Minors, Animal Biology, Botany.  
 Thesis: The Lateral Line of Polydon Spathula.
- Edward M. Lehnerts (B. S. '02), University of Pennsylvania ..... Minneapolis  
 Major, Education; Minors, Botany, Geology.  
 Thesis: The Teaching of Geography.
- Migio Miyazaki (B. A. '02), Waseda University, Japan ..... Tokio  
 Major, Philosophy; Minors, Sociology, Education.  
 Thesis: Japanese Morality, a Criticism.
- Alice M. Misz (B. A. '07), Minnesota ..... St. Paul  
 Major, Botany; Minors, Animal Biology, Geology.  
 Thesis: A Revision of the North American Species of Vaccinium.

- Sedona Fesenbeck Nelson (B. A. '04), University of Michigan . . . Minneapolis  
Major, English; Minors, German, Philosophy.  
Thesis: Shakspeare in German Literature.
- Leonard H. Pryor (B. A. '02), Minnesota . . . . .Fairmont  
Major, Education; Minor, Psychology.  
Thesis: A Practical Teaching of Secondary Mathematics.
- Rasmus S. Saby (B. A. '07), Minnesota . . . . .Radcliffe, Ia.  
Major, Political Science; Minors, Philosophy, Psychology.  
Thesis: Early Railroad Legislation in Minnesota.
- Conrad G. Selvig (B. A. '07), Minnesota . . . . .Rushford  
Major, Education; Minors, Psychology, Sociology.  
Thesis: Federal Aid to Schools .
- Emma White Shellenberger (Ph. B. '00), Univ. of Iowa . . .St. Anthony Park  
Major, English; Minors, German, French.  
Thesis: Usage and History in English Idiom.
- Theodore T. Stenberg (B. A. '06), Minnesota . . . . .Ormsby  
Major, English; Minors, Philosophy, Education.  
Thesis: The Function and Value of the Stage.
- Mary C. Van Wert (B. A. '05), Minnesota . . . . .Minneapolis  
Major, Animal Biology; Minors, Botany, Geology.  
Thesis: A Contribution to the History of Entomology in the United States.

FOR MASTER OF SCIENCE—2.

- Frank Fitch Grout (B. S. '04), Minnesota . . . . .Minneapolis  
Major, Geology; Minors, Chemistry, Physics.  
Thesis: The Granites and Associated Quartz Basalts of Stearns Co., Minn.
- John Wilson (B. S. '03), University of Wisconsin . . . . .Minneapolis  
Major, Sanitary Engineering; Minors, Bacteriology, Structural Engineering.  
Thesis: Sewage System and Disposal Plant at the State Agricultural School and Experiment Station.

CANDIDATES ENROLLED FOR THE DEGREE OF DOCTOR OF PHILOSOPHY—8.

- Brohaugh, George O. (B. A. '89, M. A., LL. B. '93), Minnesota . . . . .Red Wing  
Major, Economics; Minors, Public Finance, Sociology.  
Thesis: The Minnesota Pine Lands .
- Dawney, Hal (B. A. '03, M. A. '04), Minnesota . . . . .Minneapolis  
Major, Animal Biology; Minors, Anatomy, Neurology .
- Johnson, Mrs. Julia M. (M. A. '05), Minnesota . . . . .Macalester College  
Major, English; Minors, Latin, Philosophy.
- Kovarik, Alois P. (B. A. '04, M. A. '07), Minnesota . . . . .Minneapolis  
Major, Physics; Minors, Physics, Mechanics.
- Malmin, R. (B. A. '82, M. A.), Luther College . . . . .Decorah, Ia.  
Major, Hebrew; Minors, Aramaic, Jewish History.
- Melom, C. M. (B. L. '01, M. A. '02), Minnesota . . . . .Minneapolis  
Major, French; Minor, Spanish.
- Stevens, Homer W. (B. A. '02, B. L. '05, LL. B. '06, M. A. '07), Minnesota  
Minneapolis  
Major, Political Science; Minors, Economics, Law.
- Vickery, Roy Albion (B. A. '06, M. A. '07), Minnesota . . .St. Anthony Park  
Major, Animal Biology; Minor, Botany.

CANDIDATES ENROLLED FOR THE DEGREE OF DOCTOR OF SCIENCE—1.

- McDonald, William (B. S. '98, Ph. D. '07), Minnesota . . . . .Pretoria, So. Africa  
Major, Agriculture; Minors, Animal Industry, Horticulture.

CANDIDATES ENROLLED FOR THE DEGREE OF MASTER OF ARTS—36.

- Arten, O. O. (B. A. '07), St. Olaf . . . . .  
Major, History; Minors, Education, Scandinavian.
- Barnes, Clarence H. (B. A. '07, M. A. '07), Parker College . . . . .Wells  
Major, Education; Minor, Psychology.
- Brown, Harry A. (B. A. '07), Colorado . . . . .Glasgow, Mont.  
Major, Education; Minor, Psychology .
- Bell, Margaret G. (B. A. '05), Minnesota . . . . .Minneapolis  
Major, History; Minors, French, German.

Burns, Kevin (B. A. '03), Minnesota	Minneapolis
Major, Astronomy; Minors, Mathematics, Physics.	
Carleton, E. C. (B. A. '98, M. A. '00), Augustina	St. Peter
Major, Greek; Minors, English, Scandinavian.	
Chapple, B. P. (B. L. '91), Minnesota	Bathgate, N. D.
Major, Education; Minor, Psychology.	
Donald, Helen D. (B. L. '06), Carleton	St. Paul
Major, Sociology; Minor, History.	
Dorrurn, I. (B. A. '04), Luther College, Ia.	Fergus Falls
Major, Education; Minor, Psychology.	
Dungay, Niel S. (B. A. '04) Minnesota	Northfield
Major, Animal Biology; Minor, Geology.	
Groethe, Amos	Minneapolis
Major, English; Minors, Latin, Education.	
Hallstone, Augustus (B. A. '02), Luther College	Mabel
Major, History; Minors, Economics, Political Science.	
Hatch, E. S. (B. A. '03), Steinman College, Ill.	St. Louis Park
Major, Education; Minor, Psychology.	
Harris, James H.	
Major, Education; Minor, Psychology.	
Higbie, Edgar C. (B. A. Ed. '07), Minnesota	Canby
Major, Education; Minor, Agriculture.	
Holkesvik, Julian A. (B. A. '07), Luther College	Minneapolis
Major, History; Minors, Economics, Political Science.	
Hovda, Olaf (B. A. '04), Minnesota	Minneapolis
Major, Physics; Minor, Mechanics.	
Hutchinson, Drusilla C. (B. A. '01) Minnesota	Minneapolis
Major, History; Minor, English.	
Hutsinpillar, Florence W. (B. A. '04), Wellesley	Minneapolis
Major, Economics.	
Hyser, Alice Maude (B. A. '04), Minnesota	Minneapolis
Major, English; Minor, Philosophy.	
Jacobson, Martin L. (B. A. '03), Minnesota	Dawson
Major, Education; Minor, Psychology.	
Johnson, A. W. (B. A. '05), Minnesota	Minneapolis
Major, Geology; Minors, Animal Biology, Chemistry.	
Lurton, Freeman E. (B. S. '94, M. S. '97), Carleton	Fergus Falls
Major, Education; Minor, Psychology.	
Olson, C. O. Alexius (B. A. '95, B. L. '96, LL. B. '97), Minnesota	Minneapolis
Major, Political Science; Minors, Economics, Education.	
Palmer, Rilla W., (B. A. '07), Minnesota	St. Paul
Major, English.	
Payne, Carroll E. (Ph. B. '98), Hamline	Long Prairie
Major, Education; Minor, Psychology.	
Petterson, J. W. (B. A. '04), Luther College	St. Paul
Major, Education; Minors, English, Psychology.	
Sheldon, Eleanor (B. A. '04), Minnesota	Minneapolis
Major, English; Minors, Rhetoric, German.	
Shirer, William G. (B. A. '03), Cornell College, Ia.	Buffalo
Major, Education; Minor, Psychology.	
Thomas, William Benjamin (B. A., '03) U. of Denver, (M. A. '03) U. of Chicago	Farmington
Major, Education; Minor, Economics.	
Tressman, Conrad A. (B. A. '06), Minnesota	Minneapolis
Major, Comparative Philology; Minors, German, Education.	
True, Blanche L., (B. A. '02), Wellesley	Fargo, N. D.
Major, Comparative Philology; Minors, French, Greek.	
Trygstad, Christian (B. A. '05), St. Olaf	Rapid City, S. D.
Major, German; Minors, Latin, French.	
Van Cleve, Charles W. (B. A. '03), Ottawa Univ.	Barnesville
Major, Education; Minor, Psychology.	
Ward, Jeannette Baier (B. A. '06), Minnesota	Minneapolis
Major, English; Minor, Sociology.	
Weitzel, Grace B. (B. A. '07), Minnesota	Minneapolis
Major, Political Science; Minors, Economics, Sociology.	

## CANDIDATE FOR THE DEGREE OF MASTER OF AGRICULTURE—1.

Howell, David B. (Ph. B. '06) Wisconsin	St. Anthony Park
Major, Animal Nutrition; Minor, Chemistry.	

STUDENTS TAKING GRADUATE WORK, NOT ENROLLED AS CANDIDATES FOR

DEGREES—35.

Beeler, Levi Harrison (B. A. '96), Macalester, (Ph. D. '07), Minnesota	Stillwater
Education, History, Economics.	
Bicknell, Blanche (B. A. '07), Minnesota	Minneapolis
English, Sociology.	
Burt, Henry F. (B. A. '99), Washburn College	Minneapolis
Economics.	
Campbell, Anna Jean (B. A. '07), Minnesota	Hopkins
English.	
Chamberlain, Ruth (B. A. '07), Wells College	Minneapolis
English	
Comstock, Elting H. (B. S. '97), Wisconsin, (M. S. '07), Minnesota	Minneapolis
Mechanics, Chemistry.	
Cook, Louis G. (B. A. '01), Minnesota	Minneapolis
Chemistry.	
David, John A. (B. A. '04), Bates College	St. Paul
Chemistry, Physics.	
Dean, Helen M.	Minneapolis
English.	
Finkle, Kate T. (B. A. '05), Minnesota	Minneapolis
English, Political Science.	
Fisher, Aimee W., Vassar	Minneapolis
English.	
Funk, Henry D. (M. A. '03), Minnesota	St. Paul
History.	
Gates, F. W. (Ph. B. '99), Wisconsin, (M. A. '07), Minnesota	Minneapolis
Mechanics, Mathematics.	
Haglund, D. E., Bethany College, Kans.	St. Paul
History.	
Hall, Helen (B. A. '07), Vassar	Minneapolis
English.	
Harvey, Elizabeth G.	Minneapolis
Philosophy, Mathematics, Education.	
Hill, Louise C.	Minneapolis
English.	
Landstrom, G. (B. A.), Gustavus Adolphus	Sandstone
German, Comparative Philology, Scandinavian.	
Levens, Lora, (Ph. B. '02), University of Chicago	Minneapolis
Education.	
Lien, Martin	St. Anthony Park
Education, Scandinavian.	
Link, George M. (B. S. '98), Wisconsin	Minneapolis
Shop work, Drawing.	
MacFarlane, Lorena (B. A. '03), Minnesota	Minneapolis
English, Sociology.	
Marlowe, Cora E. (B. A. '00), Minnesota	Minneapolis
English.	
Moll, Frank E.	Wahpeton
German, French, Comparative Philology.	
Quirk, Nellie	Minneapolis
English.	
Rapeer, Louis W. (B. S. '04), Chicago, (M.A. '07), Minnesota	Minneapolis
Education, Sociology.	
Richert, Cornelius (B. A. '00), (M. A. '01), Nebraska	St. Paul
Semitic, Sociology.	
Rockwell, Frank I.	St. Anthony Park
Forestry.	
Schisby, Marion (B. A.), Vassar	Minneapolis
English.	
Sedgwick, Emily W. (B. A.), Nebraska	Minneapolis
German.	
Shephard, William H.	Minneapolis
Political Science.	

Stamm, Freda L. (B. A. '07), Minnesota .....	St. Paul German.
Truesdell, William H. (M. A. '06), Minnesota .....	Minneapolis Chemistry.
Williams, Charles A. (M. A.) .....	Minneapolis German.
Zoerb, A. J. (Ph. B. '06), Wisconsin .....	Minneapolis History.





The  
University of Minnesota  
Bulletin

The College of  
Science, Literature, and the Arts

1908-1909

Volume XI

May 26, 1908

No.

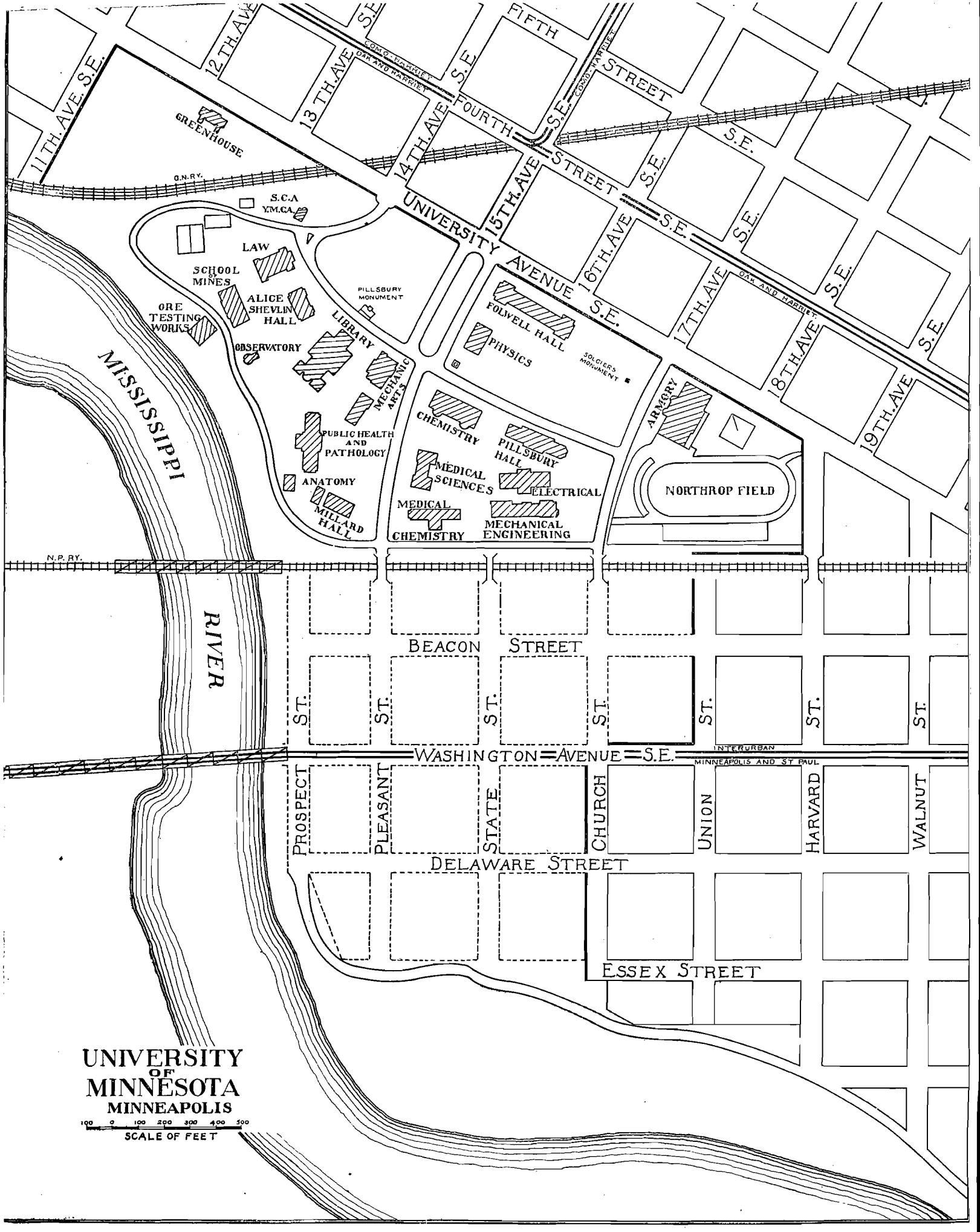
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The University catalogues are published by authority of the Board of Regents, as a regular series of bulletins. One bulletin for each college is published every year, and in addition a bulletin of general information outlining the entrance requirements of all colleges of the University, and embodying such items as University equipment, organizations and publications, expenses of students, loan and trust funds, scholarships, prizes, etc. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them. In calling for bulletins, please state the college or school of the University concerning which information is desired. Address,

THE REGISTRAR,

The University of Minnesota,

Minneapolis, Minnesota.



**UNIVERSITY  
OF  
MINNESOTA  
MINNEAPOLIS**

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SCALE OF FEET

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## CALENDAR FOR 1908-1909

1908

1909

### MAY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	<b>30</b>
31	..	..	..	..	..	..

### JUNE

..	1	2	3	4	5	6
<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
..	..	..	..	..	..	..

### SEPTEMBER

..	..	1	2	3	4	5
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20	21	22	23	24	25	26
27	28	29	30	..	..	..
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### OCTOBER

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### NOVEMBER

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29	30	..	..	..	..	..
..	..	..	..	..	..	..

### DECEMBER

..	..	1	2	3	4	5
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27	28	29	30	31	..	..

### JANUARY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
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10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

### FEBRUARY

..	1	<b>2</b>	3	4	5	6
7	8	9	10	11	<b>12</b>	13
14	15	16	17	18	19	20
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28	..	..	..	..	..	..
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### MARCH

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21	22	23	24	25	26	27
28	29	30	31	..	..	..
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### APRIL

..	..	..	..	1	2	3
4	5	6	7	8	<b>9</b>	<b>10</b>
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25	26	27	28	29	30	..
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### MAY

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16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	<b>31</b>	..	..	..	..	..

### JUNE

..	..	1	2	3	4	5
<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..

# University Calendar

1907-1908

## THE UNIVERSITY YEAR

The University year covers a period of thirty-eight weeks beginning on the second Tuesday in September. Commencement day is always the second Thursday in June.

FEBRUARY	4 T	Second semester begins—classes called for regular work
	12 W	Lincoln's birthday—legal holiday
	22 S	Washington's birthday—legal holiday
APRIL	17 F	Good Friday. Recess two days
MAY	2 Th	Regular meeting Board of Regents
	25 M	Senior examinations begin
	30 S	Decoration Day—legal holiday
JUNE	1 M	Semester examinations begin
	6 S	Semester examinations close

### COMMENCEMENT WEEK, 1908

SUNDAY	June 7	Baccalaureate service
MONDAY	June 8	Senior class exercises
TUESDAY	June 9	Phi Beta Kappa address. Senior promenade
WEDNESDAY	June 10	Alumni Day. Regular meeting Board of Regents
THURSDAY	June 11	Commencement Day. The thirty-sixth annual commencement
FRIDAY	June 12	Summer vacation begins

## 1908-1909

SEPTEMBER	7-14	Entrance examinations, condition examinations and registration
	15 T	Classes called for regular work. Seventeenth annual session
OCTOBER	1 Th	Regular meeting Board of Regents
	5 M	Regular meeting University Council
NOVEMBER	26 Th	Thanksgiving Day. Recess three days
DECEMBER	7 M	Regular meeting University Council
	8 T	Annual meeting Board of Regents
	19 S	Holiday recess begins (no classes)
JANUARY	5 T	Work resumed in all departments
	23 S	Semester examinations begin
	30 S	Semester examinations close
FEBRUARY	2 T	Second semester begins—classes called for regular work
	12 F	Lincoln's birthday—legal holiday
	22 M	Washington's birthday—legal holiday
APRIL	5 M	Regular meeting University Council
	9 F	Good Friday—Recess two days

*The University of Minnesota*

MAY	6 Th	Regular meeting Board of Regents
	24 M	Senior examinations begin
	31 M	Decoration Day—legal holiday
JUNE	1 T	Semester examinations begin
	5 S	Semester examinations close
	7 M	Regular meeting University Council

## COMMENCEMENT WEEK, 1909

SUNDAY	June 6	Baccalaureate service
MONDAY	June 7	Senior class exercises
TUESDAY	June 8	Sigma Xi address. Senior promenade
WEDNESDAY	June 9	Alumni Day. Regular meeting Board of Regents
THURSDAY	June 10	Commencement Day. The thirty-seventh annual commencement
FRIDAY	June 11	Summer vacation begins

## PROGRAM—ENTRANCE EXAMINATIONS

MONDAY,	September 7, 9	9 A. M.	3 Botany
			3 Zoology
			1 Astronomy
			3 Geology
		2 P. M.	2 American Government
			2 Political Economy
TUESDAY,	September 8, 9	9 A. M.	2 History
			5 Physics
		2 P. M.	4 Chemistry
			3 Physiography
WEDNESDAY,	September 9, 9	9 A. M.	1 English
		2 P. M.	1 German
			1 French
			1 Latin
			1 Scandinavian
THURSDAY,	September 10, 9	9 A. M.	1 Elementary Algebra
			2 Commercial Geógraphy
		2 P. M.	1 Higher Algebra
FRIDAY,	September 11, 9	9 A. M.	1 Plane Geometry
		2 P. M.	1 Solid Geometry

1 Folwell Hall, 2 Library Building, 3 Pillsbury Hall, 4 Chemical Laboratory, 5 Physics Building, 6 Mechanic Arts Building.

## PROGRAM OF CONDITION EXAMINATIONS

TUESDAY,	September 8, 9	9 A. M.	English, Rhetoric, Sociology
		2 P. M.	Mathematics, Philosophy, Psychology
WEDNESDAY,	September 9, 9	9 A. M.	Animal Biology, Botany, Geology, Physics
		2 P. M.	Astronomy, Chemistry, Economics, Drawing
THURSDAY,	September 10, 9	9 A. M.	French, German, Greek, Scandinavian
		2 P. M.	History, Latin, Education, Politics

For notice of the class-rooms in which these examinations will be given, see bulletin in library building.

The school year for 1909-10 will begin Tuesday, Sept. 14.

# The University

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THE UNIVERSITY OF MINNESOTA comprises the following named schools, colleges and departments:

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

THE DEPARTMENT OF AGRICULTURE, including—

*The College of Agriculture*

*The School of Agriculture*

*Short Course for Farmers*

*The Dairy School*

*The Crookston School of Agriculture*

THE COLLEGE OF LAW

THE COLLEGE OF MEDICINE AND SURGERY

THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE SCHOOL OF MINES

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

The Regents of the University have entrusted to their charge:

THE EXPERIMENT STATIONS, including—

*The Main Station at St. Anthony Park*

*The Sub-Station at Crookston*

*The Sub-Station at Grand Rapids*

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

---

Bulletins of these schools, colleges and departments may be obtained upon application to the University Registrar.



In the COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS, there is a four-year course of study leading to the degree, Bachelor of Arts. The work of the first year is elective within certain limitations as to the range of subjects from which the electives may be chosen. The remaining work of the course is entirely elective, with the provision that a certain number of long courses be selected. The course is so elastic that it permits the student to make the general scope of his course classic, scientific or literary, to suit his individual purpose.

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS offers courses of study, of four years each, in civil, mechanical, electrical and municipal engineering, leading to the degrees of Civil, Mechanical, and Electrical Engineer. This college offers a four-year course of study in science and technology, leading to the degree of Bachelor of Science, with an additional year leading to the engineer's degree in any one of the various lines offered in the college. This college also offers graduate work leading to the degree, Master of Science.

THE SCHOOL OF MINES offers four-year courses of study in mining and metallurgy upon completion of which the degrees, Engineer of Mines and Metallurgical Engineer, are conferred.

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY, leading to the degrees, Bachelor of Science in Chemistry, and Bachelor of Science in Chemical Engineering, offers two courses of study of four years each in analytical and applied chemistry.

THE COLLEGE OF EDUCATION receives students who have completed two years of college work, and offers them a three-year course leading to the master's degree. At the end of the second year students may receive the bachelor's degree and the University teacher's certificate. Graduates of other colleges, who have pursued an equivalent course in education, may enter for the master's degree.

THE GRADUATE SCHOOL gathers into a single organization and unites for the purposes of administration all the activities of the University in all its schools and colleges in so far as they relate to advanced instruction offered for the second or higher degrees, viz.: Master of Arts and Doctor of Philosophy conferred for advanced, non-technical study; Master of Science and Doctor of Science for technical study; Master of Laws and Doctor of Civil Law for advanced legal studies. The privileges of this school are in general open to all Bachelors of Arts, of Science, pure and applied, and of Laws, from reputable colleges and universities having courses substantially equivalent to those at this University.

THE UNIVERSITY SUMMER SCHOOL is organized for a six weeks' session in June and July under the direction of the State Department of Public Instruction. In the elementary section courses are given for teachers in all the common school branches and in preparation for the state teacher's certificates. In the college section courses are given for high school teachers and in preparation for the state professional certificate. Students who desire University entrance credits and credits toward the bachelor's degree may secure these by pursuing not more than two full courses at each session.

SPECIAL COURSES. In each of the Colleges, students of mature age and adequate preparation are permitted to pursue, under the direction of the faculty, one or two distinct lines of study.

EXTENSION LECTURES. Professors in the University are prepared to give a limited number of extension lectures from time to time. For subjects, speakers, terms and dates, application should be made to the Chairman of the Committee on University Extension.

THE COLLEGE OF AGRICULTURE offers a four-year course in agriculture. The degree of Bachelor of Science, in Agriculture, is conferred upon completion of the course. Students in this College may specialize along the line of forestry or of home economics and secure the degree, Bachelor of Science (in Forestry, or in Home Economics).

THE SCHOOL OF AGRICULTURE offers a three-year course of study and is a training school for practical farm life and in domestic economy. The College of Agriculture is open to graduates of this School who have completed the fourth year of work required for admission to the college.

*The Dairy School* offers practical instruction in dairying, specially designed for those who are actually engaged in the manufacture of butter and cheese.

*The Short Course for Farmers* is designed to be of the greatest help possible to those actually engaged in farming.

*The Crookston State School of Agriculture* offers a course of study quite similar to that given in the School of Agriculture.

THE COLLEGE OF LAW offers a three-year course of instruction leading to the degree of Bachelor of Laws. Graduate work leading to the degrees, Master of Laws, and Doctor of Civil Law, is offered. An evening class is provided in this college.

THE COLLEGE OF MEDICINE AND SURGERY, AND THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY offer four-year courses of study, of nine months each, requiring two years of collegiate work for admission. Upon completion of either of the prescribed courses the degree, Doctor of Medicine, is conferred.

In the Colleges of Science, Literature and the Arts, of Medicine and Surgery, and of Homeopathic Medicine and Surgery, there has been established a combined course of six years, leading to the degrees, Bachelor of Science, and Doctor of Medicine.

THE COLLEGE OF DENTISTRY offers a three-year course of study, of nine months each. Upon completion of the prescribed course the degree of Doctor of Dental Surgery is conferred.

THE COLLEGE OF PHARMACY offers a two or three-year course of study leading to the degree of Pharmaceutical Chemist. This college also offers graduate work leading to the degrees, Master of Pharmacy and Doctor of Pharmacy.

## The Board of Regents

CYRUS NORTHROP, LL. D., MINNEAPOLIS . . . . .	<i>Ex-Officio</i>
The President of the University	
The HON. JOHN LIND, MINNEAPOLIS . . . . .	1914
The President of the Board	
The HON. JOHN A. JOHNSON, ST. PETER . . . . .	<i>Ex-Officio</i>
The Governor of the State	
The HON. JOHN W. OLSEN, ALBERT LEA . . . . .	<i>Ex-Officio</i>
The State Superintendent of Public Instruction	
The HON. THOMAS WILSON, ST. PAUL . . . . .	1909
The HON. B. F. NELSON, MINNEAPOLIS . . . . .	1910
The HON. A. E. RICE, WILLMAR . . . . .	1909
The HON. PIERCE BUTLER, ST. PAUL . . . . .	1910
The HON. CHARLES A. SMITH, MINNEAPOLIS . . . . .	1910
The HON. S. M. OWEN, MINNEAPOLIS . . . . .	1913
The HON. W. J. MAYO, ROCHESTER . . . . .	1913
The HON. HENRY B. HOVLAND, DULUTH . . . . .	1914
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C. D. DECKER, MINNEAPOLIS	
Secretary of the Board.	

# Executive Officers

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## THE UNIVERSITY

CYRUS NORTHROP, LL. D., *President*

ERNEST B. PIERCE, B. A., *Registrar*

JAMES T. GEROULD, B. A., *Librarian*

C. D. DECKER, *Purchasing Agent*

J. D. BREN, *Cashier*

## THE COLLEGES

JOHN F. DOWNEY, M. A., C. E., *Dean of the College of Science, Literature and the Arts*

FREDERICK S. JONES, M. A., *Dean of the College of Engineering and the Mechanic Arts*

EUGENE W. RANDALL, *Dean and Director of the Department of Agriculture*

WILLIAM S. PATTEE, LL. D., *Dean of the College of Law*

FRANK FAIRCHILD WESBROOK, M. A., M. D., C. M., *Dean of the College of Medicine and Surgery*

EUGENE L. MANN, B. A., M. D., *Dean of the College of Homeopathic Medicine and Surgery*

ALFRED OWRE, D. M. D., M. D., *Dean of the College of Dentistry*

FREDERICK J. WULLING, Ph.D., LL.M., *Dean of the College of Pharmacy*

WILLIAM R. APPLEBY, M. A., *Dean of the School of Mines*

GEORGE B. FRANKFORTER, Ph. D., *Dean of the School of Chemistry*

GEORGE F. JAMES, Ph. D., *Dean of the School of Education*

HENRY T. EDDY, C.E., Ph. D., LL. D., *Dean of the Graduate School*

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ADA L. COMSTOCK, M. A., *Dean of Women*

# The University Council

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At the regular meeting of the Board of Regents of the University, May 31st, 1905, a University Council was established according to the following plan:

I. The name of the body shall be The University Council. It shall consist of the President of the University, the deans of the various colleges and schools, one elected representative from each college or school for each 400 students or major fraction thereof, and one representative of the general alumni association.

II. The elected members shall serve for a period of one year. They shall be chosen from the various faculties at the time of the selection of standing committees. The representative of the general alumni association shall be chosen by that body at its annual meeting from among the alumni who are not members of the University.

III. The Council shall be authorized to—

a) Appoint the following committees or the faculty representation thereon:

The University auditing committee

The University press committee

The committee on athletics

The committee on University relations to other institutions of higher learning

The committee on health and sanitation

The committee on commencement and other University functions

The committee on catalogue, programs and courses of study

The committee on student entertainments and social affairs

And such other committees as the general University interests may require

b) Receive reports from such committees and to make such recommendations as may be required.

c) Consider and act upon any matter of general University interest beyond the province of a single faculty which may be referred to it by the President of the University or any faculty.

IV. The Council shall hold stated meetings upon the first Monday of October, December, April and June, and such other meetings as the President of the University may call

# Representatives to the Council

## **The University**

PRESIDENT CYRUS NORTHROP

## **The College of Science, Literature and the Arts**

DEAN JOHN F. DOWNEY  
PROFESSOR JOHN H. GRAY  
PROFESSOR J. C. HUTCHINSON  
PROFESSOR H. F. NACHTRIEB  
PROFESSOR NORMAN WILDE

## **The College of Engineering and the Mechanic Arts**

DEAN FREDERICK S. JONES  
PROFESSOR GEORGE D. SHEPARDSON

## **The College and School of Agriculture**

DEAN EUGENE W. RANDALL  
PROFESSOR HARRY SNYDER  
PROFESSOR SAMUEL B. GREEN

## **The College of Law**

DEAN WILLIAM S. PATTEE  
PROFESSOR HENRY J. FLETCHER

## **The College of Medicine and Surgery**

DEAN F. F. WESBROOK  
PROFESSOR THOMAS G. LEE

## **The College of Homeopathic Medicine and Surgery**

DEAN EUGENE L. MANN

## **The College of Dentistry**

DEAN ALFRED OWRE

## **The College of Pharmacy**

DEAN FREDERICK JOHN WULLING

## **The School of Mines**

DEAN WILLIAM R. APPLEBY

## **The School of Chemistry**

DEAN GEORGE B. FRANKFORTER

## **The College of Education**

DEAN GEORGE F. JAMES

## **The Graduate School**

DEAN HENRY T. EDDY

## **General Alumni Association**

DAVID P. JONES

## **The Dean of Women**

ADA L. COMSTOCK

# University Council Committees

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## **The University Auditing Committee**

PROFESSORS ANDERSON, FLETCHER, OWRE, SIGERFOOS, SPRINGER

## **The Committee on Athletics**

PROFESSORS PAIGE, BROOKE, HARDING, D. P. JONES, LITZENBERG

## **The Committee on Grounds and Sanitation**

PROFESSORS FLATHER, BASS, BRACKEN, HICKMAN, RANDALL, SIDENER,  
WESBROOK

## **The Committee on Catalogue, Programs and Course of Study**

DEANS APPLEBY, EDDY, FRANKFORTER, JAMES, JONES, MANN, OWRE,  
WULLING; PROFESSORS FLETCHER, JOHNSTON, SCHLENKER, SNYDER  
E. B. PIERCE

## **The Press Committee**

PROFESSORS SCHAPER, BAUER, CONSTANT, ERDMANN, JAMES

## **The Committee on Commencement and other University Functions**

PROFESSORS NACHTRIEB, JENKS, OWRE, PATTEE, RANDALL, SCHLENKER,  
WASHBURN

## **The Committee on Student Entertainments and Social Affairs**

PROFESSORS FRANKFORTER, BASS, COMSTOCK, COOKE, MULLEN, PIKE

## **The Committee on University Relations to other Institutions of Higher Learning**

PROFESSORS DOWNEY, BOTHNE, EDDY, GRAY, GREEN, JAMES, LEE

## **The Committee on University Extension and University Lectures**

PROFESSORS WEST, HAECKER, RANKIN, SCHLENKER, SHEPARDSON

## **The Committee on the Library**

PROFESSORS EDDY, FLETCHER, F. S. JONES, LEE, REYNOLDS,  
VAN BARNEVELD, WES1

# Equipment

## GROUNDS AND BUILDINGS

The buildings of the College of Science, Literature, and the Arts, along with those used by all departments of instruction save that of agriculture, are located upon the University campus, a tract of about fifty-five acres lying between University avenue and the river and between eleventh and nineteenth avenues southeast. The campus is well wooded with a fine growth of native oaks and commands a beautiful view of St. Anthony Falls and the city, but is sufficiently removed from the business center to insure desirable quiet and retirement. At the last session of the legislature provision was made for the expenditure of four hundred fifty thousand dollars in campus enlargement during the course of the years 1907-1909. Private benefactors have added fifty thousand dollars to that amount. Condemnation proceedings are now in progress for the purpose of obtaining the land desired. About thirty additional acres situated to the south of the present campus will probably be secured.

There are twenty-three buildings upon the campus, ten of which are used largely or exclusively for the work of the College of Science, Literature and the Arts. They include Folwell Hall, a building three hundred and twenty-two feet in length and three stories in height above the basement, in which offices, class and seminar rooms are provided for the mathematical, linguistic, philosophical and pedagogical departments; the Library, where provision for the social science and English departments is included; Pillsbury Hall for animal biology, botany and geology; the physical and chemical laboratories; the observatory; a plant house; the Armory, for military purposes and physical training; Shevlin Hall, devoted to the exclusive use of women students; and the Y. M. C. A. building.

## LIBRARIES

*The University Library consists of:*

1. The general library,
2. The college libraries, including those of law, medicine, engineering, agriculture, and mines.



3. The departmental libraries including those of arts, astronomy, animal biology, botany chemistry, French, geology, German, Greek, Latin, mathematics, military science, physics, rhetoric, Scandinavian.

The whole number of bound volumes owned by the University is about one hundred and twenty thousand, unbound books and pamphlets about twenty thousand. About seven hundred and thirty current periodicals are received.

The general library is open to students and the public from eight A. M. to ten P. M. except Sundays and legal holidays.

The departmental libraries are designed especially for the work of their respective departments and consist mainly of books of reference and current periodicals relating to technical subjects. The private collections of the professors are usually available upon application when necessary for research.

Besides the University library the following libraries are easily accessible; the Minneapolis public library, containing over one hundred and sixty thousand bound volumes and over fourteen hundred of the leading newspapers, magazines and periodicals of the world; the St. Paul public library with about ninety-five thousand volumes; the Minnesota Historical Society library of about eighty-five thousand volumes and the state library of about fifty-nine thousand volumes in the capitol of St. Paul; the Minnesota academy of Natural Sciences library of twelve thousand titles.

## MUSEUMS AND COLLECTIONS

The museums of the University contain material obtained from various sources, arranged with special reference to its use for illustration. Among the more notable collections are the following:

(a) *In Geology and Mineralogy.* The Kunz collection of minerals, purchased of George F. Kunz; several suites of crystalline rocks secured from various sources; the Ward collection of casts contributed in part by citizens of Minneapolis; collections of the rocks, fossils, minerals and economic products of Minnesota; upwards of 9,000 entries gathered by the geological survey of the State; the Sardeson collection of paleozoic fossils of Minnesota, Wisconsin, Iowa and neighboring states, comprising 30,000 specimens; a series of 3,000 thin sections of typical rocks and minerals largely representing Minnesota localities; purchased material comprising a fine collection of crystals; 5,000 minerals and 3,000 specimens of economic minerals and crystalline rocks, and a collection of over 4,000 photographs and lantern slides.

Mr. Arus S. Williams of Minneapolis has given to the University his extensive collection of negatives and photographs. During many years of active work as a photographer, he has collected a series of several thousand plates representing geologic and geographic subjects, commercial views and historic scenes. These will prove of great value in illustrating the physical, commercial and political history of the State. They are to be recognized as the A. S. Williams Collection of Photographs and Photographic Negatives.

(b) *In Zoology*: All the material collected by the State Zoologist; a collection of mounted Minnesota birds representing about one-third of the species found in the state; a number of the mammals of the state and a few from the more western states; a collection of fishes, molluscan shells, corals and other foreign material.

The ornithological room contains the excellent Thomas S. Roberts and Franklin Benner collection of skins, nests and eggs of Minnesota birds. Other groups of animals are more or less numerously represented, and are receiving annual additions from the Zoological Survey.

(c) *In Botany*: The general herbarium numbering about 400,000 specimens and comprising the series of plants collected by the state botanist; an alcoholic collection of material for dissection; a collection of woods of Minnesota; a limited series of carboniferous and cretaceous fossil plants, including the Lesquereaux collection from the Minnesota River localities.

# Student Organizations and Publications

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## RELIGIOUS ORGANIZATIONS

THE STUDENTS' CHRISTIAN ASSOCIATION was organized in 1869, its object being to promote growth in Christian character, and to engage in such religious work as may be deemed expedient and necessary. The association owns a commodious building, which serves as the headquarters for student religious activity. All persons in sympathy with the object of the association are eligible to membership.

THE YOUNG MEN'S CHRISTIAN ASSOCIATION has as its object the promotion of "growth in grace and Christian fellowship among its members and aggressive Christian work, by and for students." This association leases the Students' Christian Association building and keeps it constantly open, with a general secretary in charge. All men in sympathy with the object of the association are eligible to membership. This building is maintained as the social and religious headquarters of all young men in the University.

This association provides an employment bureau whose services are free to students in all departments of the institution, as well as a committee to help students to find comfortable rooms and boarding places. The association also maintains an educational department in which students may make up their entrance conditions at a nominal charge for instruction. The general secretary will be pleased to correspond with any young man intending to come to the University. Any inquiry about board, room, employment, or general information will gladly be answered, and a hand-book will be sent to any one wishing it. Address the general secretary of the Young Men's Christian Association, University of Minnesota, Minneapolis, Minnesota.

THE YOUNG WOMEN'S CHRISTIAN ASSOCIATION is the center of Christian life among the young women of the University. Its object is "to deepen spiritual thought in the University woman, to environ her with a semblance of home, to bring to her friendship, assistance and sociability by stimulating student fellowship, to give her personal help when necessary; thus developing in her the Christ ideal of culture in womanhood."

To this end frequent socials and informal teas are given throughout

the year; twice each week twenty-minute prayer meetings are held; a dozen circles meet one hour a week for devotional Bible study; and from time to time missionary meetings are held. The general secretary devotes all of her time to the association and will be pleased to correspond with any young woman who wishes information regarding the University.

All young women are invited to visit the Young Women's Christian Association room before registering. Women from the upper classes will be there during the opening days to give advice and assistance.

THE UNIVERSITY CATHOLIC ASSOCIATION was organized by the Catholic students in the spring of 1900. The purpose of the association is the study of the Bible and of the doctrines and history of the Catholic Church. Membership is open to any one connected with the University. Regular meetings are held every Sunday afternoon in the rooms of either the Young Men's or the Young Women's Christian Association, through the courtesy of those organizations. The association is planning to erect a building on or near the campus at an early date.

Aside from the religious objects, the association tends to promote good fellowship among its members. Early in each University year a reception is tendered to new students and during the year two or more socials are held. Further information may be obtained by addressing the secretary of the association at the University.

#### LITERARY, SCIENTIFIC, AND MUSICAL ORGANIZATIONS

PHI BETA KAPPA.—A chapter of the honorary society of *Phi Beta Kappa* was established at the University in 1892. A small proportion of the graduates of the College of Science, Literature, and the Arts are elected to membership each year. Election is based upon high scholarship and character.

SIGMA XI.—A chapter of the honorary scientific society of *Sigma Xi* was established at the University in 1896. A small proportion of the graduates of the scientific and technical departments are elected to membership each year. Election is based upon high scholarship and character.

THE GRADUATE CLUB is a club organized for the purpose of fostering a greater interest in graduate work, for mutual help, and for the discussion of topics under investigation.

THE MINNESOTA LITERARY UNION is a federation of the members of the following societies: Shakopean, Forum, Castalian, Minerva, and Arena. Four meetings are held each year.

LITERARY SOCIETIES.—The above named literary societies are mainly debating clubs. Every student is welcome to attend the literary sessions, but the business sessions are usually held behind closed doors. Students desiring to join should make early application to some member of the society he prefers, as the membership is limited. Membership limit: *Shakopean*, 35, men; *Forum*, 30, men; *Minerva*, 30, women; *Law Literary*, unlimited, law students; *Castalian*, 35, men; *Theta Epsilon*, 30, women; *Thalian*, 25, women; *Acanthus*, 30, women.

THE DEBATING BOARD has charge of home and inter-collegiate oratorical contests.

THE NORTHERN ORATORICAL LEAGUE is composed of the oratorical associations of the University of Michigan, Northwestern University, the University of Wisconsin, Oberlin College, the State University of Iowa, the University of Chicago, and the University of Minnesota. Its purpose is to foster an interest in public speaking and to elevate the standard of oratory by holding annual contests. The contests are open only to undergraduates.

THE DRAMATIC CLUB is organized for the study and practice of dramatic art.

THE GLEE AND MANDOLIN CLUBS give a public concert each year at the University and make a tour of the state during the holidays.

THE UNIVERSITY BAND is organized as a part of the military system of the University and is composed of about sixty musicians. It is under the efficient leadership of an instructor in music, and furnishes music for military and many other University affairs.

### ATHLETIC ORGANIZATIONS

THE ATHLETIC ASSOCIATION is an organization having for its object the general physical well-being of the students and the encouragement of a proper spirit in favor of hearty, manly sports.

*Board of Control for Athletics.* The athletic sports of the University are under the supervision of a board of control made up of eleven members; two are members of the faculty, two are alumni, and seven are students. This board arranges the schedule of games, manages the finances, and exercises a general supervision over all matters connected with athletic contests. It has charge of the athletic grounds of the University, Northrop Field. This field, containing about six acres, lies immediately adjoining the armory. It contains a modern cinder track, baseball diamond, and football gridiron. The grand stands have a seating capacity of about fifteen thousand. A large portion of this field was a gift to the University from the heirs of the late John S. Pillsbury, and the brick wall surround-

ing it is the gift of his son, Mr. A. F. Pillsbury. It is generally conceded to be one of the handsomest fields in the west.

#### PUBLICATIONS

THE MINNESOTA DAILY is published five times each week during the University year by an organization of University students.

THE JUNIOR ANNUAL, called the Gopher, is a book published annually by the junior class of the University.

THE MINNESOTA MAGAZINE is a monthly magazine devoted to the cultivation of literary taste and effort among the students of the University. It is managed by a board of editors chosen from the senior class.

THE MINNE-HA-HA is a humorous monthly magazine, published by the students of the University. It depicts life upon the campus in a satirical vein. The board of editors consists of ten members, chosen from the student body.

# General Information

## ASSISTANTS, SCHOLARSHIPS, LOANS AND PRIZES

### ASSISTANTS

It is the policy of the University to encourage graduate study and to provide for assistance in laboratories, reading of test and examination papers, supervision of note books, and similar services by the appointment of assistants in departments where such services are required. The general principles which now control the making of such appointments are: (1) the appointments are made by the board of regents, upon the nomination of the head of the department concerned and its ratification by the dean of the college; (2) appointments are for one year only, but may be renewed; (3) the appointees must be graduate students, who are taking work along the lines of the assistantships to which they are appointed; (4) assistants are not regularly placed in charge of classes, and when exceptions are made to meet emergencies, the arrangement is regarded as a temporary one, and in no case to extend beyond the current year.

### ASSISTANTS FOR 1907-8.

EDWARD ANDERSON, *Chemistry*  
DONALD C. BABCOCK, B. A., *Sociology*  
WALTER BADGER, B. A., *Chemistry*  
ELIZABETH D. BELL, B. A., *Geology*  
MARGARET G. BELL, B. A., *History*  
GUY C. BLAND, *Rhetoric*  
CARL E. BOEHNER, *Chemistry*  
KEVIN BURNS, B. A., *Astronomy*  
FRED K. BUTTERS, B. S., *Botany*  
THOMAS CAHILL, *Rhetoric*  
CHARLES R. CRESSY, *Chemistry*  
HENRY W. DAHLBERG, *Chemistry*  
HAROLD C. DEERING, *Economics*  
GERHARD DIETRICHSON, *Chemistry*  
LUCIUS ARNOLD FRYE, B. A., *Political Science*  
HELEN GRIFFITH, B. A., *Rhetoric*

CHARLES E. JOHNSON, B. A., *Animal Biology*  
A. W. JOHNSTON, *Geology*  
RUSSELL MCBRIDE, *Chemistry*  
WM. ALLISON MCMANIGAL, B. A., LL. B., *Sociology*  
JESSIE A. MATSON, *Physical Culture*  
ALICE MISZ, B. A., *Botany*  
DONALD F. MITCHELL, *Chemistry*  
GEORGE MOREY, *Chemistry*  
LILLIAN NYE, *Chemistry*  
ALICE G. POPE, *History*  
VICTOR H. ROEHRICH, *Chemistry*  
RASMUS SABY, B. A., *Philosophy*  
W. G. SCHILLING, *Botany*  
JESSIE SCHULTEN, *Rhetoric*  
FAY N. SEATON, *Economics*  
ELEANOR SHELDON, B. A., *English*  
FREDA L. STAMM, B. A., *German*

SCHOLARSHIPS

*The Moses Marston Scholarship in English*

Friends and pupils of the late Professor Moses Marston, have given one thousand dollars as a memorial fund. The annual income of the fund is to be used to help some student in the English course. The award of the income is made on the basis of pecuniary need and of deserving scholarship.

*The Albert Howard Scholarship Fund*

Under the last will and testament of Mr. James T. Howard, of the town of St. Johnsbury, Vermont, \$4,166.81 was left to the University to establish a scholarship to be known as the Albert Howard Scholarship. This scholarship is assigned by the executive committee of the board of regents upon the recommendation of the faculty.

*The College Women's Club Scholarship*

The College Women's Club of Minneapolis has established a scholarship for the benefit of women students in this University. For the year 1908-9 this scholarship amounts to \$150. In awarding it the preference will be given to students in the junior and senior classes and to graduate students. Application for this scholarship may be made to Miss Comstock, Dean of Women.



## STUDENT LOAN FUNDS

*The Gilfillan Trust Fund*

The Hon. John B. Gilfillan has given to the University the sum of fifty thousand dollars, yielding an annual income of two thousand dollars, to be used by the board of regents to assist worthy students, needing such aid, to secure an education. The regents are empowered to give this aid in the way of loans or gifts, according to the circumstances of the case. As a rule the fund is used as a loan fund, and a small rate of interest is charged. The details of the regulations which have been adopted by the regents for the administration of the fund may be learned by addressing the President of the University.

*The Puritan Colony Scholarship Loan*

The Puritan Colony of the National Society of New England Women has established a loan fund for women students in the University. For the year 1908-9 this scholarship loan amounts to one hundred dollars. It is available for women students of New England birth or ancestry. In awarding it the preference will be given to young women in the junior and senior classes. Application for it may be made to Miss Comstock, Dean of Women.

## PRIZES

*The John S. Pillsbury Prize*

Three prizes of one hundred, fifty, and twenty-five dollars each, offered by the heirs of the late John S. Pillsbury, are awarded for the best work in the department of rhetoric, as evidenced finally by an oration in public.

*The '89 Memorial Prize in History*

The class of 1889, at graduation, established a prize of twenty-five dollars each year, to be known as the '89 Memorial Prize, and to be given for the best thesis in history by a member of the graduating class. The award is made by a professor in history in some other institution.

*The William H. Dunwoody Prize*

Mr. William H. Dunwoody, has provided a cash prize of seventy-five dollars for the members of the team winning the inter-sophomore debate, and another prize of twenty-five dollars for the student in the sophomore class writing and delivering the best oration.

*The Frank H. Peavey Prize*

Mrs. Frank T. Heffelfinger continues the prize of one hundred dollars, established by her father, the late Frank H. Peavey. This prize consists of seventy-five dollars for the members of the team winning the freshman-sophomore debate, and another prize of twenty-five dollars to the student in the freshman or sophomore class writing and delivering the best oration.

*The James T. Wyman Prize*

A prize of twenty-five dollars is offered by the Hon. James T. Wyman, of Minneapolis, through the department of economics and political science, for the best essay of three to five thousand words by an undergraduate student, on the subject of "The Influence of Immigration upon the Development of the Northwest."

*The William Jennings Bryan Prize*

The Hon. William Jennings Bryan has given the University the sum of two hundred dollars for the encouragement of studies in political science. The annual income will be given as a prize to the writer of the best essay upon a topic to be announced each year. The competition is open to all students of the College of Science, Literature, and the Arts.

*The Frank O. Lowden Prize*

The Hon. Frank O. Lowden, of Chicago, offers as a prize to be competed for by the Northern Oratorical League, an endowment of three thousand dollars, which will yield an annual income of about one hundred and seventy-five dollars. A prize of one hundred dollars will be given to the orator winning first place, fifty dollars to the orator winning second place, and the remainder will be set aside each year for an interest fund to accumulate, and, in time, produce another endowment.

EXPENSES

The expense of living at the University varies greatly according to individual habits and tastes. In general the scale of expense is below rather than above that of similar institutions in the middle west and is considerably lower than that of most institutions situated in the eastern states.

Several years ago a number of young men and women, at the request of University officials kept careful account of their expenses for the University year. The result was that the expenses of the young men ranged from two hundred and seventeen to three hundred and ninety-seven dollars for the University year. The same students earned sums varying from

two hundred and thirty-seven to two hundred and seventy-two dollars. The young women reported expenses varying from one hundred and fifty to three hundred and fifty-five dollars. These figures do not include fees, and, as the cost of living has increased decidedly, probably twenty-five per cent should be added to these figures to make them safe.

The students upon whose statements these figures are based were representative students; they were not extravagant nor did they deny themselves unduly to get along. While students can live within the figures given above, they would not, owing to the increased cost of living, be able to live as comfortably nor to have as many privileges as these students had.

Meals can be had at prices ranging from two dollars and a quarter per week to as high as the student can afford to pay. In private families board ranges from three to five dollars.

Furnished rooms vary in price from eight to twenty dollars per month. Two students rooming together would of course reduce this expense. It is sometimes possible for a student, rooming alone, to secure a good room at an expense but little higher than when two room together; but such chances are the exception and not the rule. New students will find that they will be more likely to secure comfortable rooms and suitable board if they will consult the general secretary of either the Young Men's or Young Women's Christian Association immediately upon arrival at the University, or if they will correspond with these officers before coming to the University.

The student who learns some trade before coming to the University has a great advantage over the student who has to earn his money by ordinary manual labor. Students have earned their whole expenses while attending the University, and have made good records at the same time. Other students have done so much work that they have not been able to keep up their studies, and have thus missed the one thing for which they were attending the University.

If it is possible for the student to have a part of his expenses paid, he should not attempt to earn his way entirely by his own exertions. It is a comparatively easy thing for a young man to earn half his living while attending the University and yet do good work in his classes. Students who want work seldom fail to find it. In coming to the University, the student should bring enough money with him so that he can live comfortably for a few weeks until he can find something to do.

A pamphlet has been published containing five papers (one by a young woman) relating actual experience of students who have made their way through the University. Students who contemplate making their own way

through college will find here stated some very interesting and encouraging facts. A copy will be sent free to any address upon application.

#### FEEES

All students in the college, who are residents of the state, are charged an incidental fee of ten dollars a semester. Non-residents are charged double the fee required of residents of the state, or twenty dollars a semester. No reduction is made for late entrance or for leaving before the end of the semester. Save in the case of the first registration, the incidental fee is increased twenty-five cents for each day's delay in registration, beginning with the day set for recitations to begin. In addition to this fee, students who take work in laboratories are charged a sum sufficient to cover the cost of material and breakage.

#### CLASS ROUTINE AND SCHOLASTIC REQUIREMENTS

Class work extends through six days of the week, except Saturday afternoon. The daily session is divided into eight class periods of fifty minutes each, four in the morning and four in the afternoon. The morning session begins at eight thirty and closes at twelve thirty-five; the afternoon session extends from two o'clock until five forty. A general assembly of the faculty and students is held at ten thirty A. M.

Most of the courses of instruction are given in three periods per week. One series is scheduled for Monday, Wednesday, and Friday, another series for Tuesday, Thursday, and Saturday. Students are advised to try to arrange their programs so as to secure as even a distribution as possible between the two series, and also if possible in such a manner that they may have a half of each day free for study at their rooms, some laboratory, or in the University library. This arrangement can usually be secured without restricting the choice of subjects by careful study of the program and bulletin.

Examinations are held at the close of each semester. Students are graded upon the basis of their class work and examinations for each subject which they pursue as excellent, good, passed, incomplete, conditioned, or failed. For graduation an average of good must be secured in at least fifty per cent of the courses pursued. In computing the averages an excellent balances a pass, making an average of good for each of the two courses. An incomplete must be removed within one month after the opening of the following semester or it becomes a condition. A condition can be removed by passing an examination in the subject before the opening of the corresponding semester of the following year; if not so removed, it becomes a failure and is subject to the rules governing failures. A failure must be pursued again in class.

A student who at any time becomes deficient in more than the work of one half year loses his class rank and is regarded as a member of the next lower class. Students whose absences exceed four weeks in the aggregate during a semester are not permitted to take the semester examinations without special permission of the faculty. Any student receiving conditions or failures in sixty per cent of the work of the first semester is dropped from the rolls and not allowed to re-enter the University until the opening of the following year.

#### THE ONE-MILE LIQUOR LAW

A state law provides that "it shall be unlawful for any person to sell or dispose of any spirituous, vinous, or malt liquors within the distance of one mile of the Main Building of the University of Minnesota, as now located in the city of Minneapolis; provided that the provisions of this section shall not apply to that part of the city of Minneapolis lying on the west side of the Mississippi River."

#### MILITARY DRILL

The act of Congress of 1862, providing for the establishment of "Land Grant Colleges," requires that instruction be given in military science and tactics at all institutions that are its beneficiaries. The armory is located on the University campus and has all the facilities usually provided in a modern armory. The United States government supplies the University with the necessary arms, equipment and ammunition for instruction in infantry and artillery drill, and details a commissioned officer of the regular army to take charge of the department.

#### THE UNIVERSITY STATE TEACHER'S CERTIFICATE

Graduates of the College of Science, Literature, and the Arts may apply for and receive upon vote of the faculty the University state teacher's certificate under the following conditions:

First: They must have maintained a good average of scholarship thruout the four years of college study.

Second: They must have the recommendation of at least one department concerned with high school studies.

Third: They must have completed one semester of psychology and three semesters of education, including courses one and two.

This certificate by state law authorizes students to teach in the public schools of Minnesota for two years from date. After that time, upon satisfactory evidence of success, the certificate may be made permanent by the endorsement of the State Superintendent of Public Instruction and the President of the University.

## WOMEN STUDENTS

After June first, 1908, the Registrar will supply a list of recommended boarding and rooming places to any women requesting such information. Young women who wish to earn a part of their expenses may generally learn of opportunities by communicating with Miss Ada Comstock, Dean of Women. During the college year Miss Comstock holds office hours every week day in the council room in Alice Shevlin Hall. At such times she welcomes any woman student who cares to come to her whether for advice, information, or an informal talk.

During the summer Miss Comstock's address in Moorhead, Minnesota. She will be glad to correspond with young women who are planning to enter the University or with their parents.

**SHEVLIN HALL.** Through the generosity of Hon. Thomas H. Shevlin, the University now possesses in Alice Shevlin Hall a building admirably designed and equipped for the use of its women students. It is a two-story and basement structure, the material used being pressed brick with stone trimmings. It has a frontage of one hundred and fourteen feet on Pillsbury avenue and a depth of fifty-five feet. The purpose of this building is to furnish suitable rest and study rooms for the women attending the University. The building contains several society rooms, a large lunch room, and a general reception hall.

**THE STUDENT GOVERNMENT ASSOCIATION FOR WOMEN.** This organization was formed for the purpose of aiding in the care and conduct of Alice Shevlin Hall. Every woman student in the University is regarded as a member. There are no dues. The association makes rules for the guidance of those using Alice Shevlin hall; it provides committees to enforce the rules; it gives permission for the holding of social functions in the building; and it controls the expenditure of any surplus in the receipts from the lunch room.

**THE WOMAN'S LEAGUE.** This organization is open to all women who are students in the University. It is governed by a council made up of student members from the four college classes. It makes its headquarters in the council room in Alice Shevlin hall. The aim of the organization is to promote fellowship and sociability among the women of the University. For this purpose it gives receptions and parties for girls at regular intervals throughout the year. It also endeavors to aid in any project which may be of benefit to the University, and particularly to the women students. At present it is interested in the attempt to secure dormitories.

## FACULTY

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- CYRUS NORTHROP, LL. D., *President*  
JOHN F. DOWNEY, M. A., C. E., *Dean, Professor of Mathematics*  
WILLIAM W. FOLWELL, LL.D., *Emeritus Professor of Political Science*  
JABEZ BROOKS, D.D., *Professor of Greek*  
JOHN G. MOORE, B. A., *Professor of German*  
CHRISTOPHER W. HALL, M. A., *Professor of Geology and Mineralogy*  
JOHN CORRIN HUTCHINSON, B. A., *Professor of Greek Language and Literature*  
JOHN SINCLAIR CLARK, B. A., *Professor of Latin Language and Literature*  
MARIA L. SANFORD, *Professor of Rhetoric and Elocution*  
CHARLES WILLIAM BENTON, Litt. D., *Professor of the French Language and Literature*  
HENRY F. NACHTRIEB, B. S., *Professor of Animal Biology*  
FREDERICK S. JONES, M. A., *Professor of Physics*  
WILLIS MASON WEST, M. A., *Professor of History*  
GEORGE BELL FRANKFORTER, Ph. D., *Professor of Chemistry*  
FRANCIS P. LEAVENWORTH, M. A., *Professor of Astronomy*  
FREDERICK KLAEBER, Ph. D., *Professor of Comparative and English Philology*  
JOSEPH BROWN PIKE, M. A., *Professor of Latin*  
CHARLES PETER SIGERFOOS, Ph. D., *Professor of Zoology*  
JOHN ZELNY, Ph. D., *Professor of Physics*  
SAMUEL G. SMITH, Ph. D., LL.D., *Professor of Sociology*  
GEORGE FRANCIS JAMES, Ph. D., *Professor of Education*  
NORMAN WILDE, Ph. D., *Professor of Philosophy and Psychology*  
WILLIAM A. SCHAPER, Ph. D., *Professor of Political Science*  
‡FRANK MALOY ANDERSON, M.A., *Professor of History*  
CHARLES FREDERICK SIDENER, B. S., *Professor of Chemistry*  
CARL SCHLENKER, B. A., *Professor of German*  
ALBERT WILLIAM RANKIN, B. A., *Professor of Education*  
RICHARD BURTON, Ph. D., *Professor of English Literature*  
†GEORGE NEANDER BAUER, Ph.D., *Professor of Mathematics*  
FREDERIC EDWARD CLEMENTS, Ph. D., *Professor of Botany*  
ALBERT ERNEST JENKS, Ph. D., *Professor of Anthropology*  
FRANCES SQUIRE POTTER, M. A., *Professor of English*

‡On leave of absence during 1908-9.

†On leave of absence during the second semester of 1908-9.

ALBERT BEEBE WHITE, Ph. D., *Professor of History and Politics*  
JOHN HENRY GRAY, Ph. D., *Professor of Economics and Politics*  
EDWARD VAN DYKE ROBINSON, Ph. D., *Professor of Economics and Politics*  
GISLE BOTHNE, M. A., *Professor of Scandinavian Languages and Literature*  
ANDREW ADIN STOMBERG, M. A., *Professor of Scandinavian Languages and Literature*

CHARLES MARTIN ANDRIST, M. L., *Assistant Professor of French*  
JOSEPH W. BEACH, Ph. D., *Assistant Professor of English*  
JOHN C. BROWN, M. A., *Assistant Professor of Animal Biology*  
OSCAR BURKHARD, M. A., *Assistant Professor of German*  
WILLIAM HENRY BUSSEY, Ph. D., *Assistant Professor of Mathematics*  
ADA LOUISE COMSTOCK, M. A., *Assistant Professor of Rhetoric and Dean of Women*

LOUIS JOSEPH COOKE, M. D., *Director of Gymnasium*  
HANS H. DALAKER, M. A., *Assistant Professor of Mathematics*  
SAMUEL N. DELNARD, Ph. D., *Assistant Professor of Semitic Language and Literature*

HAL DOWNEY, M. A., *Assistant Professor of Animal Biology*  
†HENRY ANTON ERIKSON, B. E. E., *Assistant Professor of Physics*  
JULIUS T. FRELIN, B. A., *Assistant Professor of French*  
JOHN EVENSON GRANRUD, Ph. D., *Assistant Professor of Latin*  
HANS JUERGENSEN, M. A., *Assistant Professor of German*  
EDWARD M. LEHNERTS, B. S., *Assistant Professor of Geography*  
\*\*EDWARD EUGENE McDERMOTT, M. S., *Assistant Professor of Rhetoric*  
JAMES BURT MINER, Ph. D., *Assistant Professor of Psychology*  
EDWARD E. NICHOLSON, M. A., *Assistant Professor of Chemistry*  
OSCAR W. OESTLUND, Ph. D., *Assistant Professor of Biology*  
MARY GRAY PECK, M. A., *Assistant Professor of English*  
SAMUEL N. REEP, M. A., *Assistant Professor of Sociology*  
CARL OTTO ROSENDAHL, Ph. D., *Assistant Professor of Botany*  
FREDERICK W. SARDESON, Ph. D., *Assistant Professor of Paleontology*  
CHARLES ALBERT SAVAGE, Ph. D., *Assistant Professor of Latin and Greek*  
CARLYLE SCOTT, *Assistant Professor of Music*

DAVID FERDINAND SWENSON, B. S., *Assistant Professor of Philosophy*  
FLETCHER HARPER SWIFT, Ph. D., *Assistant Professor of Education*  
JOSEPHINE E. TILDEN, M. S., *Assistant Professor of Botany*  
\*WILLIAM LINN WESTERMANN, Ph. D., *Assistant Professor of History*  
MATILDA JANE CAMPBELL WILKIN, M. L., *Assistant Professor of German*  
HENRY L. WILLIAMS, M. D., *Director of Athletics*

†On leave of absence during 1908-9.

\*Resigned May 7, 1908.

\*\*Died February 27, 1908.



ANTHONY ZELENY, Ph. D., *Assistant Professor of Physics*  
 EDWARD SIGERFOOS, Ph. D., Capt. U. S. A., *Professor of Military Science*

## INSTRUCTORS

CEPHAS DANIEL ALLIN, M. A., LL. B., *Political Science*

EMMA BERTIN, *French*

ANNA M. BUTNER, *Physical Culture*

HENRIETTA CLOPATH, *Drawing*

LILLIAN COHEN, M. A., *Chemistry*

JOHN M. COULTER, M. A., *Economics*

OSCAR W. FIRKINS, M. A., *Rhetoric*

FRANCIS C. FRARY, M. S., *Chemistry*

HALDOR B. GISLASON, B. A., LL. B., *Rhetoric*

FRANK F. GROUT, B. S., *Geology and Mineralogy*

ROWLAND HAYNES, M. A., *Psychology*

CHARLES M. HOLT, B. A., *Education*

LEULAH J. JUDSON, M. A., *History*

ALOIS F. KOVARIK, M. A., *Physics*

JENNINGS C. LITZENBERG, B. S., M. D., *Gymnasium*

LINDA H. MALEY, B. L., *Rhetoric*

JAMES E. MANCHESTER, Sc. D., *Mathematics*

CARL M. MELOM, M. A., *Spanish and French*

CHARLES W. NICHOLS, M. A., *Rhetoric*

RAYMOND V. PHELAN, Ph. D., *Economics*

BERT A. ROSE, *Band*

THEOPHILUS SCHROEDEL, B. A., *German*

ROYAL R. SHUMWAY, B. A., *Mathematics*

NELLIE A. WHITNEY, B. A., *Rhetoric*

†CHARLES WILLIAMS, M. A., *German*

†On leave of absence during 1908-9.

# Admission

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Every applicant for admission, except those belonging to classes four and five below, must take the entrance examination in English. For details see page 41. No student is admitted with more than three half-year conditions and all such conditions must be removed by examination within one year.

The regulations governing admission recognize seven different classes of applicants, according to the mode of their preparation or the line of work which they propose to pursue.

## 1. ADMISSION TO THE FRESHMAN CLASS BY CERTIFICATE

- A. Graduates of the following courses are admitted to the freshman class, provided they have completed four years of English and one year each of algebra and plane geometry, on the terms specified under B.
- (a) Any four-years course of a Minnesota state high school.
  - (b) Any four-years course of other accredited schools in Minnesota.
  - (c) Any four-years course of schools in any other state which are accredited to the state university of that state.
  - (d) The advanced Latin or English course of the Minnesota state normal schools.

For applicants under (a) or (b) however, this certificate privilege is limited by the proviso that each school so accredited shall keep its records of standings in the following grades: passed, passed with credit, and passed with honor; or else shall show by a printed statement in the record book and in the catalogue of the school, how the marks in use are to be translated into these three grades.

- B. The applicant for admission must present to the registrar the principal's certificate containing his record on all the studies which were counted towards graduation.

All records shall be entered on this certificate as "passed," "passed with credit" or "passed with honor".<sup>1</sup>

<sup>1</sup>In per cents, these three grades are to be interpreted approximately as follows:

- (1) In schools having 65 as a passing mark, passed=65-75, passed with credit=75-90, passed with honor=90-100.
- (2) In schools having 75 as a passing mark, passed=75-80, passed with credit=80-90, passed with honor=90-100.

Each mark below "passed with credit" shall count as a condition, unless a state high school board certificate shall be presented for the same subject.

Beginning in September, 1909, this rule for admission shall be applied to all work completed after June, 1908. Until it goes into effect for the full four years work, applicants will be admitted provided they have not, on the average, more than one semester mark below "passed with credit" for each year subject to the rule.

## 2. ADMISSION TO THE FRESHMAN CLASS BY EXAMINATION

Entrance examinations are offered at the University during the opening week of the University year. The program for the year 1908-9 is printed in this bulletin on page 4. Certificates of Minnesota state high school board examinations will be accepted in place of University entrance examinations in whole or in part.

Students who enter by examination, besides the entrance examination in English, must pass examinations in secondary school subjects as follows:

- (1) The six year-credits under "A" below and
- (2) Nine year-credits selected from the list of electives under "B," provided that, if the total of entrance conditions does not exceed three half-year credits, the applicant shall be admitted conditionally and be given one year in which to make up the entrance conditions.

### A. SUBJECTS REQUIRED OF ALL

*English*, four years, including

- (a) Classics
- (b) Principles of composition
- (c) Practice in written expression

*Mathematics*

- (a) Elementary algebra, one year
- (b) Plane geometry, one year

### B. ELECTIVES, NINE YEAR-CREDITS REQUIRED

*Mathematics*

- Higher algebra, one-half year  
Solid geometry, one-half year

*Latin*

- Grammar, one year  
Caesar, four books, one year

Cicero, six orations, one year

Virgil, six books, one year

*Greek*

Grammar, one year

Anabasis, four books, one year

*German*

Grammar, one year

Literature, one year

*French*

Grammar, one year

Literature, one year

*Spanish*

Grammar, one year

Literature, one year

*Swedish, Danish-Norwegian, Icelandic*

Grammar, one year

Literature, one year

*History*

Ancient to Charlemagne, one year

Modern from Charlemagne, one year

England, one-half year

Senior American, one-half year

*American Government*, one-half year

*Business Subjects*

History of commerce, one-half year

Commercial geography, one-half year or one year

Elementary economics, one-half year

Business law, one-half year

Business arithmetic, one-half year

Elementary bookkeeping, one-half year

Advanced bookkeeping and business practice, one year

Stenography and typewriting, two years

Business spelling and correspondence, one-half year

*Physics*, one year

*Chemistry*, one year

*Botany*, one-half or one year

*Zoology*, one half or one year

*Astronomy*, one-half year

*Geology*, one-half year

*Physiography*, one-half year

*Manual Subjects*

- Freehand drawing, two credits<sup>1</sup>
- Mechanical drawing, two credits<sup>1</sup>
- Shop work, two credits<sup>1</sup>
- Modeling and wood carving one credit<sup>1</sup>
- Domestic art and science, two credits<sup>1</sup>

## SYLLABI

The following statements indicate in a general way the preparation which the University expects in the various subjects accepted for admission.

*English (four years)*

In order to secure a definite plan of study and unity of method on the part of preparatory schools, the entrance requirement in English is outlined below somewhat in detail. To satisfy this requirement a four years' course of not less than four hours per week must be pursued. The headings under which instruction will naturally fall are:

- (a) English classics
- (b) The principles of rhetoric
- (c) Practice in written expression
  - (a) English classics should include a critical reading, in class, of English masterpieces. The following are suggested as well adapted for such study: Shakespeare's *Macbeth*; Milton's *Paradise Lost*, books one and two; Burke's *Conciliation with America*; Carlyle's essay on *Burns*. In the study of these works the student should know the leading facts connected with the author and his time; he should become familiar with the subject matter of the work and thoroughly at home with the story, and should have a clear idea of the form and structure of the work as a whole.
  - A less critical knowledge of other standard or classic works, which may perhaps be read by the student at home, with written reports and brief oral discussions in class, is desirable. The following works are noted as indicative of the minimum amount of work expected: at least two of Shakespeare's plays, beside the one read in class, one of Irving's works, one of Hawthorne's novels, one of Stevenson's novels, one of Webster's orations.
  - (b) The work in the principles of composition should include the principles and technical terms of ordinary texts upon the subject, whether acquired by the direct study of such texts or mainly by the study of selected English masterpieces. It should not be forgotten that this is not an end in itself, but simply a means of teaching the student the correct use of English.
  - (c) Not less than one hour each week throughout the four years of the high school course should be devoted to practice in written expression. The instructor may choose such topics as local conditions may require or make most profitable; but whatever line of work is pursued, the student should be taught to use language correctly and forcibly and learn to express himself clearly and logically in writing.

**ELEMENTARY ALGEBRA (one year).** Addition, subtraction, multiplication, division, factoring, highest common divisor, lowest common multiple, fractions, simple equations, with one, two, and several unknown quantities followed by problems, theory of exponents, involution (including the binomial theorem for positive integral exponents), evolution, radicals, inequalities, ratio, proportion, progression, and quadratic equations, with problems.

**HIGHER ALGEBRA, FIRST PART (one-half year).** While this subject does not include any topics not named under elementary algebra, a much fuller treatment of those topics is expected in this work. Principles as well as processes should be learned, theorems and rules should be

<sup>1</sup>For explanation of the term *credit*, as here used, see the syllabi for annual subjects given on page 39.

rigorously demonstrated, the exercises and problems should be more difficult, and students should be drilled in short methods and rapid work. Unless candidates have a good knowledge of the fundamental topics named below, they are not prepared to pursue successfully at the University the second part of higher algebra.

The topics are addition, subtraction, multiplication, division, factoring, highest common divisor, lowest common multiple, fractions, theory of exponents, involution, evolution, surds, imaginaries and simple equations with problems.

**PLANE GEOMETRY** (one year). Any of the standard texts on this subject will furnish the necessary preparation. Isoperimetry, symmetry and maxima and minima of figures are not required. The exercises requiring solutions and demonstrations should not be omitted.

**SOLID GEOMETRY** (one-half year). Any of the standard texts on this subject will furnish the necessary preparation. The exercises requiring solutions and demonstrations should not be omitted.

**LATIN GRAMMAR** (one year). This will include the subjects of orthography, etymology and syntax. Proficiency is particularly desired in the following subjects: the analysis of the verb forms, the rules of syntax, and the principal parts of the irregular verbs.

**CAESAR** (one year). First four books or selections from the seven books equivalent to four; or three books, with thirty pages of Cornelius Nepos, or two books with sixty pages of Cornelius Nepos. Special attention should be paid to the translation of passages of the text into correct and idiomatic English; grammatical questions connected with the text; more especially on the subjunctive mood, indirect discourse and the sequence of tenses. The student is expected to be familiar with the life of Caesar and an account of his wars.

**CICERO** (one year). Any six orations from the following list: *Against Cataline*, *Poet Archias*, *Ligarius*, *Marcellus*, *Manilian Law* (to count as two orations), the fourteenth *Phillipic*. The student should also be familiar with the life of Cicero.

**VIRGIL** (one year). Six books of the *Aeneid*, or five of the *Aeneid* and one of the *Metamorphoses* of Ovid, or the *Eclogues*. The student should be familiar with the life of Virgil and an account of his times and writings. A correct rythmical reading of the text is to be encouraged.

**GREEK GRAMMAR** (one year)

**XENOPHON'S ANABASIS** (one year)—Four books

**GERMAN** (two years)

First year the pupil should acquire:

- (1) A correct pronunciation, training of the ear, eye and organs of speech.
- (2) A vocabulary of a thousand words of every day use; facility in combining these words into simple sentences. As a means to this, 100 to 150 pages of easy narrative prose and poetry should be read, from which questions and answers may be formed. To test the student's memory and knowledge of the word-order he should relate or write out the story anew in his own words.
- (3) From two to three hundred German idioms.
- (4) The essentials of German grammar, to be taught by means of oral and written exercises based upon the reading lessons.

Second year:

- (1) Read one hundred and fifty to two hundred pages of prose and poetry.
- (2) Practice in reading smoothly and with expression.
- (3) Carefully translate selected passages of the text into idiomatic English. To translate easy sentences which the student already understands is a waste of time.
- (4) Translate sentences from English into German, using words and idioms of the text read.
- (5) Study topically German grammar; chief rules of orthography, etymology and syntax; illustrate these by words, phrases and sentences selected or composed by the student.

**FRENCH** (two years). The principles of French grammar, including acquaintance with the verb, regular and irregular; an ability to translate easy English sentences into French and simple French prose into English.

**SPANISH** (two years). First year, grammar and reader; second year, grammar reviewed; reading of some modern writer; composition and conversation.

**ANCIENT HISTORY** (one year).

(a) This study should begin with from five to seven weeks upon the oriental peoples who have most influenced European development, noting the early civilizations in the valleys of the Nile and Euphrates, the spreading and meeting of these civilizations in the intermediate region, with notice of the more important states in that district, and the union of the East under Persia. This survey should aim to give an idea of the reach of recorded history, of the distinguishing features of the successive oriental nations, and of their more important influence upon later European development.

(b) In the Greek and Roman age emphasis should be put upon the evolution of institutions, and considerable attention should be paid to the later Hellenistic period, after the rise of Macedon, and to the Roman Empire, with its bearing upon subsequent history. Some of the work should be illustrated by the use of sources, and maps should be used constantly.

(c) The subject should be carried down to the establishment of Charlemagne's empire. This will bring together all the chief lines of influence which were afterwards to make our modern world, will show the meaning of the preceding eras as can not be done if the study stops at an early date, and will leave the subject at a period of comparative order and simplicity.

**MODERN HISTORY** (one year). From Charlemagne to the present. The topics to which special attention are called are the period of disorder after Charlemagne and the consequent rise of feudalism, the Holy Roman Empire and the papacy, the medieval church, the crusades, the free cities, the rise of national monarchies, the intellectual renaissance and the protestant reformation, the French revolution and the subsequent democratic movements in politics and industry.

It is desirable to give at least half of the year to this last period from 1789.

**ENGLISH HISTORY** (one-half year). The Saxon period should be passed over rapidly. In the remainder of the work, besides the narrative, constitutional points should receive attention, and easily accessible documents, like Magna Charta, should receive careful study.

**SENIOR AMERICAN HISTORY** (one-half year). No attempt should be made to cover the whole field in this time. Either the colonial history or the period from 1783 to 1832 offers quite enough material. In any case, considerable use should be made of collections of documents, and sources.

**AMERICAN GOVERNMENT** (one-half year). This should be a study of our government, national, state and local, as it is organized and actually operated today. Students should be made familiar with the purpose and salient features of important instruments of government and other public acts like the Declaration of Independence, Articles of Confederation, the constitution of the United States, the constitution of Minnesota, and a local city or village charter.

In no case, however, should the instruction consist wholly or largely of an analysis of documents. It should rather aim to impart information essential to intelligent, active citizenship, such as the division of the government into departments, their organization and function; the methods of nominating, electing, and appointing men to office; of framing and amending constitutions, city charters and statutes; of drawing grand and petit juries and the duty of the citizen to serve on them; the distinction between common law, state law, and constitutional law, between equity, civil, and criminal cases.

To make the government seem a real working organization to the student, he should be encouraged to observe public proceedings by attending school meetings, town meetings, sessions of the county commissioners, city council, state legislature, a trial in court, and party primaries and conventions. He should also be led to read

about and observe public affairs for himself. To that end let him collect statistics and accounts of work done by particular offices and departments from published reports and by personal inquiry.

**BUSINESS SUBJECTS:** The following syllabi are offered by the University in order that the schools may be informed concerning the preparation expected in business subjects, in view of the fact that the graduates of business courses are now admitted to the University on the same footing as the graduates of other courses.

It is not intended or expected that many schools, or perhaps any one school, will offer all the subjects indicated. Not to exceed forty per cent of the units for admission should in any case be taken from the list of technical business subjects named below. The other sixty per cent should embrace the required English and mathematics, together with some work in history, science and the modern languages. The University is strongly of the opinion that no business course should be offered which does not include at least two years of some one modern language.

Under the head of business subjects are included two distinct lines of work: first, courses dealing with the history, description, theory and law of business, including the history of commerce, commercial geography, elementary economics and business law; second, courses dealing with the technique of business. The latter may be further subdivided into the mathematics of business, including business arithmetic, bookkeeping and business practice; and the language of business, including stenography, typewriting and business correspondence.

**HISTORY OF COMMERCE** (one-half or one year). The history of commerce forms the natural introduction to the study of present economic conditions. It would be well to give special attention to the economic history of England and the United States. The work should be based on a text book, supplemented by carefully directed map work and assigned readings. This should be preceded by a year course of medieval and modern European history.

**COMMERCIAL GEOGRAPHY** (one-half or one year). As the history of commerce is concerned with the past, so commercial geography describes and seeks to explain the commerce of today. The work should cover the ways in which commerce depends on nature and on man, the development of means of transportation and communication, and a detailed study of the several commercial nations of the world with reference to resources, industries, transportation facilities and commerce. It should be based on a text book supplemented by map work and assigned readings.

**ELEMENTARY ECONOMICS** (one-half year). In the study of economics it is desirable to avoid two extremes, abstract theory on the one hand, and controversial questions such as the tariff, trusts, and trade unions on the other hand. Emphasis should be placed on historical and descriptive matter, especially relating to the economic development of England and the United States. Some good elementary text book should be mastered and a reasonable amount of collateral reading required.

**BUSINESS LAW** (one-half year). The object of this study is not to make "every man his own lawyer" but rather to enable him to keep out of legal complications. Text book supplemented by study of a few typical cases, and practice in drawing up ordinary legal papers such as bills, notes, checks, etc.

**BUSINESS ARITHMETIC** (one-half year). The object is first of all, absolute accuracy and secondly speed in ordinary business computations. The topics to be emphasized are, fundamental operations, common fractions having as denominator 2, 3, 4, 6 and 8, a few common weights and measures, percentage and its applications, and useful short methods, especially the use of interest and other calculation tables. The work should be based on a text book, supplemented by numerous live exercises from current sources.

**ELEMENTARY BOOKKEEPING** (one year). A text book should be employed with exercises so arranged that no two pupils will do exactly the same work, and no credit should be allowed unless the work is done neatly, accurately and at a satisfactory rate of speed. It is sug-



gested that double periods be provided, and all work be done in class under the eye of the instructor. The set used should include the journal, cash book, sales book, ledger, check book, bank pass book and trial balance book.

**ADVANCED BOOKKEEPING AND BUSINESS PRACTICE** (one year). Thorough drill on standard business forms, such as bills, receipts, checks, notes, etc., also on the use and meaning of business symbols and abbreviations. The student should become acquainted with the bill book and invoice book, and loose leaf and voucher systems of bookkeeping. Each student should carry on a business of his own, first as an individual, then as a partnership, and finally as a corporation. Credit on this course should mean that the student lacks only age and actual business experience to become a competent bookkeeper.

**STENOGRAPHY AND TYPEWRITING** (two years). This work is expected to occupy not less than two periods daily for two years. No credit should be given for either shorthand or typewriting if taken alone. Nothing but the touch method should be used in typewriting. The essentials are first, accuracy and speed in taking dictation and transcribing notes; secondly, correct spelling, capitalization, punctuation and paragraphing. The minimum speed at the end of the first year should be 75 words per minute in dictation and 25 words per minute on the machine; and at the end of the second year, 100 words per minute in dictation and 35 words per minute in transcribing notes. Thorough training should also be given in care of the machine, in modern methods of manifolding and in filing papers.

**SPELLING AND BUSINESS CORRESPONDENCE** (one-half year). Preliminary review of five hundred common technical business words. Thorough training on business correspondence including (1) the proper form for business letters, (2) the proper choice of words and construction of sentences with reference to clearness and brevity, (3) capitalization, punctuation and paragraphing, (4) writing and answering telegrams and advertisements. The work should be based on a text book supplemented by letters relating to most prominent industries of the locality.

**PHYSICS** (one year). It is suggested that the year's work be confined to four of the seven subjects mentioned below.

- (1) Mechanics of solids, (2) liquids and gases, (3) sound, (4) heat, (5) light, (6) and (7) electricity and magnetism (to count as two subjects, but not to be divided).

**CHEMISTRY** (one year). The full year's work should include a study of both the non-metals and metals with laboratory experiments illustrating the common chemical laws and the commoner chemical reactions.

**BOTANY** (one or one-half year). Schools which give one-half year of botany should devote particular attention to plant relations, making the course largely ecologic in bearing. When a whole year is given to the subject, additional work upon plant structures should be offered, and together with fundamental conceptions of ecology, a general idea of morphology and taxonomy should be the aim of the course.

**ZOOLOGY** (one or one-half year). The course of zoology, whether a half year or a year course, should be a natural history rather than a modern morphological course. Collecting and classifying (as a means) should be encouraged as much as possible. Animals should be studied as living units, in their relation to one another and their environment. The general and special structural feature in relation to the habits, the food and manner of obtaining it, the enemies and means of protection against them, hibernation, migration, the differences in habits, form and structure between the old or mature animal and the young, the relation of parents to their offspring, etc.—in short, all about the life of the animal under consideration should be made out by direct observation of the animal in its natural home and in confinement.

The course, on the whole, should aim to foster and develop a love for nature, train the power of observation toward accuracy and give a healthful stimulation to the imagination. The pupil should be guarded against the habit of confounding the facts of observation with his interpretation and his judgments.

The animals for direct observation should be selected from as many branches of the animal kingdom as possible, and the changes during the year in the character of the fauna of the locality in general as

well as of some particular region should be noted. In some localities the work will of necessity be largely restricted to land and air animals, but no locality in Minnesota is so poor in animal life that very profitable work cannot be laid out along the line indicated above. It will be noticed that such a course of necessity includes so-called laboratory work. The amount and extent of the laboratory work will depend upon conditions, but even under the best conditions it is hardly advisable to go into detailed dissections and embryology. Continued, repeated, and close observation, aided now and then, by a simple hand lens or a compound microscope, will reveal an abundance of material and opportunity for disciplining the mind.

**ASTRONOMY** (one-half year). An elementary course in general astronomy as presented in any good modern text-book.

**GEOLOGY** (one-half year). These subdivisions should receive special attention: physiographic geology, which treats of the building of the land and the evolution of its existing contours; geo-dynamics, the study of the forces, atmosphere, water, terrestrial heat, plants and animals modifying the earth; and a brief survey of historical geology.

**PHYSIOGRAPHY** (one-half year). The following topics should be emphasized: meteorology, the leading facts relating to the atmosphere and its phenomena, including some acquaintance with the work of the United States weather bureau; land sculpture, as it treats of the origin, development and decadence of land forms, and the influence of these processes on the physical environment of man.

**MANUAL SUBJECTS:** In view of the multiplication of manual training courses in the high schools, it seems well to define what the University expects in the line of manual training and drawing work. It is not implied that many schools, or perhaps any one school, should offer all of the subjects indicated. Not to exceed twenty-five per cent of the units for admission to the University should in any case be taken from the list given below. The major part of the course should consist of the required English, and of mathematics, history, science and foreign languages. Students taking a manual training course should be held to a full course in mathematics, and should be required to complete not less than two years of one foreign language. Owing to the fact that drawing and shop work do not require outside preparation, it is not fair that they should be credited by the schools on the same basis as the academic subjects. It is therefore suggested that half credits be allowed; that is to say, one full credit for two years of work one period daily, or for one year of work two periods daily, in each subject.

**FREEHAND DRAWING** (two credits)

**MECHANICAL DRAWING** (two credits)

**JOINERY** (one-half credit)

**WOOD TURNING AND CABINET MAKING** (one-half credit)

**PATTERN MAKING AND FORGE SHOP** (one-half credit)

**MACHINE SHOP, INCLUDING CHIPPING**

**FILING AND WORK ON THE IRON LATHE** } (one-half credit)

**DRILL PRESS AND IRON PLANER**

**CLAY MODELLING** (one-half credit)

**WOOD CARVING** (one-half credit)

**DOMESTIC ART, INCLUDING CAREFULLY GRADED EXERCISES IN SEWING**  
(one credit)

**DOMESTIC SCIENCE, INCLUDING PRACTICAL COOKERY, AND HOUSEHOLD ECONOMY** (one credit)

### 3. ADMISSION TO THE SIX YEARS MEDICAL COURSE

For a full statement of all matters connected with the six year medical course see pages 117-121.

#### 4. ADMISSION TO THE SOPHOMORE CLASS FROM MINNESOTA STATE NORMAL SCHOOLS.

Graduates of the advanced graduate course of a Minnesota state normal school are admitted with advanced standing equivalent to one year's credit, and receive the degree of bachelor of arts upon completing in this college ninety-six credits including freshman mathematics, courses three and four, provided the usual requirements regarding majors and minors on pages 44-45 be complied with. Such students will not be permitted to elect education five or seven, mathematics one or two, rhetoric one, or history one, and upon registering for mathematics three and four will be required to make good any deficiency in preparatory mathematics.

Individual graduates of the advanced Latin course (five years) or of the advanced English course (five years) of the Minnesota state normal school, who, on the basis of maturity and ability, present certificates of special fitness from the president of the normal school, will be admitted with advanced standing under the same regulations and proviso.

#### 5. ADMISSION TO ADVANCED STANDING

This college accepts records from all reputable colleges and universities for credit to advanced standing. Such records are accepted as far as they are equivalent to the work done in this college. In bringing records from other institutions, the certificate must be upon the official blank of the institution granting the certificate, and should show:

- (a) The subject studied; if a language, the books read, etc.
- (b) The time spent upon each subject.
- (c) Ground covered in laboratory work in case of laboratory subjects.
- (d) The result. The exact grades should be stated accompanied with an explanation of the marking basis employed.

#### 6. ADMISSION AS UNCLASSED STUDENTS

Whenever in the judgment of the enrollment committee an applicant presents satisfactory reasons for not taking the regular course, such applicant may be admitted as an unclassified student. He must take the same examinations or present the same credentials as are required of those who enter the freshman class. (See classes one and two.) Exceptions can be made only upon vote of the faculty. A new application must be made each semester to the enrollment committee.

#### 7. ADMISSION TO STUDY MUSIC

Students who enter the University for the express purpose of study-

ing music, must take the same examinations or present the same credits that are required by those who apply for admission to the freshman class. (See classes one and two). No student is admitted for the purpose of studying music, unless he presents a certificate from the department of music showing that he is qualified to pursue the courses offered.

### ENTRANCE EXAMINATION IN ENGLISH

All applicants for admission to the College of Science, Literature, and the Arts, except those belonging to classes four and five above, must be examined in writing, spelling, and English composition. The examination will be given in two parts.

Part I. Elementary.—Those who fail to pass this examination satisfactorily are required to take a special three-hour preparatory course in composition through their first year or longer if necessary. This work is not credited toward a degree. Students pursuing it are not allowed to take more than maximum of seventeen hours of work per week including this course. These students must take rhetoric one, but not until the preparatory work has been completed. At any time during the first half of the first semester the department of rhetoric may transfer promising students from the preparatory class to the class in rhetoric one.

#### Part II. Advanced.

Those who pass both parts of the examination with a grade of good or excellent take English one and two during their freshman year. Those who do not obtain one of these required grades register for rhetoric one.

The entrance examination will be given at the University in the chapel of the library building, Saturday May 16, and Wednesday, Sept. 9, at 9:00 a. m.

The examination in May will be sent, upon application, to the principals of state high and other accredited schools in the state to be offered in each school at the option of the principal, to members of the senior class who expect to enter the University. The examination, if given, must be held on Saturday, May 16, under the general rules which govern state high school board examinations. All papers must be sent immediately after examination to the Registrar of the University and will be marked by the proper University authority.

Students who enter the freshman class after the regular September examination without having taken the test in English may be given a special test if the department of rhetoric sees fit, or shall be registered for preparatory rhetoric with the provision that, if found proficient during the first six weeks, they may be promoted to the freshman rhetoric class. Such students must be prepared to suffer any further change in registration necessitated by the program and rules of the college.

## LIST OF ACCREDITED SCHOOLS

The following high schools are accredited:

Ada	Elmore	Litchfield	Royalton
Adrian	Eveléth	Little Falls	Renville
Aitkin	Excelsior	Long Prairie	Rochester
Albert Lea	Fairfax	Luverne	Rush City
Alden	Fairmont	Lyle	Rushford
Alexandria	Faribault	McIntosh	St. Charles
Amboy	Farmington	Mabel	St. Cloud
Annandale	Fergus Falls	Madelia	St. Louis Park
Anoka	Fertile	Madison	St. James
Appleton	Fosston	Mankato	St. Paul—
Argyle	Frazee	Mantorville	Central
Arlington	Fulda	Mapleton	Cleveland
Atwater	Gaylord	Marshall	Humboldt
Austin	Glencoe	Mazeppa	Mechanic Arts
Barnesville	Glenwood	Milaca	St. Peter
Belle Plaine	Graceville	Minneapolis—	Sandstone
Bemidji	Grand Meadow	Central	Sauk Centre
Benson	Grand Rapids	East Side	Shakopee
Bird Island	Granite Falls	North Side	Sherburn
Blooming Prairie	Hallock	South Side	Slayton
Blue Earth City	Halstad	Minneota	Sleepy Eye
Brainerd	Harmony	Montevideo	South St. Paul
Breckenridge	Hastings	Montgomery	Springfield
Browns Valley	Hawley	Monticello	Spring Grove
Buffalo	Hector	Moorhead	Spring Valley
Caledonia	Henderson	Mora	Staples
Cambridge	Herman	Morris	Stephen
Canby	Heron Lake	Morton	Stewartville
Cannon Falls	Hibbing	Mountain Lake	Stillwater
Cass Lake	Hinckley	New Prague	Thief River Falls
Chaska	Hopkins	New Richmond	Tracy
Chatfield	Houston	New Ulm	Two Harbors
Chisholm	Howard Lake	Northfield	Virginia
Clarkfield	Hutchinson	North St. Paul	Wabasha
Cloquet	Jackson	Olivia	Wadena
Cokato	Janesville	Ortonville	Warren
Cottonwood	Jordan	Osakis	Waseca
Crookston	Kasota	Owatonna	Waterville
Dawson	Kasson	Park Rapids	Welcome
Delano	Kenyon	Paynesville	Wells
Detroit	Kerkhoven	Pelican Rapids	West Concord
Dodge Center	Lake Benton	Perham	Wheaton
Duluth	Lake City	Pine City	White Bear
Central	Lake Crystal	Pine Island	Willow River
Irving	Lakefield	Pipestone	Willmar
Eagle Bend	Lake Park	Plainview	Windom
E. Grand Forks	Lamberton	Preston	Winnebago
Elbow Lake	Lanesboro	Princeton	Winona
Elgin	Le Roy	Red Lake Falls	Winthrop
Elk River	Le Sueur	Red Wing	Worthington
Ely	Le Sueur Center	Redwood Falls	Zumbrota

The following private schools are also accredited to the University :

St. Mary's Hall, Faribault	St. Paul's College, St. Paul Park
St. Paul Academy	The Loomis School, St. Paul
Shattuck Military Academy,	The Backus School for Girls, St. Paul
Faribault	The College of St. Catherine, St. Paul
Stanley Hall, Minneapolis	St. Margaret's Academy, Minneapolis
Windom Institute, Montevideo	The Winona Seminary, Winona
Concordia College, Moorhead	St. John's College, Collegeville
Pillsbury Academy, Owatonna	Minnesota College, Minneapolis.
St. Joseph's Academy, St. Paul	

# Courses of Study

Students pursuing work in the College of Science, Literature, and the Arts are classified as follows: (1) those pursuing the four years course in science, literature, and the arts leading to the degree bachelor of arts; (2) those pursuing the six years medical course in science and medicine; (3) music students; (4) unclassified students. The regulations regarding the course of study prescribed for each category of students are outlined below:

## 1. FOUR YEARS COURSE IN SCIENCE, LITERATURE AND THE ARTS LEADING TO THE DEGREE OF BACHELOR OF ARTS

The degree of bachelor of arts will be conferred upon any student who fulfills the conditions as to amount, grade and distribution of work stated under A, B, and C below:

- A. **AMOUNT OF WORK.**—The student must earn from the courses offered in the college one hundred and twenty-six credits in addition to the required exercises in drill, gymnasium, and physical culture. A credit is one hour per week through one semester. Juniors and seniors pursuing beginning language courses (not including Spanish, Greek, and Hebrew), English one and two, mathematics one and two, chemistry one (a), rhetoric one, or history one, shall receive only half credits. No student shall receive credit for more than two beginning modern language courses, save by special permission. A double period in laboratory subjects counts as one credit hour.
- B. **GRADE.**—In at least one-half his work (sixty-three credits), the student must secure a grade of "good." For the system of grades see page 25. For the purpose of this count each "excellent" shall balance one "pass," making an average of "good" for both records.<sup>1</sup>
- C. **DISTRIBUTION OF WORK.**—
1. The student must complete a major and four minors. A major is not less than eighteen credits, and a minor is not less than twelve credits in one department. Two minors, or a major and a minor, may be combined in one department, but at least one of the five subjects shall be chosen from each of the following groups:
    - (a) English, French, German, Greek, Latin, rhetoric
    - (b) Animal biology, astronomy, botany, chemistry, geology and mineralogy, physics
    - (c) Economics and political science, history, mathematics, philosophy, sociology and anthropology.In the statement of courses, departments may indicate any courses which shall not count toward a major or minor, and in no case shall the following courses be so counted: the first year of be-

<sup>1</sup>This rule applies for graduates of 1908-9 only to work in the junior and senior years, and for graduates of the year 1909-10 to work of the sophomore, junior, and senior years.

- gining languages (excepting Spanish, Greek, and Hebrew), English one and two, mathematics one and two, general chemistry one (a), rhetoric one, and history one.
2. Each student must choose his major subject before the end of the sophomore year.
  3. Upon the choice of his major subject, the department in which the student has made his selection shall assign him to an adviser in that department.
  4. The student shall choose, under the advice and approval of his adviser, a sufficient amount of work to make with his major, a total of forty-eight credits, the additional subjects being such as to reinforce the major.

The distribution of the work by years is in accordance with the following plan:

FRESHMAN YEAR

Required

For men, military drill, three hours, and gymnasium, one hour in two periods; for women, physical culture, three hours.

English one, three hours, for those who have passed part two of the entrance examination in English with a grade of good or excellent, or rhetoric one, three hours, for those who have not obtained one of these grades upon the entrance examination in English.

Mathematics one and two, five hours, for those who do not present entrance credits in higher algebra, part one, and solid geometry.

Elective by Groups

The amount of work must be not less than fifteen hours or more than seventeen, exclusive of military drill, gymnasium, and physical culture. The subjects chosen must be continued through the year.

Those who have credits in higher algebra, part one, and solid geometry must select from the following groups three subjects, if the language chosen is three times per week, and two subjects if the language chosen is five times per week. When two subjects are elected, they must be in different groups; but when three are elected, two may be from one group.

GROUP ONE

French one, five hours; or French three, three hours, with or without

French four (conversation), two hours.

German one, five hours; or German four, three hours, with or without

German five (conversation), two hours.

Latin one, three hours.

Scandinavian one, five hours, or three, three hours; or Scandinavian two, five hours, or four, three hours.

GROUP TWO.

Animal biology one, three hours.

Botany one, three hours.

Chemistry one or two, three hours.

GROUP THREE.

Greek one, five hours; or Greek three, three hours.

History one or two, three hours.

Mathematics three and four, three hours.

SOPHOMORE YEAR

Military Drill, two hours—Required of men.

In addition to military drill, sophomores shall elect not less than fifteen nor more than eighteen credit-hours of work from the subjects open to them. See departmental statements.

JUNIOR AND SENIOR YEARS

The work of these two years is entirely elective, it being provided that no student shall elect less than fifteen nor more than eighteen hours of work in any semester, save by permission of the committee on students' work.



1. Students who carry military drill beyond the required two years will be allowed two semester credits for each year; but no credit will be allowed for such drill for less than one year.

2. Seniors contemplating entering the medical department are permitted to elect the courses in anatomy, chemistry, histology and physiology (it being understood that no repetition of work is allowed) in the medical department. The work completed in any or all of these subjects will be applied toward the work required for a degree in this department.

3. Members of the senior class of this college are permitted to elect throughout the senior year, work in the College of Law, including the elements of contracts, domestic relations, torts, and criminal law. The satisfactory completion of the above named courses will give the student twelve senior credits, and will entitle him to admission to the middle class of the College of Law. The student may also elect the subject of negotiable paper and receive credit in the College of Law, but such election shall not be a basis for a claim for additional credits in the College of Science, Literature, and the Arts. No student will be permitted to take more than one lecture each day in the College of Law, without special permission of the faculty of this college. The work must be taken with the night class in the College of Law.

#### REQUIREMENTS FOR THE DEGREE OF BACHELOR OF ARTS WITH DISTINCTION

Students may receive the degree of bachelor of arts with distinction in accordance with the following plan:

1. The degree with distinction shall be granted upon the basis of special excellence in the major subject.

2. To become a candidate for the degree of A. B. with distinction, the student must signify his intention by registration, upon the proper blank, at some time between the close of the freshman year and the beginning of the senior year. Students wishing to become candidates for the degree are advised to register as such as early in the course as possible.

3. At the time of registration for such degree the applicant must have an average of *good* in all his previous work. (For the purpose of this count, each excellent shall balance one *pass*, making an average of *good* for both records).

4. To receive the degree with distinction at graduation, the student must fulfill the following requirements:

- a. Comply with all the regulations applying to the ordinary degree of bachelor of arts.
- b. Secure a record at graduation, higher than pass in four-fifths of all his work (provided that an excellent shall balance a pass as in B. page 44.)
- c. By May 1st of his senior year, present a satisfactory thesis upon a subject approved by the adviser in charge of this work.
- d. Comply with the special requirements of the department in which he takes his major work.
- e. Be recommended by the department to the faculty for *special excellence* in his work; and
- f. Be approved by vote of the faculty.

5. A student registered for the degree with distinction may withdraw his name at any time from such registration, or the registration may be cancelled by the department concerned, or by the dean after consultation with the department; but students whose registration for the degree with distinction has been withdrawn or cancelled shall still receive the degree of bachelor of arts upon completion of the requirements therefor.

6. The degree shall be given in the diploma thus: Bachelor of Arts, with distinction.

7. The names of students recommended by the faculty for the degree with distinction shall appear in the commencement program, with the statement that distinction has been acquired in a certain department. A certificate signed by the head of the department and the registrar shall be presented to the student who has attained the degree with distinction.

8. The special requirements of the departments in which distinction may be gained shall be authorized by the faculty, after recommendation by the curriculum committee.

2. SIX-YEARS COURSE IN SCIENCE AND MEDICINE LEADING  
TO THE DEGREE OF BACHELOR OF SCIENCE  
AND DOCTOR OF MEDICINE

For all matters connected with this course see pages 117-121.

3. COURSE FOR MUSIC STUDENTS

Students who have entered the University for the express purpose of studying music are required to register for courses one and four in music and at least six credits in other courses outside the department of music, preferably modern languages, to be selected with the approval of the enrollment committee.

4. UNCLASSED STUDENTS

Unclassed students must take the same number of hours as regular students, and, unless advanced standing is obtained through credits from other institutions, four-fifths of the work during the first year must be taken from subjects offered to freshmen. A new application must be made each semester to the enrollment committee.

Any unclassified student who has satisfied the regular entrance requirements may classify at the beginning of either semester as a regular student, and become a candidate for the bachelor of arts degree by registering in accordance with the regulations governing amount and distribution of work as indicated on pages 44-46.

# Departmental Statements

## ORDER OF DEPARTMENTAL STATEMENTS

- I. English Language and Literature  
(a) English, (b) Comparative Philology, (c) Rhetoric
- II. Ancient Languages and Literatures  
(a) Greek, (b) Latin, (c) Semitic Languages
- III. Modern Languages and Literatures  
(a) German, (b) Romance Languages, (1) French, (2) Spanish,  
(3) Italian, (c) Scandinavian Languages
- IV. Biological Sciences  
(a) Animal Biology, (b) Botany, (c) Paleontology
- V. Physical Sciences  
(a) Chemistry, (b) Geology and Mineralogy, (c) Physics
- VI. Pure and Applied Mathematics  
(a) Mathematics, (b) Astronomy, (c) Mechanics, (d) Physics
- VII. Philosophy, Education, and Anthropology  
(a) Philosophy and Psychology, (b) Education, (c) Anthro-  
pology
- VIII. Social Sciences  
(a) Economics and Political Science, (b) History, (c) Sociology
- IX. Fine Arts  
(a) Drawing, (b) Music
- X. Military Science and Physical Culture

## I. English Language and Literature

### ENGLISH

The requirements for a major in English are the completion of courses 6, 7, 14, 15, 22, and twelve additional credits from other courses offered by the department. For a minor the requirements are the completion of one of the following courses: 1, 18, 19 and 22, and twelve additional credits from courses offered by the department. For distinction in English the special requirements of the department are the completion of a major in English and twelve additional credits from courses offered by the department, of which six shall be in Old English, and rhetoric 6. To obtain the recommendation of the department for a teacher's certificate courses 3 (first semester), 6, 7, 14, 15, 18 and 22, six additional credits from courses offered by the department, and rhetoric 6 must be completed.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Outline Eng. Lit. ....	1	3††	All	None
2.	Outline Am. Lit. ....	2	3††	All	See statement
3.	Early Eng. ....	1, 2	6	Soph., Jr., Sr.	None
4.	Middle Eng. ....	1	2	Soph., Jr., Sr.	See statement
6.	Chaucer ....	1	3	Soph.	None
7.	Spenser ....	2	3	Soph.	None
8.	Outline 18 Cent. Lit. ....	1	3	Soph., Jr.	Six credits
9.	Outline 19 Cent. Lit. ....	2	3	Soph., Jr.	Six credits
12.	Eng. Novel ....	1	3	Jr., Sr.	Six credits
13.	Bible as Lit. ....	2	3	Jr., Sr.	None
14.	Milton ....	1	3	Jr.	Courses 6 and 7, or six credits
15.	Shakespeare ....	2	3	Jr.	Courses 6, 7 and 14, or nine credits
16.	Mod. Drama ....	1, 2	6	Sr.	Course 15 or nine credits
18.	Teachers' Course ....	1, 2	2*	Sr.	Courses 6, 7, 14 and 15.
19.	Hist. Lit. Crit. ....	1, 2	2*	Jr., Sr.	None
20.	Eng. Prose ....	1	3	Jr., Sr.	Six credits
21.	Browning-Tennyson ....	2	3	Jr., Sr.	Six credits
22.	Hist. Eng. Lang. ....	2	1	Soph., Jr., Sr.	Course 3 (1st sem.)
23.	Sen. Seminar ....	1, 2	1	Sr.	See statement
24.	Anglo-Saxon ....	1	..	Grad.	Major in Eng.
25.	Beowulf ....	2	..	Grad.	Major in Eng.
26.	Criticism ....	..	..	Grad.	See statement
27.	Shakespeare ....	1, 2	..	Grad.	Major in Eng.
28.	Prose Fiction ....	1, 2	..	Grad.	Major in Eng.
29.	Drama ....	1, 2	..	Grad.	Major in Eng.

‡Sophomores, juniors, and seniors are allowed only half credit, not credited toward a minor.

†Courses 1 and 2 must be completed before credit is allowed for either.

\*Both semesters must be completed before credit is allowed for the first semester.

1. OUTLINE OF ENGLISH LITERATURE PROFESSOR BURTON, ASSISTANT PROFESSORS PECK AND BEACH  
Three credits (three hours per week) First semester

Open to all, but sophomores, juniors, and seniors are allowed only half credit; freshmen must also complete course 2 before credits will be allowed for this course; not credited toward a major in English.

An outline sketch of the main personalities of English literature from the earliest times to the present. The intention is to enable the student later to approach more specific aspects of the study with a general notion of the subject.

2. OUTLINE OF AMERICAN LITERATURE PROFESSOR BURTON, ASSISTANT PROFESSORS PECK AND BEACH  
Three credits (three hours per week) Second semester

Open to freshmen who have completed course 1, and, at half credit, to sophomores, juniors and seniors; not credited towards a major in English.

A study of the salient figures of our native literary development. Special attention is given to contemporary writers.

3. EARLY ENGLISH PROFESSOR KLAEBER, ASSISTANT PROFESSOR BEACH  
Six credits (three hours per week) Both semesters  
Open to sophomores, juniors and seniors; required of all who take a major or obtain a teacher's certificate.

A study of the language and reading of representative selections of old English prose and poetry. The relation to the modern English will be particularly emphasized.

4. INTRODUCTION TO MIDDLE ENGLISH LANGUAGE AND LITERATURE  
 PROFESSOR KLAEBER  
 Two credits (two hours per week) First semester  
 Open to sophomores, juniors, and seniors, who have taken the  
 first semester of course 3; alternates with course 5.  
 An outline of middle English grammar including the interpretation of  
 selected texts.
5. PIERS THE PLOWMAN PROFESSOR KLAEBER  
 Two credits (two hours per week) First semester  
 Open to sophomores, juniors and seniors, who have taken the first  
 semester of course 3; alternates with course 4; not given in  
 1908-9.  
 A critical study of *Piers the Plowman*.
6. CHAUCER ASSISTANT PROFESSORS PECK AND BEACH, AND MR. FIRKINS  
 Three credits (three hours per week) First semester  
 Open to sophomores.  
 A study of the grammar and literary forms of fourteenth century English  
 with selected readings from Chaucer's works. Special attention is given  
 to the *Canterbury Tales*.
7. SPENSER ASSISTANT PROFESSORS PECK AND BEACH, AND MR. FIRKINS  
 Three credits (three hours per week) Second semester  
 Open to sophomores.  
 A course in the forms and literary influences in the Elizabethan period  
 which are illustrated in the poetry of Edmund Spenser, with selected readings  
 from the minor poems and three books entire of the *Faery Queen*.
8. OUTLINE OF EIGHTEENTH CENTURY LITERATURE ASSISTANT PROFESSOR BEACH  
 Three credits (three hours per week) First semester  
 Open to sophomores and juniors who have completed one year of  
 work in English.  
 An outline study of the main personalities and literary forms of the  
 eighteenth century. Particular attention to Defoe, Addison and Steele,  
 Swift, Pope, Gray, and Johnson, with a sketch of the minor poets and  
 novelists. Reports required on the reading of representative works.
9. OUTLINE OF NINETEENTH CENTURY LITERATURE ASSISTANT PROFESSOR BEACH  
 Three credits (three hours per week) Second semester  
 Open to sophomores and juniors who have completed one year of  
 work in English.  
 An outline study of the main literary forms in the nineteenth century,  
 with some consideration of all the major writers in poetry, the novel and  
 the essay. Reports required on the reading of representative works.
12. THE ENGLISH NOVEL PROFESSOR POTTER  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors who have completed one year of work  
 in English.  
 A study of the history and development of the English novel.
13. THE BIBLE AS LITERATURE PROFESSOR POTTER  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors.  
 A literary study of the Old Testament with special attention to forms  
 and the critical study of selected readings.
14. MILTON PROFESSOR POTTER  
 Three credits (three hours per week) First semester  
 Open to juniors who have completed courses 6 and 7, or one year  
 of work in English; courses 6 and 7 are the most suitable  
 preparation; required of all who take their major or obtain a  
 teacher's certificate in English.  
 A critical study of the early poems, six books of *Paradise Lost* and  
*Samson Agonistes*.

15. SHAKESPERE PROFESSOR POTTER  
Three credits (three hours per week) Second semester  
Open to juniors who have taken course 6, course 7, course 14 for a year and a half of English; courses 6, 7 and 14 are the most suitable preparation. Required of all who take their major or obtain a teacher's certificate in English.

An outline study of the Shakespere plays, with a critical study of selected comedies, tragedies, and historical plays.

16. CONSTRUCTION AND DEVELOPMENT OF THE MODERN DRAMA ASSISTANT PROFESSOR PECK  
Six credits (three hours per week) Both semesters  
Open to seniors who have completed two years of work in English, which must include course 15.

First semester: a study of the theory of the drama, with the history of English drama to the middle of the nineteenth century. Second semester: a study of the inter-relation of the English with the continental drama in the late nineteenth century with special emphasis upon Ibsen.

18. TEACHERS' COURSE IN ENGLISH PROFESSOR POTTER  
Two credits (one hour per week) Both semesters  
Open to seniors who have completed courses 6, 7, 14, and 15; both semesters must be completed before credit is allowed for the first semester.

A survey of English literature with emphasis on methods of interpretation and teaching in the secondary schools.

19. HISTORY OF LITERARY CRITICISM PROFESSOR BURTON  
Two credits (one hour per week) Both semesters  
Open to juniors and seniors; both semesters must be completed before credit is given for the first semester.

This course traces the rise, growth and present condition of the principles of criticism as applied to literature.

20. ENGLISH PROSE PROFESSOR BURTON  
Three credits (three hours per week) First semester  
Open to juniors and seniors who have completed one year of work in English.

A discussion of current idiom with the purpose of relating it to the underlying principles of historical development.

21. BROWNING AND TENNYSON PROFESSOR BURTON  
Three credits (three hours per week) Second semester  
Open to juniors and seniors who have completed one year of work in English.

This course involves a reading of the representative work of the two major poets of the Victorian era, in order to show their quality and contrasted power.

22. HISTORY OF THE ENGLISH LANGUAGE PROFESSOR KLAEBER  
One credit (one hour per week) Second semester  
Open to sophomores, juniors, and seniors who have completed the first semester of course 3; required of all who take their major or obtain a teacher's recommendation in English.

23. SENIOR SEMINAR IN ENGLISH ASSISTANT PROFESSOR PECK  
Two credits (one hour per week) Both semesters  
Open to seniors who have taken courses 3 and 4 or any of the following courses: 6, 19, 20, 22.

Hakluyt's Voyages will be studied in 1908-9. The work will consist of an inquiry into the vivid and dramatic sources of the language and literature found in this "prose epic" of the Elizabethan seamen.

24. ANGLO-SAXON PROFESSOR KLAEBER  
First semester  
Open to graduate students who have taken an undergraduate major in English; other arrangements may be ascertained upon application to the department.

25. **BEOWULF** PROFESSOR KLAEBER  
Second semester  
Open to graduate students who have taken an undergraduate major in English; other arrangements may be ascertained upon application to the department.
26. **PRINCIPLES OF CRITICISM** MR. FIRKINS  
Open to graduate students who have taken an undergraduate major in English; other arrangements may be ascertained upon application to the department.  
This course comprises a brief treatment of the elements or forces in literature, e. g., clearness, vigor, beauty, precision, art, taste, humor, truth, ethics, and the like; an exposition of literary types, e. g., lyric, epic, drama, short story, novel, biography, etc., in relation to the standards and methods of judging each.
27. **SHAKESPEARE** PROFESSOR POTTER  
Open to graduate students who have taken an undergraduate major in English; other arrangements may be ascertained upon application to the department.
28. **THE DRAMA AS A LITERARY FORM** PROFESSOR BURTON  
Both semesters  
Open to graduate students who have taken an undergraduate major in English; other arrangements may be ascertained upon application to the department.
29. **THE DRAMA AS A LITERARY FORM** PROFESSOR BURTON  
Both semesters  
Open to graduate students who have taken an undergraduate major in English; other arrangements may be ascertained upon application to the department.

### COMPARATIVE PHILOLOGY

This department, besides offering courses in the general principles of linguistic science, affords an opportunity for elementary studies in comparative Indo-European philology, and more particularly the investigation of Old Germanic dialects. Related courses in English philology will be found under English language and literature.

The requirements for a major in comparative philology are the completion of courses 1, 3, 4, 5, and 6; for a minor, twelve credits. For distinction in comparative philology the special requirements of the department are to take all the undergraduate courses offered in two consecutive years, four of the graduate courses (of two hours each) given in two consecutive years, either English 3, 4 and 22, or English 3 and German 14.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Sc. of Lang. ....	1	2	Soph., Jr.,	Sr. None
3.	Life of Words ....	1	2	Soph., Jr.,	Sr. None
4.	Esperanto ....	2	1	Soph., Jr.,	Sr. None
6.	Comp. Phonology ....	2	3	Soph., Jr.,	Sr. See statement
7.	Comp. Grammar ....	..	..	Grad.	..
8.	Gothic .....	..	..	Grad.	..
9.	Urgerm. Gram. ....	..	..	Grad.	..
10.	Old Saxon .....	..	..	Grad.	..
11.	Old High German .....	..	..	Grad.	..
1.	<b>GENERAL INTRODUCTION TO THE SCIENCE OF LANGUAGE</b>			PROFESSOR KLAEBER	
	Two credits (two hours per week)			First semester	
	Open to sophomores, juniors, and seniors.				
	This course will be sufficiently general in its nature to be of use to all students who wish to obtain an insight into the life of language.				
2.	<b>HISTORY OF THE ALPHABET</b>			PROFESSOR KLAEBER	
	Two credits (two hours per week)			First semester	
	Open to sophomores, juniors, and seniors, who have had four years of preparatory Latin; alternates with course 3.				
	Survey of the principal systems of writing. Development of the letters in the Indo-European languages. History of English spelling and spelling reform.				

3. THE LIFE OF WORDS PROFESSOR KLAEBER  
 Two credits (two hours per week) First semester  
 Open to sophomores, juniors, and seniors; alternates with  
 course 2.  
 Etymology and semasiology. Growth of vocabulary; change of words  
 in form and meaning. Lectures and exercises with special reference to  
 English and other Germanic languages.
4. ESPERANTO AND THE IDEA OF AN INTERNATIONAL LANGUAGE PROFESSOR KLAEBER  
 One credit (one hour per week) Second semester  
 Open to sophomores, juniors, and seniors.  
 Comparison of the principal families of languages in grammatical and  
 lexical respects. History of the movement for the creation of an international  
 language. Consideration of the merits of Volapuk, Esperanto, and other arti-  
 ficial languages. Exercises in Esperanto.
5. INTRODUCTION TO TEUTONIC PHILOLOGY PROFESSOR KLAEBER  
 One credit (one hour per week) Second semester  
 Open to sophomores, juniors, and seniors, who have a fair knowl-  
 edge of German; alternates with course 4.  
 History of Germanic philology, biographies of leading scholars (J. Grimm  
 and others). Classification of the Germanic languages. Rapid survey of the  
 various branches of the Teutonic group (Gothic, Norse, English, Frisian,  
 Dutch, Low German, High German).
6. COMPARATIVE PHONOLOGY OF ENGLISH AND GERMAN PROFESSOR KLAEBER  
 Three credits (three hours per week) Second semester  
 Open to sophomores, juniors, and seniors who have a fair knowl-  
 edge of German.  
 Elements of phonetics; history of English and German sounds; orthog-  
 raphy. The lectures will be supplemented by practical exercises.
7. COMPARATIVE GRAMMAR OF THE GREEK, LATIN, AND GERMANIC  
 LANGUAGES PROFESSOR KLAEBER  
 Open to graduate students who have taken an undergraduate  
 major in a linguistic subject; other arrangements may be  
 ascertained upon application to the department.  
 A general survey of the field of Indo-Germanic philology will be included.
8. GOTHIC PROFESSOR KLAEBER  
 Open to graduate students who have taken an undergraduate  
 major in a linguistic subject; other arrangements may be  
 ascertained upon application to the department.  
 The relation of Gothic to other Germanic dialects will be particularly  
 emphasized. Study of the grammar (Braune, J. Wright, Streitberg)  
 and reading of the gospels (Heyne's *Ulfilas*, 10th edition).
9. URGERMANISCHE GRAMMATIK PROFESSOR KLAEBER  
 Open to graduate students who have completed course 8; other  
 arrangements may be ascertained upon application to the  
 department.  
 Lectures and study of standard works (Brugmann, Kluge, Noreen,  
 Streitberg, et al.).
10. OLD SAXON PROFESSOR KLAEBER  
 Open to graduate students who have taken an undergraduate  
 major in a linguistic subject; other arrangements may be  
 ascertained upon application to the department.  
 Old Saxon Grammar and interpretation of the *Heland*.
11. OLD HIGH GERMAN PROFESSOR KLAEBER  
 Open to graduates who have taken an undergraduate major in a  
 linguistic subject; other arrangements may be ascertained upon  
 application to the department.  
 Braune's *Althochdeutsche Grammatik*; Braune's *Althochdeutsches Lese-  
 buch*.  
 This course is identical with German 14.

### RHETORIC AND ELOCUTION

The requirement for a major in rhetoric is the completion of courses 1,  
 2, 3, and 6; for a minor, twelve credits. For distinction in rhetoric the



special requirements of the department are the completion of courses 1 to 4 inclusive, 6, and three credits for individual work with some professor in the department. Students who desire to obtain distinction in rhetoric are advised to take English 19 and 22. To obtain the recommendation of the department for a teacher's certificate courses 1, 2, 3 and 6, and eighteen credits in English must be completed.

#### HONORS IN PUBLIC SPEAKING

Students who have been on the debating teams in their freshman and sophomore years, or have won places in the oratorical contests of those years, and have taken part in intersociety and intercollegiate debates, winning at least one intercollegiate contest, or have won places on the Pillsbury oratorical contest, may, if the department deems them worthy, receive honors in public speaking.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1 (a)	Rhetoric	1, 2	6‡	All	None
1 (b)	Argumentation	1, 2	6	Fresh., Soph.	See statement
2 (a)	Rhetoric	1, 2	6	All	See statement
2 (b)	Argumentation	1, 2	6	Soph., Jr., Sr.	Course 1
3.	Lit. Crit.	1	3	Jr., Sr.	Course 1
4.	Art. Lec.	2	3	Jr., Sr.	Course 1
6.	Advanced Rhet.	1, 2	6	Jr., Sr.	Courses 1 and 2
7.	Advanced Rhet.	1, 2	6	Jr., Sr.	Course 6
8.	Reading	1, 2	4*	Soph.	None

\*Both semesters must be completed before credit is given for the first semester.

‡Juniors and seniors receive only half credit.

#### RHETORIC

- 1 (a) RHETORIC                      MESSRS. FIRKINS AND NICHOLS, AND MISSES MALEY, GRIFFITH AND WHITNEY  
 Six credits (three hours per week)                      Both semesters  
 Open to all classes, but juniors and seniors must obtain the consent of the department and receive only half credit.

This course includes the study of formal rhetoric, the writing of compositions, and the study and analysis of masterpieces of prose.

- 1 (b) ARGUMENTATION                      MR. GISLASON  
 Six credits (three hours per week)                      Both semesters  
 Open to freshmen and sophomores recommended by the department; students who have had special preparation in debate may, by consent of the head of the department, substitute argumentation for rhetoric.

This course aims at instruction in the science of argumentation and in the art of debate. The work consists of study of the laws and processes of reasoning and their application to written and spoken argument. Speeches of eminent lawyers made before courts in the trial of famous cases are briefed and analyzed. \*Practical exercises in debate on the floor form an important part of the work.

- 2 (a) RHETORIC                      MR. FIRKINS, MISSES MALEY AND WHITNEY  
 Six credits (three hours per week)                      Both semesters  
 Open to freshmen who have obtained a grade of excellent upon the entrance examination in English, and to sophomores, juniors, and seniors, who have completed course 1.

The course consists of a study of the short story in the first semester, and of the essay and forms of public address in the second semester. The writing of compositions and the keeping of a note book form the greater part of the work.

- 2 (b) ARGUMENTATION                      MR. GISLASON  
 Six credits (three hours per week)                      Both semesters  
 Open to sophomores, juniors, and seniors, who have taken course 1 and have had some previous experience in debate.

3. LITERARY CRITICISM PROFESSOR SANFORD  
 Three credits (three hours per week) First semester  
 Open to sophomores (by special permission), juniors, and seniors,  
 who have taken course 1.  
 A study of models of English poetry, oratory, fiction, etc., with critical  
 essays.
4. ART LECTURES PROFESSOR SANFORD  
 Three credits (three hours per week) Second semester  
 Open to sophomores (by special permission), juniors, and seniors,  
 who have taken course 1.  
 This course embraces a study of the development of architecture, sculp-  
 ture, and painting from the earliest remains in Chaldea and Egypt through  
 the sixteenth century A. D. Some attention is also given to more recent art.  
 Van Dyke's *College Histories of Art*, Radcliffe's *Schools and Masters  
 of Painting and of Sculpture*, Hoyt's *Painters* and other works are used as  
 text-books. Essays upon the history of art are required.
5. DEBATE PROFESSOR SANFORD  
 Six credits (three hours per week) Both semesters  
 Open to juniors and seniors who have taken courses 1 (b) and  
 2 (b); not offered in 1908-9.  
 This course aims at the training of men in public speaking. It consists  
 of theoretical work in argumentation. Standard debates and orations are  
 analyzed and briefed; original debates are briefed, written, and rehearsed  
 for criticism. Special emphasis is laid upon class-room debate with criticism  
 on delivery, thought, and composition.
6. ADVANCED RHETORIC ASSISTANT PROFESSOR COMSTOCK  
 Six credits (three hours per week) Both semesters  
 Open to seniors and juniors who have taken courses 1 and 2.
- ADVANCED RHETORIC (3) 1, 2 ASSISTANT PROFESSOR COMSTOCK  
 Open to juniors and seniors who have completed course 2 (a).  
 Structure and style, theoretically and practically considered, are  
 subjects of study in this course. Some time is given to the  
 oral presentation of topics. In the composition work the student  
 is allowed to select his own subjects and methods of treatment.  
 This course, in addition to the courses in literature, is required of  
 students who desire a recommendation in English toward a  
 teacher's certificate.
7. ADVANCED RHETORIC ASSISTANT PROFESSOR COMSTOCK  
 Six credits (three hours per week) Both semesters  
 Open to juniors and seniors who have taken courses 1, 2, and 6.  
 A continuation of course 6 and conducted along the same lines.

ELOCUTION

8. READING PROFESSOR SANFORD  
 Six credits (three hours per week) Both semesters  
 Open to sophomores; both semesters must be completed before  
 credit is given for the first semester.  
 The object of this course is voice building and training in interpretation  
 and expression. The text used is Shakespeare's plays.
9. VOCAL EXPRESSION \*ASSISTANT PROFESSOR McDERMOTT  
 (Three hours) Both semesters  
 Open to juniors and seniors who have taken course 1; not offered  
 in 1908-9.  
 This course aims at the following objects: An understanding of the  
 vocal mechanism; the strengthening and cultivation of the voice; the correc-  
 tion of foreign accent, defective enunciation, and common faults of quality  
 such as aspirated, oral, pectoral, guttural, and nasal tones; the specific appli-  
 cation of the principles of clearness, simplicity, strength, and variety in  
 delivery. Interpretation is approached from within, not from without, and  
 correct thinking is made the basis of correct expression.

\*Professor McDermott died February 27th, 1908. His successor has not  
 yet been selected.

10. THE PSYCHOLOGICAL SIDE OF VOCAL EXPRESSION  
 (Three hours) \*ASSISTANT PROFESSOR McDERMOTT Both semesters  
 Open to juniors and seniors who have taken course 1; not offered  
 in 1908-9.

In this course the functions of the dramatic instinct, the will, the intellect, the imagination, and the emotions, are considered independently and jointly with reference to delivery. The effect upon expression of the neglect of any one of these elements is shown and literature is studied with a view to the harmonious development of all.

11. AMERICAN ORATORY (Three hours) \*ASSISTANT PROFESSOR McDERMOTT Both semesters  
 Open to juniors and seniors who have taken course 1; not offered  
 in 1908-9.

Standard orations are analyzed; synopses, oral biographies, accounts of historical settings, and expositions of the orator's style and logic are required. Forensics and debates are prepared, one original oration each semester is required, a short selection from the oration under consideration is committed for practice in delivery, and short stories from best modern authors are retold for fluent command of English. Besides class work each student is given a brief period for individual criticism; for this reason only a limited number can be admitted.

## II. Ancient Languages and Literatures

### GREEK

The requirement for a major in Greek is the completion of eighteen credits from the courses offered by the department; for a minor, twelve credits. For distinction in Greek the special requirements of the department are the completion of at least courses 4 to 7 inclusive, 8 or 9, 10, and two hours per week of seminar work throughout one year.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	First Year Greek . . . . .	1, 2	10*	All	None
2.	Hist. and Epic Poetry . . . . .	1, 2	6*	Soph., Jr., Sr.	Course 1
3.	Xenophon and Herodotus . . . . .	1, 2	6*	All	See statement
4.	Oratory . . . . .	1	3	Soph., Jr., Sr.	Course 2 or 3
5.	Philosophy . . . . .	2	3	Soph., Jr., Sr.	Course 2 or 3
6.	Lyrics . . . . .	1	3	Jr., Sr.	Course 4 or 5
7.	Tragedy . . . . .	2	3	Jr., Sr.	Course 5
8.	Philosophy Advanced . . . . .	1	3	Jr., Sr.	Course 5
10.	Epic Poetry . . . . .	2	3	Jr., Sr.	Course 7
11.	Modern Greek . . . . .	1	3	Soph., Jr., Sr.	Course 2 or 3
12.	Archæology . . . . .	1, 2	6*	Soph., Jr., Sr.	None
13.	Dramatic Poetry . . . . .	1, 2	4	Soph., Jr., Sr.	See statement
14.	Composition . . . . .	1, 2	2*	Jr., Sr.	Courses 4 and 5
15.	Greek Lit. and Life . . . . .	1	2	Jr., Sr.	None
16.	Later Greek . . . . .	1, 2	6	Jr., Sr.	Course 5
17.	Seminar . . . . .	1	1	Jr., Sr.	Course 4 or 5
18.	Seminar . . . . .	1	1	Jr., Sr.	Course 5
19.	Epic Poetry . . . . .	..	..	Grad.	..
20.	Dramatic Poetry . . . . .	..	..	Grad.	..
21.	Oratory . . . . .	..	..	Grad.	..
22.	Later Greek . . . . .	..	..	Grad.	..
23.	Adv. Mod. Greek . . . . .	..	..	Grad.	..

\*Both semesters must be completed before credit is allowed for the first semester.

1. FIRST YEAR IN GREEK PROFESSOR HUTCHINSON  
 Ten credits (five hours per week) Both semesters  
 Open to all; both semesters must be completed before credit  
 is given for the first semester. Students are advised to take  
 this course in their freshman year, especially such as intend  
 to fit themselves for teaching Latin. Those also who expect

to do intensive work in ancient history or philosophy or who expect to study theology or who intend to devote themselves to literature should take this course in the freshman year.

The work of the first semester is based upon Brooks' *Introduction to Attic Greek* and has for its object the mastery of the declensions and conjugations, and the simpler rules of syntax; together with the ability to read readily simple sentences based on the vocabulary of the first chapter of the *Anabasis* which is learned by heart; and to translate into Greek idiomatic English sentences based upon the same text.

In the second semester the *Anabasis* itself is used as the reading book; an amount equivalent to about a book and a half is read. *Hadley's Greek Grammar* is studied systematically. Etymology is reviewed and syntax is studied sufficiently to enable the student to proceed confidently in the translation of the text. The translation from English into Greek is continued.

## 2. HISTORY AND EPIC POETRY: *Anabasis* and *Iliad*

Six credits (three hours per week)

ASSISTANT PROFESSOR SAVAGE

Both semesters

Open to sophomores, juniors, and seniors, who have completed course 1; credits allowed only when both semesters are taken.

The course is designed for students who have begun Greek in the University. Students who have begun Greek before coming to the University may, with the consent of the department, take Homer during the second semester.

Books 2, 3, and 4 of Xenophon's *Anabasis* are read during the first semester; particular attention is given to syntax and irregular verbs. Selections from Homer's *Iliad* are read during the second semester; special attention is given to prosody, and to poetical forms and usages.

## 3. HISTORY: Xenophon and Herodotus

ASSISTANT PROFESSOR SAVAGE

Six credits (three hours per week)

Both semesters

Open to freshmen, sophomores, juniors, and seniors, who offer two years of Greek for admission to the University or have completed course 1, and in the judgment of the department are qualified for the work; both semesters must be completed before credit is allowed for the first semester.

Selections from Xenophon's *Cyropaedia* are read during the first semester, and special attention is given to syntax and irregular verbs. Selections from Herodotus are read during the second semester, and particular attention is paid to peculiarities of dialect and style. The work is supplemented by lectures on Greek historiography.

## 4. ORATORY: Lysias and Demosthenes

ASSISTANT PROFESSOR SAVAGE

Three credits (three hours per week)

First semester

Open to those who have completed course 2 or course 3.

The course consists chiefly of readings from the orations of Lysias and Demosthenes; selections from Andocides' speech *On the Mysteries* may also be read. This work is supplemented by lectures on Greek oratory, and some attention is given to the study of Greek rhetoric. At this stage of the student's development less attention is given to syntax, and more attention is paid to matters of literary interest.

## 5. PHILOSOPHY: Plato's *Apology* and *Crito*.

ASSISTANT PROFESSOR SAVAGE

Three credits (three hours per week)

Second semester

Open to those who have completed course 2 or course 3.

The course consists chiefly in the reading of Plato's *Apology* and *Crito*; and, in connection with these works, selections from Xenophon's *Memorabilia* may also be read. The reading of texts is supplemented by lectures on Greek philosophy.

## 6. LYRICS

Three credits (three hours per week)

PROFESSOR BROOKS

First semester

Open to juniors and seniors who have completed course 4 or course 5.

## 7. TRAGEDY: Aeschylus and Sophocles

PROFESSOR BROOKS

Three credits (three hours per week)

Second semester

Open to juniors and seniors who have completed course 5.

8. **PHILOSOPHY: Plato's *Republic*** PROFESSOR HUTCHINSON  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors who have completed course 5; alternates with course 9.  
*The Republic* of Plato is read, not primarily for its philosophic interest but as one of the masterpieces of Greek literature. The study is, therefore, in the main, a study of literary style.
9. **ORATORY: Demosthenes' *De Corona*** PROFESSOR HUTCHINSON  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors who have completed course 4; offered in alternation with course 8; not given in 1908-9.  
 This course is intended to secure a careful study of the development of oratorical style among the Greeks and its culmination in this acknowledged masterpiece.
10. **ADVANCED COURSE IN EPIC POETRY: The *Odyssey*** PROFESSOR HUTCHINSON  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 7.  
 The object of this course is to secure as intimate an acquaintance as possible, at first hand, with Homer. The Homeric Question is given but scanty attention; its place is in the graduate work (course 19). Literary values receive chief attention and that these may be realized by the student the entire epic is, if possible, read.
11. **MODERN GREEK** PROFESSOR BROOKS  
 Three credits (three hours per week) First semester  
 Open to sophomores, juniors and seniors, who have completed course 2 or course 3.
12. **ARCHAEOLOGY** PROFESSOR BROOKS  
 Six credits (three hours per week) Both semesters  
 Open to sophomores, juniors and seniors; a knowledge of the Greek language is not required; both semesters must be completed before credit is allowed for the first semester.  
 A study of the monuments or remains of Greek art, illustrating Greek customs, civilization, and life. Laboratory methods and theses are largely employed.
13. **DRAMATIC POETRY: Euripides and Aristophanes** ASSISTANT PROFESSOR SAVAGE  
 Four credits (two hours per week) Both semesters  
 Open in the first semester to those who have completed courses 2, 3, or 7, and in the second to those who have completed the first semester or course 7.  
 During the first semester, either the *Alcestis* or the *Medea* of Euripides is read; during the second semester the *Frogs* of Aristophanes is studied. Special attention is given to metre, literary style, and mythology, and the work is supplemented by lectures on the authors studied.
14. **GREEK COMPOSITION** PROFESSOR HUTCHINSON  
 Two credits (one hour per week) Both semesters  
 Open to juniors and seniors who have completed courses 4 and 5; both semesters must be completed before credit is given for the first semester; recommended to those who expect to teach Greek.  
 The course consists of a systematic review of Greek syntax and the retranslation into Greek of passages translated from various classic authors, illustrative of various styles.
15. **GREEK LITERATURE AND LIFE** ASSISTANT PROFESSOR SAVAGE  
 Two credits (two hours per week) First semester  
 Open to juniors and seniors; a knowledge of Greek is not required.  
 The course is intended primarily for students who have not had an opportunity to study Greek. It consists of lectures, text book work, and illustrative readings; and, from time to time, the lectures will be illustrated by stereopticon views. The course is especially recommended to students who are intending to teach Greek, Latin, English, or ancient history.

16. LATER GREEK PROFESSOR HUTCHINSON  
Six credits (three hours per week) Both semesters  
Open to juniors and seniors who have completed course 5.  
The course consists chiefly of selected readings from the Septuagint and the New Testament.
17. SEMINAR IN ORATORY OR PHILOSOPHY PROFESSOR HUTCHINSON  
One credit (one hour per week) First semester  
Open to juniors and seniors who have completed course 4 or course 5.  
In 1908-9 the work will be in connection with Demosthenes' *De Corona*.
18. SEMINAR IN GREEK TRAGEDY PROFESSOR BROOKS  
One credit (one hour per week) Second semester  
Open to juniors and seniors who have completed course 5.
19. ADVANCED COURSE IN EPIC POETRY PROFESSOR HUTCHINSON  
Open to graduate students only; other arrangements may be ascertained upon application to the department.
20. ADVANCED COURSE IN GREEK DRAMATIC POETRY PROFESSOR BROOKS  
Open to graduate students only; other arrangements may be ascertained upon application to the department.
21. ADVANCED COURSE IN GREEK ORATORY ASSISTANT PROFESSOR SAVAGE  
Open to graduate students only; other arrangements may be ascertained upon application to the department.
22. LATER GREEK (322 B. C. to 200 A. D.) PROFESSOR HUTCHINSON  
Open to graduate students only; other arrangements may be ascertained upon application to the department.
23. ADVANCED COURSE IN MODERN GREEK PROFESSOR BROOKS  
Open to graduate students only; other arrangements may be ascertained upon application to the department.

## LATIN

The requirement for a major in Latin is the completion of eighteen credits from the courses offered by the department; for a minor, twelve credits. For distinction in Latin the special requirement of the department is the completion of thirty credits from courses offered in the department. To obtain a recommendation for a teacher's certificate in Latin, courses 1, 2, 3, 4, 6, and 7 must be completed; courses 10 and 12 are also recommended.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Livy .....	1	3	Fresh.	4 yrs. prep. Latin
2.	Plautus and Terence....	2	3	Fresh.	Course 1
3.	Horace .....	1	3	Soph., Jr., Sr.	Courses 1 and 2
4.	Roman Lit. ....	2	3	Soph., Jr., Sr.	Courses 1-3
5.	Ovid .....	1, 2*	2	Soph., Jr., Sr.	Courses 1 and 2
6.	Adv. Cæsar .....	1	3	Jr., Sr.	Courses 1-4
7.	Adv. Virgil .....	2	3	Jr., Sr.	Courses 1-4
8.	Pliny's Letters .....	1	2	Jr., Sr.	Courses 1-4
9.	Med. Latin .....	1	1	Jr., Sr.	Courses 1-4
10.	Composition .....	2	2	Jr., Sr.	Courses 1-4
11.	Elegiac Poetry .....	1	3	Jr., Sr.	Courses 1-4
12.	Corresp. of Cicero.....	1	2	Jr., Sr.	Courses 1-4
13.	Satire .....	2	3	Jr., Sr.	Courses 1-4
14.	Drama .....	2	2	Jr., Sr.	Courses 1-4
15.	Arch. and Public Life ..	1	1	Jr., Sr.	None
16.	Private Life .....	2	1	Jr., Sr.	None
17.	Lucretius .....	1, 2	3	Grad.	
18.	Seneca .....	1, 2	3	Grad.	
19.	Roman Eloquence .....	1, 2	..	Grad.	

\*Both semesters must be completed before credit is given for the first semester.

1. LIVY: Books I, II, XXI, XXII. Selections PROFESSORS CLARK AND PIKE, AND ASSISTANT PROFESSOR GRANRUD  
 Three credits (three hours per week) First semester  
 Open to freshmen who have completed four years of Latin in preparatory schools; course 2 must also be completed before credit is given for this course.  
 The course consists of (a) a correct translation of the Latin into idiomatic English with a study of the difference between the idioms of the two languages; (b) Latin composition and review of the principles of Latin syntax.
2. PLAUTUS AND TERENCE, Selections PROFESSORS CLARK AND PIKE, AND ASSISTANT PROFESSOR GRANRUD  
 Three credits (three hours per week) Second semester  
 Open to freshmen who have completed course 1.  
 The course comprises the translation of selected plays of Plautus and Terence with an outline study of the beginnings of the Roman drama and also of Roman political institutions.
3. HORACE PROFESSOR PIKE AND ASSISTANT PROFESSOR GRANRUD  
 Three credits (three hours per week) First semester  
 Open to those who have taken courses 1 and 2; course 4 must also be taken before credit is given for this course.  
 Selections from the odes, epodes, satires and epistles with a study of the life and literary art of Horace.
4. ROMAN LITERATURE PROFESSOR PIKE AND ASSISTANT PROFESSOR GRANRUD  
 Three credits (three hours per week) Second semester  
 Open to those who have taken courses 1, 2, and 3.  
 A brief history of Roman literature with illustrative readings from the most important writers.
5. OVID PROFESSOR CLARK  
 Two credits (one hour per week) Both semesters  
 Open to those who have taken courses 1 and 2; both semesters must be completed before credit is given for the first semester.  
 Translations from Ovid's *Fasti*, with a study of the religion and religious ceremonials of the Romans.
6. ADVANCED COURSE IN CAESAR PROFESSOR PIKE  
 Three credits (three hours per week) First semester  
 Open to those who have completed courses 1 to 4 inclusive; required for a teacher's recommendation in Latin.  
 Selections from books five to seven of the Gallic War and from the Civil War. Thorough study of the principles of indirect discourse. Intermediate Latin composition. An amount of time approximately equal to one hour for one-half semester will be spent upon the technical portions of the work, e. g., class drill work and discussion of various problems connected with secondary school work in Latin.
7. ADVANCED COURSE IN VIRGIL PROFESSOR PIKE  
 Three credits (three hours per week) Second semester  
 Open to those who have completed courses 1 to 4 inclusive; required for a teacher's recommendation in Latin.  
 An interpretation of selections from books seven and twelve of the *Aeneid*; a study of the quantitative method of pronouncing Latin verse; practice in the metrical rendering of selected passages. An amount of time approximately equal to one hour for one-half semester will be spent upon the strictly technical portions of the subject.
8. PLINY'S LETTERS PROFESSOR PIKE  
 Two credits (two hours per week) First semester  
 Open to those who have completed courses 1 to 4 inclusive.  
 Selections from the correspondence of Pliny the Younger with a study of his times.
9. MEDIEVAL LATIN PROFESSOR PIKE  
 One credit (one hour per week) First semester  
 Open to those who have completed courses 1 to 4 inclusive.  
 A course intended primarily to assist the student in rendering Latin historical documents of the middle ages. The work consists principally in the reading of selected documents of the middle ages with an outline of the main peculiarities of medieval Latin.

10. **LATIN COMPOSITION** PROFESSOR PIKE  
Two credits (two hours per week) Second semester  
Open to those who have completed courses 1 to 4 inclusive.  
A course in advanced Latin composition and a study of Latin prose style.
11. **ROMAN ELEGIAC POETRY** PROFESSOR CLARK  
Three credits (three hours per week) First semester  
Open to those who have completed courses 1 to 4 inclusive.  
Selections from Catullus, Tibullus, Propertius, and Ovid, with a study of the rise, development, and characteristics of Roman elegiac poetry.
12. **CORRESPONDENCE OF CICERO** PROFESSOR CLARK  
Two credits (two hours per week) First semester  
Open to those who have completed courses 1 to 4 inclusive.  
Selections from the letters of Cicero, with a study of his life and the history of his times.
13. **ROMAN SATIRE** PROFESSOR CLARK  
Three credits (three hours per week) Second semester  
Open to those who have completed courses one to four inclusive.  
Selections from Juvenal, Persius, Horace, and from early satire, with a study of the rise, development, and characteristics of Roman satire.
14. **ROMAN DRAMA** PROFESSOR CLARK  
Two credits (two hours per week) Second semester  
Open to those who have completed courses 1 to 4 inclusive.  
Selections from Seneca's tragedies and from the comedies of Plautus and Terence, with a study of the rise and development of the drama at Rome.
15. **ROMAN ARCHEOLOGY AND PUBLIC LIFE** ASSISTANT PROFESSOR GRANRUD  
One credit (one hour per week) First semester  
Open to juniors and seniors; no knowledge of Latin required.  
A study of the city of Rome; the forums; Roman architecture, sculpture, and painting; the Roman assemblies, senate, and magistracies. Lectures with stereopticon views and collateral reading.
16. **ROMAN PRIVATE LIFE** ASSISTANT PROFESSOR GRANRUD  
One credit (one hour per week) Second semester  
Open to juniors and seniors; no knowledge of Latin is required.  
The Roman house, family, dress, food, education, and amusements are studied. Lectures with stereopticon views and collateral reading.
17. **LUCRETIUS** PROFESSOR CLARK  
Three credits (two hours per week) Both semesters  
Open to graduate students; other arrangements may be ascertained upon application to the department.  
The course consists of the reading and interpretation of the text of Lucretius with a study of his philosophy and its sources.
18. **SENECA** PROFESSOR PIKE  
Three credits (two hours per week) Both semesters  
Open to graduate students; other arrangements may be ascertained upon application to the department.  
Reading, interpretation and annotation of the *de Beneficiis* of Seneca with a study of Stoicism at Rome.
19. **THE HISTORY AND THEORY OF ROMAN ELOQUENCE** ASSISTANT PROFESSOR GRANRUD  
Three credits (two hours per week) Both semesters  
Open to graduate students; other arrangements may be ascertained upon application to the department.  
The *Brutus* of Cicero will form the basis of the work during the first semester and the *Orator* during the second semester.

SEMITIC LANGUAGES

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Elem. Hebrew	1, 2	6*	Soph., Jr., Sr.	None
2.	Elem. Arabic	1, 2	6*	Jr., Sr.	Course 1
3.	Elem. Aramaic	2	3	Jr., Sr.	Course 1
4.	Hist. Hebrews	1, 2	6	Jr., Sr.	None

\*Both semesters must be completed before credit is given for the first semester.



1. **ELEMENTARY HEBREW** ASSISTANT PROFESSOR DEINARD  
Six credits (three hours per week) Both semesters  
Open to sophomores, juniors, and seniors; both semesters must be completed before credit is given for the first semester.  
First semester, Harper's *Elements of Hebrew* and reading of easy prose passages from the Old Testament; second semester, critical reading of some book of the Old Testament and a review of Hebrew grammar.
2. **ELEMENTARY ARABIC** ASSISTANT PROFESSOR DEINARD  
Six credits (three hours per week) Both semesters  
Open to those who have completed course 1; both semesters must be completed before credit is given for the first semester.  
First semester, Socin's *Arabic Grammar* and the reading of the prose sections contained in it; second semester, selected suras from the Koran and a review of Arabic grammar.
3. **ELEMENTARY ARAMAIC OR SYRIAC** ASSISTANT PROFESSOR DEINARD  
Three credits (three hours per week) Second semester  
Open to those who have completed course 1.  
The course is based upon Strach's *Grammatik des Biblischen Aramaisch* or Brockelman's *Syrische Grammatik*.
4. **HISTORY OF THE HEBREWS TO THE CLOSE OF THE PERSIAN PERIOD** ASSISTANT PROFESSOR DEINARD  
Six credits (three hours per week) Both semesters  
Open to sophomores, juniors, and seniors; no knowledge of any Semitic language is required.  
A survey of the political, social, and religious life of the Hebrews. The English Bible will be used as a text-book, a careful study of the Palestinian, Egyptian, and Assyro-Babylonian inscriptions will be made, and the works of some modern writers on Hebrew history will be consulted.

### III. Modern Languages and Literatures

#### GERMAN

The requirement for a major in German is the completion of eighteen credits from the courses offered by the department; for a minor, twelve credits. For distinction in German the special requirement of the department is the completion of courses 8, 9, 10, and any two of the following: 12, 13, 14, and 17. To obtain the recommendation of the department for a teacher's certificate, courses 4, 6 or 7, 8, 9, 10 and 11 must be completed.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Beginning	1, 2	10½*	All	None
2.	Intermediate	1, 2	6*	Soph., Jr., Sr.	Course 1
3.	Scientific Inter.	1, 2	6*	Soph., Jr., Sr.	Course 1
4.	Prose and Poetry	1, 2	6*	All	Two yrs. prep. Ger.
5.	Conversation	1, 2	4*	All	See statement
6.	Drama	1, 2	6*	Soph., Jr., Sr.	Courses 1 and 2, or 4
7.	Adv. Sc. Reading	1, 2	6*	Soph., Jr., Sr.	Courses 2 and 3, or 4
8.	Adv. Conversation	1, 2	4*	Soph., Jr., Sr.	Courses 1 and 2, or 4
9.	Classic Period	1, 2	6*	Jr., Sr.	See statement
10.	Modern Authors	1, 2	6*	Jr., Sr.	See statement
11.	Teachers' Course	2	1	Sr.	Course 10
12.	Reformation	1, 2	4*	Sr. Grad.	Course 9 or 10
13.	Middle High Ger.	1, 2	4*	Sr. Grad.	Course 9 or 10
14.	Old High Ger.	1, 2	4*	Sr.	Course 9 or 10
15.	Seminar on Drama	1, 2	..	Grad.	See statement
16.	Volklied	1, 2	2	Grad.	Course 9 or 10
17.	Hist. of Ger. Lit.	1, 2	4*	Sr. Grad.	Course 9
18.	Sem. on Reading	1, 2	4*	Grad.	See statement

‡Juniors and seniors are allowed only half credit.

\*Both semesters must be completed before credit is allowed for the first semester.

1. BEGINNING PROFESSOR SCHLENKER, ASSISTANT PROFESSORS WILKIN AND JUERGENSEN, MR. BURKHARD, AND MR. WILLIAMS  
 Ten credits (five hours per week) Both semesters  
 Open to all, but juniors and seniors receive only half credit; both semesters must be completed before credit is given for the first semester.  
 Pronunciation, grammar, conversation, and composition; selected reading in easy prose and verse.
2. INTERMEDIATE PROFESSOR SCHLENKER, MR. BURKHARD, AND MR. WILLIAMS  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed course 1 or its equivalent; both semesters must be completed before credit is given for the first semester. This course may be supplemented by course 5. It should be followed by course 6 or course 7. Students who obtain credit for this course cannot receive credit also for either course 3 or course 4.  
 First semester, selections from modern narrative and descriptive prose; selected lyrics and ballads. Second semester, a drama of Lessing, Goethe, or Schiller.
3. SCIENTIFIC INTERMEDIATE ASSISTANT PROFESSOR JUERGENSEN  
 Six credits (three hours per week) Both semesters  
 Open to all who have completed course 1; both semesters must be completed before credit is given for the first semester.  
 First semester: Hodge's *German Science Reader* (or equivalent).  
 Second semester: *Brandt and Day's German Scientific Reading*. This course aims to give the student a reading knowledge of German for use in scientific studies.
4. PROSE AND POETRY PROFESSOR MOORE, ASSISTANT PROFESSOR WILKIN, MESSRS. BURKHARD AND WILLIAMS  
 Six credits (three hours per week) Both semesters  
 Open to all who enter the University with two years of German; not open to those who have obtained credit in course 2 or course 3; both semesters must be completed before credit is given for the first semester.  
 First semester: Meissner's *Aus deutschen Landen; Goethe's Gedichte*.  
 Second semester: Schrakamp's *Beruhmte Deutsche*, Heine's *Buch der Lieder*.  
 Geography, history and legend. Review of German grammar throughout the year. This course may be supplemented by course 5.
5. ELEMENTARY CONVERSATION AND COMPOSITION ASSISTANT PROFESSORS WILKIN AND JUERGENSEN, MESSRS. BURKHARD AND WILLIAMS  
 Four credits (two hours per week) Both semesters  
 Open to those who are taking or have taken course 2, 3, or 4; not open to those who are taking, or have taken course 9 or course 10; both semesters must be completed before credit is given for the first semester.  
 Translation of short English selections; conversation on topics of everyday life; narrative and descriptive essays and letter writing.
6. THE DRAMA PROFESSOR SCHLENKER, ASSISTANT PROFESSORS WILKIN AND JUERGENSEN, AND MR. BURKHARD  
 Six credits (three hours per week) Both semesters  
 Open to those who have taken courses 1 and 2, or course 4; both semesters must be completed before credit is given for first semester. This course may be supplemented by course 8.  
 First semester: Modern drama. Play of Hebbel, Hauptmann, or Sudermann. Study of the present-day drama in Germany. Assigned readings and reports. Second semester: Classic drama. Play of Lessing, Goethe, or Schiller. Study of dramatic structure. History of the German drama in the eighteenth century.
7. ADVANCED SCIENTIFIC READING ASSISTANT PROFESSOR JUERGENSEN  
 Six credits (three hours per week) Both semesters  
 Open to those who have taken course 2, 3, or 4; both semesters must be completed before credit is given for first semester.  
 Reading of monographs and periodicals.

8. **ADVANCED CONVERSATION, GRAMMAR, AND COMPOSITION**  
 PROFESSOR SCHLENKER, ASSISTANT PROFESSOR WILKIN, AND MR. BURKHARD  
 Four credits (two hours per week) Both semesters  
 Open to those who have completed courses 1 and 2, or course 4;  
 both semesters must be completed before credit is given for  
 first semester; recommended that it be preceded by course 5;  
 required of those who obtain a teacher's recommendation in  
 German; intended as a preparation for course 11.  
 Essays on assigned subjects; oral exercises in German by means of  
 discussions on everyday subjects; debates, narration, and the like.
9. **GERMAN LITERATURE OF THE CLASSIC PERIOD** PROFESSOR MOORE  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed courses 1 and 2 (by special  
 permission) or 3 and 7, or 4 and 6; both semesters must be  
 completed before credit is given for the first semester; required  
 of those who obtain a teacher's recommendation in German.  
 First semester: Goethe's *Faust*; its genesis; the Faust legend; its  
 treatment in literature before and since Goethe's time; plan of Goethe's *Faust*;  
 solution of the Faust problem in part two. Lectures and collateral reading;  
 essays by the class. Schiller's ballads, and other representative poems of  
 this period. German versification. Second semester: Reading and discussion  
 of Lessing's more important critiques, the *Laocoon*, and *Dramaturgie*.
10. **MODERN AUTHORS** PROFESSOR MOORE  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed courses 1, 2, and 9 (by special  
 permission), or 4, 6, and 9, or 3, 7, and 9; both semesters  
 must be completed before credit is given for the first semester;  
 required of those who obtain a teacher's recommendation in  
 German.  
 First semester: Romantic school and *Junge Deutschland*. Second  
 semester: German literature since 1848.
11. **TEACHERS' COURSE** PROFESSOR MOORE  
 One credit (one hour per week) Second semester  
 Open to those who have completed course 10; especially de-  
 signed for students who expect to become teachers of German  
 in high schools.
12. **HISTORY AND LITERATURE OF THE REFORMATION** PROFESSOR MOORE  
 Four credits (two hours per week) Both semesters  
 Open to seniors and graduates who have completed course 9 or  
 course 10; both semesters must be completed before credit  
 is given the first semester.  
 Brandt, Luther, Hutten, Sachs, Murner, and Fischart. Selec-  
 tions from Jansen and Egelhaaf.
13. **MIDDLE HIGH GERMAN** PROFESSOR SCHLENKER  
 Four credits (two hours per week) Both semesters  
 Open to seniors and graduates who have completed course 9  
 or course 10; both semesters must be completed before credit  
 is given for the first semester.  
 Study of the language and literature of the period. Paul's *Mittelhoch-  
 deutsche Grammatik*. Selected readings from Armer *Heinrich*, *Nibelungen  
 Lied*, *Gudrun*, the poems of Walter von der Vogelweide, *Parsifal*, etc.
14. **OLD HIGH GERMAN** PROFESSOR KLAEBER  
 Four credits (two hours per week) Both semesters  
 Open to seniors who have taken course 9\* or course 10; both  
 semesters must be completed before credit is given for the  
 first semester.  
 This course is identical with comparative philology 11.
15. **SEMINAR IN GERMAN DRAMA** PROFESSOR SCHLENKER  
 Two credits (one hour per week) Both semesters  
 Open to graduates and, by permission of the department, to  
 undergraduates but without credit.  
 An outline of the history of German dramatic literature from its beginning  
 to and including the so-called classic drama. Assigned readings, reports,  
 and discussions.

16. **THE GERMAN VOLKSLIED** MR. WILLIAMS  
 Two credits (two hours per week) Second semester  
 Open to graduate students who have completed course 9 or  
 course 10.  
 Outline of the history and development of the *Volkshied*. Study of  
 selected numbers in Uhland's *Volkshieder* with references to other general  
 and special collections. Influence of the *Volkshied* upon lyric and ballad  
 writers.
17. **HISTORY OF GERMAN LITERATURE** ASSISTANT PROFESSOR JUERGENSEN  
 Four credits (two hours per week) Both semesters  
 Open to seniors and graduates who have completed course 9;  
 both semesters must be completed before credit is given for  
 the first semester.  
 Lectures in German on the history of German literature. Reviews and  
 topical research on the part of the students.
18. **SEMINAR IN SCIENTIFIC READING** ASSISTANT PROFESSOR JUERGENSEN  
 Four credits (two hours per week) Both semesters  
 Open to graduate students who have completed course 9 or 10,  
 and (by permission of the department) to undergraduates who  
 have completed course 9 or 10; both semesters must be com-  
 pleted before credit is given for the first semester.  
 1908-9 The literature of evolution (Haeckel, Reinke, et al.)  
 1909-10 Chemistry and physics (Ostwald, Helmholtz, et al.)  
 1910-11 Psychology and philosophy (especially Wundt.)  
 For courses in Germanic philology see the statement of the department  
 of comparative philology, pp. 52-53.

### ROMANCE LANGUAGES

The requirement for a major in French or Spanish is the completion of  
 eighteen credits from the courses offered in those subjects; for a minor,  
 twelve credits. For distinction in French the special requirement of the  
 department is the completion of courses 2 or 3, 5, 7, and four credits from  
 courses 6, 8, 9, or 10; for distinction in Spanish the required courses are  
 5, 11, 12, and 13.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Begin. French . . . . .	1, 2	10†*	All	None
2.	Intermediate French . . . . .	1, 2	6*	Soph., Jr., Sr.	Course 1
3.	Adv. Fr. G. and Comp. . . . .	1, 2	6*	All	None
4.	Begin. Fr. Conversation . . . . .	1, 2	4*	Soph., Jr., Sr.	See statement
5.	Classic Fr. Lit. . . . .	1, 2	6*	Soph., Jr., Sr.	Course 2 or 3
6.	Adv. Fr. Conversation . . . . .	1, 2	4*	Soph., Jr., Sr.	Course 2 or 3
7.	Fr. Lit. of 19 Cent. . . . .	1, 2	6*	Soph., Jr., Sr.	Course 2 or 3
8.	Teachers Fr. . . . .	1, 2	2*	Jr., Sr.	Course 5
9.	Romance Phil. . . . .	1, 2	2*	Jr., Sr.	Course 5
10.	Italian Lit. . . . .	1, 2	2*	Jr., Sr.	Course 5
11.	Begin. Span. . . . .	1, 2	10*	Soph., Jr., Sr.	Two yrs. prep. Fr.
12.	Intermediate Span. . . . .	1, 2	6	Soph., Jr., Sr.	Course 11
13.	Adv. Span. . . . .	1, 2	6*	Jr., Sr.	Course 12
14.	Old French . . . . .	1, 2	4	Grad.	
15.	Hist. of Fr. Lit. . . . .	1, 2	6*	Grad.	
16.	Ital. Lit. . . . .	1, 2	2*	Grad.	Course 5

\*Both semesters must be completed before credit is given for the first semester.

†Juniors and seniors receive only half credit.

1. **BEGINNING FRENCH** ASSISTANT PROFESSORS ANDRIST AND FRELIN,  
 MADAM BERTIN  
 Ten credits (five hours per week) Both semesters  
 Open to all, but juniors and seniors receive only half credit; both  
 semesters must be completed before credit is given for the first  
 semester; not credited toward a minor in French.  
 Fraser and Squair's *French Grammar and Reader*; modern texts.

2. INTERMEDIATE FRENCH ASSISTANT PROFESSOR FRELIN AND MADAM BERTIN  
Six credits (three hours per week) Both semesters  
Open to sophomores, juniors and seniors who have completed course 1; both semesters must be completed before credit is given for the first semester.  
François *Advanced French Prose Composition*; modern texts will be read, including some of the works of Coppée, Mérimée, Daudet, Scribe, et al.
3. ADVANCED FRENCH GRAMMAR AND COMPOSITION ASSISTANT PROFESSOR ANDRIST  
Six credits (three hours per week) Both semesters  
Open to all who enter the University with two years of French; both semesters must be completed before credit is given for the first semester.  
François' *Introduction to French Composition*; readings from modern authors, including selections from Coppée, Feuillet, Sandeau.
4. BEGINNING FRENCH CONVERSATION ASSISTANT PROFESSORS ANDRIST AND FRELIN, MADAME BERTIN  
Four credits (two hours per week) Both semesters  
Open to those who have completed or who are taking course 2 or course 3; both semesters must be completed before credit is given for the first semester.  
Conversations based on modern French life.
5. THE CLASSICAL PERIOD OF FRENCH LITERATURE PROFESSOR BENTON  
Six credits (three hours per week) Both semesters  
Open to those who have completed course 2 or course 3; both semesters must be completed before credit is given for the first semester.  
The reading of works and selections produced during the classical period of French literature and conversations in French concerning the same. The works of Corneille, Racine, Molière, La Fontaine, et al. Compositions.
6. ADVANCED FRENCH CONVERSATION PROFESSOR BENTON  
Four credits (two hours per week) Both semesters  
Open to those who have completed course 2 or course 3; both semesters must be completed before credit is given for the first semester.  
Conversations on French history, literature, the drama, etc.
7. FRENCH LITERATURE OF THE NINETEENTH CENTURY PROFESSOR BENTON  
Six credits (three hours per week) Both semesters  
Open to those who have completed course 2 or course 3 and course 5; both semesters must be completed before credit is given for the first semester.  
Lectures in French on the history of modern literature. Select works of some of the authors read and discussed. Compositions and essays.
8. TEACHERS' COURSE IN FRENCH PROFESSOR BENTON  
Two credits (one hour per week) Both semesters  
Open to those who have completed course five; both semesters must be completed before credit is given for the first semester.  
Special practice in pronunciation. Discussion in French of methods of teaching the French language and literature.
9. ROMANCE PHILOLOGY PROFESSOR BENTON  
Two credits (one hour per week) Both semesters  
Open to those who have completed course 5; both semesters must be completed before credit is given for the first semester.  
Lectures on the phonetical development of the French and other Romance languages from popular Latin. Reading of old French texts.
10. ITALIAN LITERATURE PROFESSOR BENTON  
Two credits (one hour per week) Both semesters  
Open to those who have completed course 5; both semesters must be completed before credit is given for the first semester.  
Edgren's *Italian Grammar*, Dante's *Divine Comedy*.

11. **BEGINNING SPANISH** MR. MELOM  
 Ten credits (five hours per week) Both semesters  
 Open to sophomores, juniors, and seniors. Both semesters must  
 be completed before credit is given for the first semester.  
 Monsanto and Languellies's *Spanish Course-Josselyn*. Worman's *First*  
*Spanish Book*. Bransby's *Spanish Reader*.
12. **INTERMEDIATE SPANISH** MR. MELOM  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed course 11; both semesters must  
 be completed before credit is given for the first semester.  
 First semester: Loiseaux, *Spanish Composition*; Brownell, *El Pajaro*  
*Verde*. Second semester: Gray's *Fortuna*; Alarcon's *El Capitan Veneno*.
13. **ADVANCED SPANISH** MR. MELOM  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed course 11 and 12; both semesters  
 must be completed before credit is given for the first semester.  
 F. Solderilla, *Compendio de la Literatura Espanola*; Alarcon's *El Som-*  
*brero de Tres Picos*. Lectures and collateral readings of representative Span-  
 ish authors.
14. **ROMANCE LANGUAGES OLD FRENCH** PROFESSOR BENTON  
 Four credits (two hours per week) Both semesters  
 Open to graduate students; other arrangements may be ascertained  
 upon application to the department.  
 Comparative phonetics and grammar of French and other Romance  
 languages. Some of the oldest monuments of the French language are studied  
 and the phonetic changes compared with modern French and English. Special  
 attention is given to the period when French words came into the English  
 language.
15. **HISTORY OF FRENCH LITERATURE** PROFESSOR BENTON  
 Two credits (one hour per week) Both semesters  
 Open to graduate students; both semesters must be completed  
 before credit is given for the first semester.  
 A discussion of the evolution of the various schools and doctrines in  
 French literature.
16. **ITALIAN LITERATURE** PROFESSOR BENTON  
 Two credits (one hour per week) Both semesters  
 Open only to graduate students who have completed course 5;  
 both semesters must be completed before credit is given for the  
 first semester.  
 History of Italian Literature, special: *The Divine Comedy*.

### SCANDINAVIAN LANGUAGES

The requirement for a major in the Scandinavian languages is the completion of eighteen credits from courses offered by the department; for a minor, twelve credits.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Elem. Norwegian	1, 2	10*†	All	None
2.	Adv. Norwegian	1, 2	6*	Soph., Jr., Sr.	Course 1
3.	Elem. Swedish	1, 2	10*†	All	None
4.	Adv. Swedish	1, 2	6*	Soph., Jr., Sr.	Course 3
5.	Old Norse (Icelandic)	1, 2	4	Jr., Sr., Grad.	Courses 1 and 2, or 3 and 4
6.	Modern Norwegian Lit.	1, 2	6*	Jr., Sr., Grad.	Courses 1 and 2
7.	Swedish Literature	1, 2	6*	Jr., Sr., Grad.	Courses 3 and 4
8.	Henrik Ibsen	1	2*	Jr., Sr., Grad.	See statement
9.	History of Northern Europe	1, 2	6	Jr., Sr.	None

\*Both semesters must be completed before credit is given for the first semester.

†Juniors and seniors received only half credit.

1. **ELEMENTARY NORWEGIAN** PROFESSOR BOTHNE  
 Ten credits (five hours per week) Both semesters  
 Open to all, but juniors and seniors receive only half credit; both semesters must be completed before credit is given for the first semester.  
 Elementary study of the language, grammar, composition, select reading in easy prose and poetry.
2. **ADVANCED NORWEGIAN** PROFESSOR BOTHNE  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed course 1 and to others with the permission of the department; both semesters must be completed before credit is given for the first semester.  
 Grammar, composition, conversation elementary history of literature, and select works of modern authors.
3. **ELEMENTARY SWEDISH** PROFESSOR STOMBERG  
 Ten credits (five hours per week) Both semesters  
 Open to all, but juniors and seniors receive only half credit; both semesters must be completed before credit is given for the first semester.  
 Grammar and composition; select reading in easy prose and verse.
4. **ADVANCED SWEDISH** PROFESSOR STOMBERG  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed course 3 and to others with the permission of the department; both semesters must be completed before credit is given for the first semester.  
 First semester: grammar and composition. Modern prose texts will be read. Second semester: an elementary history of the literature of Sweden and reading of Tegner's *Frithjofs Saga* and Runeberg's *Fänrik Ståls Sägner*.
5. **OLD NORSE (Icelandic)** PROFESSOR BOTHNE  
 Four credits (two hours per week) Both semesters  
 Open to those who have completed courses 1 and 2, or 3 and 4, and to other qualified students with the approval of the department.  
 Grammar and reading. *Gunnlaugs Saga Ormstungu*.
6. **MODERN NORWEGIAN LITERATURE** PROFESSOR BOTHNE  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed courses 1 and 2; both semesters must be completed before credit is given for the first semester.  
 History of Norwegian literature from 1814 to the present day. Special attention paid to Björnson and Ibsen.
7. **SWEDISH LITERATURE** PROFESSOR STOMBERG  
 Six credits (three hours per week) Both semesters  
 Open to qualified students upon the approval of the department; both semesters must be completed before credit is given for the first semester.  
 History of the literature and study of modern authors, including Selma Lagerlöf, Geijerstam, Strindberg.
8. **IBSEN** PROFESSOR BOTHNE  
 Two credits (two hours per week) First semester  
 Open to qualified students upon the approval of the department.  
 Lectures and readings.
9. **HISTORY OF NORTHERN EUROPE** PROFESSOR STOMBERG  
 Six credits (three hours per week) Both semesters  
 Open to juniors and seniors; no knowledge of the Scandinavian languages is required.  
 The course includes the history of the Scandinavian countries from the earliest period to recent times.
10. **EARLY NORWEGIAN LITERATURE** PROFESSOR BOTHNE  
 (Not given in 1908-9.)
11. **MODERN DANISH LITERATURE** PROFESSOR BOTHNE  
 (Not given in 1908-9.)

FOR GRADUATES

12. MODERN SWEDISH LANGUAGE AND LITERATURE
13. HISTORY OF THE SCANDINAVIAN LANGUAGES  
For courses in Scandinavian philology, see the statement of the department of comparative philology, pp. 52-53.

IV. Biological Sciences

ANIMAL BIOLOGY

The requirements for a major in animal biology are the completion of course one and twelve additional credits from related courses; for a minor, twelve credits. For distinction in animal biology the special requirements of the department are the completion of a major and at least six additional credits from courses offered by the department. To obtain the recommendation of the department for a teacher's certificate courses one, fifteen, or two, or three, or four, or five, and twelve additional credits in the biological sciences, six of which shall be in botany, must be completed.

Students who contemplate taking a major or advanced work in animal biology are advised to confer with the head of the department in planning their work.

*Journal Club.* The professors, instructors, and advanced students of the department meet once a week to review and discuss current zoological literature and to listen to reports from those carrying on investigations.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Gen. Zoology . . . . .	1, 2	6	All	None
2.	Morphol. Invertebrates . .	1, 2	6*	Soph., Jr., Sr.	Course 1
3.	Histol.-Embryol. . . . .	1, 2	6	Soph., Jr., Sr.	Course 1
4.	Comp. Ant. Vertebrates . .	1, 2	6	Soph., Jr., Sr.	Course 1
5.	Gen. Physiol. . . . .	1, 2	6*	Soph., Jr., Sr.	Course 1
7.	Entomol. . . . .	1, 2	6*	Soph., Jr., Sr.	Course 1
8.	Ichthyology . . . . .	1	3	Soph., Jr., Sr.	Course 1
9.	Ornithology . . . . .	2	3	Soph., Jr., Sr.	Course 1
11.	Animal Habits—Intel. . .	2	2	Jr., Sr.	See statement
13.	Teachers' Course . . . . .	1	1	Jr., Sr.	Eighteen credits
14.	Problems & Research . . .	1, 2	6 or 12*	Jr., Sr.	See statement
15.	Elements of Entomol. & Ornith. . . . .	1, 2	6*	Soph., Jr., Sr.	Course 1

\*Both semesters must be completed before credit is given for the first semester.

1. GENERAL ZOOLOGY PROFESSOR SIGERFOOS, ASSISTANT PROFESSOR OESTLUND, BROWN, DOWNEY, AND MR. JOHNSON  
Six credits (six hours per week) Both semesters  
Open to all; the laboratory fee is three dollars per semester.  
This course is a comparative study of the principles of structure, physiology, and development in animals. In the laboratory a brief study of insects and the dissection of the frog are used as a practical introduction to the course. Then follow a study of cell structure and cell division, a systematic study of representatives of the chief phyla or branches of the animal kingdom, and a study of the elements of embryology as illustrated by the development of the starfish and chick. Lectures, quizzes, and laboratory work. Text-book required: Hertwig's *Manual of Zoology*
2. MORFOLOGY OF INVERTEBRATES PROFESSOR SIGERFOOS AND MR. JOHNSON  
Six credits (six hours per week) Both semesters  
Open to those who have completed course one; both semesters must be completed before credit is given for the first semester; the laboratory fee is three dollars per semester.  
The object of this course is to familiarize the student with the methods and principles of zoology thru an intensive study of two or three groups of animals and to acquaint him with the minor phyla not considered in course one. During the year 1908-9 the Protozoa and Crustacea will be the groups especially taken up.



3. **ESSENTIALS OF HISTOLOGY AND EMBRYOLOGY** PROFESSOR NACHTRIEB  
AND ASSISTANT PROFESSOR DOWNEY  
Six credits (six hours per week) Both semesters  
Open to those who have completed course 1; the laboratory fee  
is three dollars per semester.  
In this course are taken up the development and minute structure of the animal as an organism built up of tissues combined into organs, and the student is given practice in general methods, technique, and the use of apparatus. The course prepares directly for most of the advanced courses. Lectures, quizzes, and laboratory work.
4. **COMPARATIVE ANATOMY OF VERTEBRATES** ASSISTANT PROFESSOR BROWN  
AND MR. JOHNSON  
Six credits (six hours per week) Both semesters  
Open to those who have completed course 1 or its equivalent;  
both semesters must be completed before credit is given for  
the first semester; the laboratory fee is three dollars per  
semester.  
The first semester's work is based upon a study of chordates, cartilaginous and bony fishes and all classes up to mammalia; the second semester to a detailed study of the cat and comparative studies of the rabbit, sheep, and man. Lectures, quizzes, and laboratory work. Required text books: Davidson's *Mammalian Anatomy* and *Burkholder's Anatomy of the Brain*.
5. **GENERAL PHYSIOLOGY** PROFESSOR NACHTRIEB  
Six credits (three hours per week) Both semesters  
Open to those who have completed course one; both semesters  
must be completed before credit is given for the first semester.  
In the first semester are considered the physical, structural, and functional features of living substance; the cell, present conditions, and expressions of life; and the theories of the origin of life and death. Demonstrations and simple experiments constitute an essential part of the course in both semesters.  
In the second semester the life of the cell is considered in its relations to that of other cells and the course is concluded with special reference to the teaching of physiology in high schools.
6. **EXPERIMENTAL ZOOLOGY**  
Six credits (six hours per week) Both semesters  
Open to those who have completed courses 1 and 3; both semesters  
must be completed before credit is given for the first  
semester; not given in 1908-9.
7. **ENTOMOLOGY** ASSISTANT PROFESSOR OESTLUND  
Six credits (six hours per week) Both semesters  
Open to those who have completed course 1; both semesters  
must be completed before credit is given for the first semester.  
The course covers, in general, the elements of entomology, structure, functions, development, and economics, leading up to a discussion of the principles of taxonomy and their application to the classification of insects. Folsom's *Entomology*, and Hertwig's *Zoology* are used as text-books and general guides.
8. **ICHTHYOLOGY** ASSISTANT PROFESSOR BROWN  
Six credits (six hours per week) First semester  
Open to those who have completed course 1; the laboratory fee  
is three dollars.  
This course includes lectures, quizzes, and laboratory work in the structure, classification, life history, and culture of fishes, with special reference to the fishes of our inland waters which are of economic importance.
9. **ORNITHOLOGY** ASSISTANT PROFESSOR BROWN  
Six credits (six hours per week) Second semester  
Open to those who have completed course 1; the laboratory fee  
is three dollars.  
This course includes lectures, quizzes, laboratory and field work in the structure, classification, nest building, food, habits, and distinction of birds. The lectures consider the subjects of migration, coloration, flight, etc. Practical demonstrations are given of the preparation of birds and eggs for scientific purposes. Required: Chapman's *Hand-Book of Birds of Eastern North America*.

10. **HISTORY OF ZOOLOGY** PROFESSOR NACHTRIEB  
Two credits (two hours per week) First semester  
Open to juniors and seniors; students are advised to complete course 1 before electing this course; not offered in 1908-9.  
A course of lectures on the history of zoology from ancient times to the present, including a brief history of our domestic animals and those that have become extinct within historic times, and a discussion of the modern theories and problems of heredity and evolution.
11. **ANIMAL HABITS AND INTELLIGENCE** PROFESSOR NACHTRIEB  
Two credits (two hours per week) Second semester  
Open to juniors and seniors; students are advised to complete course 1 before electing this course; alternates with course twelve.  
The course consists of lectures and discussions on animal habits and intelligence, and concludes with a consideration of the development of mental power in animals.
12. **ECONOMIC ZOOLOGY** PROFESSOR NACHTRIEB  
Two credits (two hours per week) Second semester  
Open to juniors and seniors; alternates with course 11; not given in 1908-9.  
Lectures on the uses made of animals and their products, the production and protection of those animals of special economic importance, and the methods of protection against some of the disease-producing animals.
13. **TEACHERS' COURSE** PROFESSOR NACHTRIEB AND ASSISTANTS  
One credit (one hour per week) First semester  
Open to those who have completed a minor in zoology; given in alternate years.  
Lectures and discussions on the ends to be attained through courses in general zoology and the methods and means by which such ends may be gained.
14. **PROBLEMS AND RESEARCH** PROFESSOR NACHTRIEB AND ASSISTANTS  
Six or twelve credits (six or twelve hours per week) Both semesters  
Open to those who have completed courses 1 and 3 or 1 and such other work as may be required by the instructor in charge; both semesters must be completed before credit is given for the first semester.  
The course consists of advanced or essentially independent work carried on in some specific line under the direction of the professor in charge of that work. The lines of work open at present are:—  
(a) Morphology of vertebrates under Assistant Professor Brown  
(b) Blood, connective tissue and excretory organs of vertebrates under Assistant Professor Downey  
(c) Entomology under Assistant Professor Oestlund  
(d) Experimental zoology  
(e) General physiology under Professor Nachtrieb  
(f) Invertebrate embryology under Professor Sigerfoos  
(g) Invertebrate morphology under Professor Sigerfoos  
(h) Vertebrate embryology or morphology under Professor Nachtrieb.
15. **ELEMENTS OF ENTOMOLOGY AND ORNITHOLOGY** ASSISTANT PROFESSORS OESTLUND AND BROWN  
Six credits (six hours per week) Both semesters  
Open to those who have completed course 1; both semesters must be completed before credit is given for the first semester; the laboratory fee is three dollars per semester.  
This course is planned with special reference to candidates for the teacher's certificate. During the first semester the class meets with Assistant Professor Oestlund during the third and fourth hours on Monday, Wednesday and Friday. During the second semester the class meets with Assistant Professor Brown on Monday, Wednesday and Friday at the hours arranged with him.

## BOTANY

The requirement for a major in botany is the completion of eighteen credits from the courses offered by the department; for a minor twelve credits. For distinction in botany the special requirement of the department

is the completion of courses 1, 2, and 3, and any advanced course covering two semesters. To obtain a teacher's certificate courses 1 and 2, and twelve additional credits in biological sciences, of which six shall be in animal biology, must be completed.

Students entering the department for the first time must take course 1, or present a satisfactory equivalent. Courses 1 and 2 are required for entrance to all advanced courses, with the exception of eleven to fifteen. Students are requested to confer with the head of the department before electing an advanced course.

The *Botanical Seminar* consists of advanced students in botany, together with the staff of the department. It meets every two weeks for the presentation of the results of investigation, and for the discussion of current problems.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Gen. Botany	1, 2	6*	All	None
2.	Adv. Botany	1, 2	6	Soph., Jr., Sr.	Course 1
3.	Plant Phys. and Ecol.	1, 2	6	Soph., Jr., Sr.	See statement
4.	Algae	1, 2	6	Jr., Sr.	Courses 1 and 2
5.	Fungi	1, 2	6	Jr., Sr.	Courses 1 and 2
6.	Mosses and Ferns	1, 2	6	Jr., Sr.	Courses 1 and 2
7.	Flowering Plants	1, 2	6	Jr., Sr.	Courses 1 and 2
8.	Ecology	1, 2	6	Jr., Sr.	Courses 1, 2 and 3
9.	Plant Physiol.	1, 2	6	Jr., Sr.	Courses 1, 2 and 3
10.	Cytology	1, 2	6	Jr., Sr.	Courses 1 and 2
11.	Industrial Botany	1, 2	6	Soph., Jr., Sr.	See statement
12.	Wood Technology	1	6	Soph., Jr., Sr.	Course 1
13.	Water Supply Botany	2	3	Soph., Jr., Sr.	Course 1
14.	Timber and Timber Diseases	1	3	Soph., Jr., Sr.	Course 1
15.	Bot. Microchemistry	1, 2	3	Soph., Jr., Sr.	Course 1
16.	Plant Studies	1, 2	3	Jr., Sr.	Courses 1 and 2
17.	Morph. and Taxonomy	1, 2	..	Grad.	See statement
18.	Problems in Algology	1, 2	..	Grad.	See statement
19.	Problems in Phys. and Ecology	1, 2	..	Grad.	See statement
20.	Problems in Cytology	1, 2	..	Grad.	See statement

\*Both semesters must be completed before credit is given for the first semester.

#### GENERAL COURSES

Required for entrance to any special course, except those in technical botany 11 to 15 inclusive.

- GENERAL BOTANY** PROFESSOR CLEMENTS, ASSISTANT PROFESSORS TILDEN AND ROSENDAHL, MR. HUFF AND MR. BUTTERS  
 Six credits (six hours per week) Both semesters  
 Open to all; both semesters must be completed before credit is given for the first semester; the laboratory fee is three dollars per semester.

A general survey of the subject, comprising laboratory study of the evolution and relationships of plants, greenhouse study of their behavior and structure, and field work in the identification and distribution of flowering plants. Lectures and quizzes, laboratory, greenhouse and field work.

- ADVANCED BOTANY** PROFESSOR CLEMENTS, ASSISTANT PROFESSORS TILDEN AND ROSENDAHL  
 Six credits (six hours per week) Both semesters  
 Open to those who have completed course 1; the laboratory fee is three dollars per semester.

A study of the structure and classification of the great groups of plants, based on identification; the details of cell-division, of the formation of tissues and of reproduction; and the general relations of the plant to the physical factors of its home. Lectures and quizzes, laboratory, greenhouse and field work.

SPECIAL COURSES

3. **PLANT PHYSIOLOGY AND ECOLOGY** PROFESSOR CLEMENTS AND MR. HUFF  
Six credits (six hours per week) Both semesters  
Open to those who have completed courses 1 and 2; by permission of the department the course may be taken in conjunction with course 2; the laboratory fee is three dollars per semester.  
A study of the factors that affect the plant and its response to them; the adaptations of plants and the origin of new forms; the structure and development of vegetation, as shown in migration, invasion, competition, etc. Lectures and quizzes, greenhouse and field work.
4. **ALGAE** ASSISTANT PROFESSOR TILDEN  
Six credits (six hours per week) Both semesters  
Open to those who have completed courses 1 and 2; the laboratory fee is three dollars per semester.  
A detailed comparative study of the structure and classification of the algae; the blue-green and yellow-green algae, together with a systematic examination of forms in the Minneapolis water supply, occupy the first semester, and the brown and the red marine algae the second semester. Lectures, laboratory and reference work.
5. **FUNGI** PROFESSOR CLEMENTS  
Six credits (six hours per week) Both semesters  
Open to those who have completed courses 1 and 2; the laboratory fee is three dollars per semester.  
The classification and life-history of the various groups of fungi, based on identification, cultures and field work, with particular reference to forms which cause plant and animal diseases. Lectures and discussions, laboratory, greenhouse and field work.
6. **MOSESSES AND FERNS** ASSISTANT PROFESSOR ROSENDAHL AND MR. HUFF  
Six credits (six hours per week) Both semesters  
Open to those who have completed courses 1 and 2; the laboratory fee is three dollars per semester.  
The course is designed for students who wish to pay special attention to the morphology and taxonomy of liverworts, mosses, and ferns. Lectures, laboratory and field work.
7. **FLOWERING PLANTS** ASSISTANT PROFESSOR ROSENDAHL  
Six credits (six hours per week) Both semesters  
Open to those who have completed courses 1 and 2; the laboratory fee is three dollars per semester.  
The course is designed to afford the student an opportunity to become proficient in the determination of plant species and plant types, as well as to show the genetic development and relationships of the flowering plants. Lectures, reference reading, laboratory, greenhouse and herbarium work, together with field work in the fall and spring.
8. **ECOLOGY** PROFESSOR CLEMENTS  
Six credits (six hours per week) Both semesters  
Open to those who have completed courses 1, 2 and 3; the laboratory fee is three dollars per semester.  
A critical study of plant habitats by means of instruments, and the adaptations produced by water and by light, together with a careful examination of the causes and reactions of plant formations. Class discussions and quizzes, field and greenhouse work.
9. **PLANT PHYSIOLOGY** PROFESSOR CLEMENTS  
Six credits (six hours per week) Both semesters  
Open to those who have completed courses 1, 2 and 3; the laboratory fee is three dollars per semester; alternates with course 8.  
A study of the relations of factor, function and structure in the various organs of the plant, with special reference to absorption, transpiration, photosynthesis, respiration, irritability and reproduction. Class discussions and quizzes, greenhouse and field work.

10. **CYTOLOGY** ASSISTANT PROFESSOR ROSENDAHL  
Six credits (six hours per week) Both semesters  
Open to those who have completed courses 1 and 2; the laboratory fee is three dollars per semester.  
The course includes a survey of cell structure and the various phenomena of division, fusion and metamorphosis, together with a review of the history of cytologic investigation. Methods of cytological research indicated in the laboratory. Laboratory work and collateral reading.
11. **INDUSTRIAL BOTANY** ASSISTANT PROFESSOR TILDEN  
Six credits (six hours per week) Both semesters  
Open to technical students who have completed course 1, and to academic students who have completed courses 1 and 2; the laboratory fee is three dollars per semester.  
A study of the origin, distribution and cultivation of plants yielding products of economic value, the nature and use of these products, and the processes by which they are obtained from the plants. Lectures, demonstrations, topics and laboratory work.
12. **WOOD TECHNOLOGY** PROFESSOR CLEMENTS AND MR. BUTTERS  
Six credits (six hours per week)  
Open to those who have had course 1; the laboratory fee is three dollars per semester.  
A critical study of the most important woods, with especial reference to their structure, differences, and uses, and the life history and relationship of the various genera.
13. **WATER SUPPLY BOTANY** ASSISTANT PROFESSOR TILDEN  
Three credits (six hours per week) Second semester  
Open to those who have completed course 1; the laboratory fee is three dollars.  
A technical course for municipal, sanitary and reclamation engineers involving the determination of the forms prevalent in storage waters and in water supplies, and their abundance, together with methods of control or prevention. Lectures and references, laboratory and field work.
14. **TIMBER AND TIMBER DISEASES** MR. HUFF  
Three credits (six hours per week) First semester  
Open to those who have completed course 1; the laboratory fee is three dollars.  
A study of the source and structure of the important timbers with particular reference to their mechanical properties, together with a study of timber diseases, and methods of timber preservation. Lectures, laboratory work, and references.
15. **BOTANICAL MICROCHEMISTRY** PROFESSOR CLEMENTS  
Six credits (six hours per week) Both semesters  
Open to those who have completed course 1; laboratory fee is three dollars.  
A microscopical study by means of stains and reagents of the nature and structure of plant substances, in the natural condition as well as in the finished product. Lectures, laboratory and reference work.
16. **PLANT STUDIES AND METHODS** PROFESSOR CLEMENTS  
Six credits (six hours per week) Both semesters  
Open to those who have completed courses 1 and 2; the laboratory fee is three dollars per semester.  
A course for teachers and for students intending to teach; the subjects of nature study and high school botany are presented as they are to be taught and not from the university point of view; the material is taken up in detail in its proper sequence, and training in method is afforded as far as possible by practice in the elementary school of the College of Education.

**GRADUATE COURSES**

17. **MORPHOLOGY AND TAXONOMY** ASSISTANT PROFESSOR ROSENDAHL  
Both semesters  
Open to graduate students; other arrangements may be ascertained upon application to the department  
Important literature and necessary material will be provided for whatever research is entered upon, and the results of the investigations will be required to be prepared for publication. The course is an elastic one and will be adapted to the special training and requirements of those pursuing it.

18. PROBLEMS IN ALGOLGY ASSISTANT PROFESSOR TILDEN  
Both semesters  
Open to graduate students; other arrangements may be ascertained upon application to the department.  
Research work may be done on special groups or along any of the following lines: The freshwater algae of Minnesota; the algae of the Minneapolis and St. Paul water supplies; the algae of hot springs; lime-depositing algae; arctic marine algae (material from Vancouver Island); tropical marine algae (material from the Hawaiian Islands). Special facilities for study are offered by the Minnesota Seaside Station on Vancouver Island, which is open during the summer vacation.
19. PROBLEMS IN PHYSIOLOGY AND ECOLOGY PROFESSOR CLEMENTS  
Both semesters  
Open to graduate students; other arrangements may be ascertained upon application to the department.  
Opportunity for research work in ecology and physiology is offered along the following lines: Critical investigation of the physical factors of the habitat by means of instruments; studies in plant functions and adaptations; the experimental production of new forms; investigations in the development and structure of vegetation, and especially in migration, competition, etc.
20. PROBLEMS IN CYTOLOGY AND EMBRYOLOGY PROFESSOR CLEMENTS  
Both semesters  
Open to graduate students; other arrangements may be ascertained upon application to the department.  
Research work may be taken along any of the following lines: The minute structure of the cell; microchemistry of the cell; development of sporangia and spores; fecundation; development of the embryo; origin and development of the primary tissues; development of organs; correlation, etc.

## V. Physical Sciences

### CHEMISTRY

The requirement for a major in chemistry is the completion of eighteen credits from courses offered by the department; for a minor, twelve credits. To obtain the recommendation of the department for a teacher's certificate courses 1 and 2, and six additional credits in physical sciences must be completed.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Gen. Chem. ....	1, 2	6†*	All	Course 4
2.	Adv. Gen. Chem. ....	1, 2	6*	All	Course 3
3.	Qual. Anal. ....	1, 2	6	Soph., Jr., Sr.	Course 3
4.	Quant. Anal. (Grav.)...	1	3	Jr., Sr.	See statement
5.	Quant. Anal. (Vol.)...	2	3	Jr., Sr.	None
6.	Organic Chem. ....	2	6	Jr., Sr.	Course 2
7.	Teachers	2	1	Sr.	Course 3
8.	Spec. Inorganic	..	..	Grad.	
9.	Electro-Chem.	..	..	Grad.	
10.	Organic Chem.	..	..	Grad.	
11.	Alkaloids	..	..	Grad.	
12.	Analytical Chem.	..	..	Grad.	

\*Both semesters must be completed before credit is given for the first semester.

†Juniors and seniors are allowed only half credit.

1. GENERAL CHEMISTRY MISS COHEN AND MR. BADGER  
Both semesters  
Six credits (six hours per week)  
Open to all who do not present any entrance credits in chemistry, but juniors and seniors receive only half credit; both semesters must be completed before credit is given for the first semester; the laboratory fee is five dollars per semester.  
Recitation and laboratory work. The course includes a study of the common elements and their compounds, with an introduction to the modern theories of chemistry.

2. **ADVANCED GENERAL CHEMISTRY** PROFESSOR FRANKFORTER, MISS COHEN, AND MR. BADGER  
 Six credits (six hours per week) Both semesters  
 Open to all who have completed a satisfactory course in general chemistry; both semesters must be completed before credit is given for the first semester; the laboratory fee is five dollars per semester.  
 Lectures and laboratory work. The ground covered includes an introduction to physical and technological chemistry with an exhaustive study of the chemical elements.
3. **QUALITATIVE ANALYSIS** ASSISTANT PROFESSOR NICHOLSON AND MR FRARY  
 Six credits (six hours per week) Both semesters  
 Open to those who have completed course 2; the laboratory fee is five dollars per semester.  
 Lectures and laboratory work, with recitations and collateral reading. The course includes the general reactions of the metals and acids with their qualitative separation. Besides this mechanical work, the ionic theory and the law of mass action are discussed with special reference to common qualitative reactions.
4. **QUANTITATIVE ANALYSIS (Gravimetric)** PROFESSOR SIDENER  
 Three credits (six hours per week) First semester  
 Open to those who have completed course 3; the laboratory fee is five dollars.  
 Lectures and laboratory work. The course includes an introduction to quantitative and a beginning of gravimetric analysis.
5. **QUANTITATIVE ANALYSIS (Volumetric)** PROFESSOR SIDENER  
 Three credits (six hours per week) Second semester  
 Open to those who have completed course 4; the laboratory fee is five dollars.  
 Lectures and laboratory work. The course includes an introduction to volumetric analysis with a discussion of standard solutions and the necessary stoichiometric calculations.
6. **ORGANIC CHEMISTRY** PROFESSOR FRANKFORTER, ASSISTANT PROFESSORS DERBY AND HARDING  
 Six credits (six hours per week) Both semesters  
 Open to those who have completed course 3.  
 Lectures and laboratory work. The course includes the aliphatic and aromatic series with a preparation of the more important compounds.
7. **TEACHERS' COURSE** MISS COHEN  
 One credit (one hour per week) Second semester  
 Open to seniors who have completed course 3.  
 This course is specially arranged for students who expect to teach. The course will be largely didactic, with the experimental work necessary to a thorough understanding of the new methods and theories.
8. **SPECIAL INORGANIC CHEMISTRY**  
 Open to graduate students; other arrangements may be ascertained upon application to the department.
9. **ELECTRO-CHEMISTRY**  
 Open to graduate students; other arrangements may be ascertained upon application to the department.
10. **ORGANIC CHEMISTRY**  
 Open to graduate students; other arrangements may be ascertained upon application to the department.
11. **THE ALKALOIDS**  
 Open to graduate students; other arrangements may be ascertained upon application to the department.
12. **ANALYTICAL CHEMISTRY**  
 Open to graduate students; other arrangements may be ascertained upon application to the department.

GEOLOGY AND MINERALOGY

The requirement for a major in geology and mineralogy is the completion of eighteen credits from the courses offered by the department; for a minor, twelve credits. No recommendation for a teacher's certificate in geology and mineralogy is issued, but a minor recommendation to go with similar recommendations in biological or physical sciences may be obtained.

Students who desire to take double courses in geology may do so by electing any of the following combinations: First semester, 1 and 2, 1 and 6, 1 and 10, 6 and 7, 7 and 8, 10 and 12; second semester, 3 and 4, 5 and 6, 7 and 9, 7 and 10. By vote of the faculty, credit will be given to students who satisfactorily complete any of the general field courses in geology offered in the joint announcement of various universities for the summer of 1908.

GEOLOGY

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Gen. Geol.	1	3	Jr., Sr.	None
2.	Ess. Phys. Geog.	1	3	Jr., Sr.	None
3.	Indust. Geog.	2	3	Jr., Sr.	Course 1 or 2
4.	Elements of Meteorology	2	3	Jr., Sr.	Course 1 or 2
5.	Geog. and Geol. of Minn.	2	3	Jr., Sr.	Course 1
6.	Historical Geol.	2	3	Jr., Sr.	Courses 1 and 7, or 8
7.	Elements of Paleontol.	1	3	Jr., Sr.	See statement
8.	Paleontology	1, 2	6	Jr., Sr.	See statement
9.	Paleontologic Practice	1, 2	6	Jr., Sr.	See statement
10.	Elements of Rock Study	1	3	Jr., Sr.	Course 1
11.	Petrography	2	3	Jr., Sr.	Course 10
12.	Applied Geol.	1	3	Jr., Sr.	Course 1
13.	Ore Deposits	1	3	Sr.	Course 1
14.	Special Problems	2	2	Sr.	Geol. 1 and Min. 1
15.	Method and Material of Geog.	1, 2	2	Jr., Sr.	Course 1 or 13
16.	Outline Study of Minerals and Rocks	1, 2	2	Sr.	None
17.	Field and Lab. Practice	1, 2	2	Jr., Sr.	None
18.	Petrographical Problems	1, 2	..	Grad.	See statement
19.	Keweenawan Eruptions	1, 2	..	Grad.	See statement
20.	Glacial Geol.	1, 2	..	Grad.	See statement
21.	Paleontologic Geol.	..	3	Grad.	Courses 1, 6 and 8
22.	Advanced Paleontology	1, 2	6	Grad.	Course 8

MINERALOGY

1.	Elements of Min.	1	3	Soph., Jr., Sr.	None
2.	Descriptive Min.	1, 2	6	Soph., Jr., Sr.	None
3.	Quantitative Min.	2	3	Soph., Jr., Sr.	Course 1
4.	Optical Min.	2	3	Sr.	Course 1
5.	Morphology of Minerals.	1	3	Jr., Sr.	
6.	Physico-Chem. Methods.	2	3	Sr.	
7.	Outline of Min.	1, 2	2	Jr., Sr.	None
8.	Original Problems	1, 2	..	Grad.	See statement
9.	Special Investigations	..	..	Grad.	See statement
10.	Occurrences and Association	1, 2	..	Grad.	See statement

GEOLOGY

1. GENERAL GEOLOGY PROFESSOR HALL  
First semester  
 Three credits (three hours per week)  
 Open to juniors and seniors.  
 Comprises: (1) geodynamics, in which are set forth the phenomena of the atmosphere, water, heat, gravity, and plants and animals as geologic agents; (2) structural geology, wherein stratification, displacement and veining of rock masses are described; (3) physiographic geology, pointing out prominent earth features and inquiring into the causes producing them; (4) an outline of historical geology. Conferences and lectures illustrated by photographs, maps, profiles, and lantern slides.



2. **ESSENTIALS OF PHYSICAL GEOGRAPHY** ASSISTANT PROFESSOR LEHNERTS  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors.  
 Discussion of the principles of earth sculpture and description of the structural features of continents, with special reference to the ethnic movements and commercial activities of mankind.
3. **INDUSTRIAL GEOGRAPHY** ASSISTANT PROFESSOR LEHNERTS  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 1 or 2.  
 The structural features of the North American continent outlined as an introduction. Following this is a study of the types of soil and dominating climatic characters of the several agricultural regions of the continent; a discussion of the geography of industries as they have grown up within the past 100 years and their dependence upon physiographic conditions; a study of local industries effected through excursions and reports. A brief survey of industries in other parts of the world parallels the more detailed study of North America. Throughout the course cause and effect are kept in view.
4. **ELEMENTS OF METEOROLOGY** ASSISTANT PROFESSOR LEHNERTS  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 1 or 2.  
 The general principles of meteorology are treated, embracing the properties and phenomena of the atmosphere, including an explanation of the ordinary observations of pressure and temperature, together with a more extended study of the apparatus and practice of a weather bureau office. This is followed by a study of storms and climatic elements generally. The conditions of climatic changes are studied and the influence of physiographic conditions are discussed. Text-book, lectures, and reference reading.
5. **GEOGRAPHY AND GEOLOGY OF MINNESOTA** PROFESSOR HALL  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 1.  
 (a) The physical geography of the state in its relations to geological history and industrial development. (b) A study of the principles and facts of pre-Cambrian geology as exemplified within the state and the extension of these into general application. (c) The present problems of the state in agriculture, drainage, water power, mining, quarrying, etc., are considered in some detail.
6. **HISTORICAL GEOLOGY** ASSISTANT PROFESSOR SARDESON  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 1, 7 or 8.  
 A course in historical geology, including a study of the more important types of fossils in their geological relations. The history of the North American continent in particular is considered. Lectures and demonstrations.
7. **ELEMENTS OF PALEONTOLOGY** ASSISTANT PROFESSOR SARDESON  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors who have taken or are taking courses in geology or biology.  
 This course includes an elementary study of fossil organisms and a discussion of the sources and interpretation of paleontologic evidence and the relation to it of theories of evolution. Lectures and demonstrations. Occasional excursions will be arranged.
8. **PALEONTOLOGY** ASSISTANT PROFESSOR SARDESON  
 Six credits (three hours per week) Both semesters  
 Open to juniors and seniors who have taken or are taking courses in geology or biology.  
 The chief types of organisms as represented by fossils will be studied successively. The leading fossils and their phylogenetic history will be treated with considerable detail. Lectures and demonstrations.
9. **PALEONTOLOGIC PRACTICE** ASSISTANT PROFESSOR SARDESON  
 Six credits (three hours per week) Both semesters  
 Open to juniors and seniors who have completed course 8; may be taken by students pursuing courses in geology and biology in conjunction with course 7.  
 The collection, preparation, and study of materials, examination of collections, and reading will be carried on with a view to more complete knowledge of the groups of fossil organisms as presented in course 7.

10. **ELEMENTS OF ROCK STUDY** MR. GROUT  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors who have completed course 1.  
 The structures, textures, and mineral and chemical composition of rocks. A practical study of rock types with laboratory and field practice. The origin, occurrence, variation, and alteration of rocks are considered with a view to their accurate description. An introduction to the use of the microscope concludes the course. Kemp's *Handbook of Rocks*, reference reading, and practice.
11. **PETROGRAPHY** MR. GROUT  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 10.  
 The identification of rocks through the optical study of the component minerals; rock structures as seen under the microscope; alterations of rocks, and stratigraphic relations are studied. Preparation of material for study, its collection in the field, and an examination of some group of Minnesota crystalline rocks are features of the course. Laboratory, lectures, reference reading, and field work.
12. **APPLIED GEOLOGY** MR. GROUT  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors who have completed course 1.  
 An outline of the economic relations of geology. The course comprises a discussion of the nature and distribution of non-metallic materials of economic value, including coal, mineral oil, and natural gas; phosphates and other natural fertilizers; soils; the geologic conditions of water supply; abrasive and ficile materials; natural and artificial building stones; mortars and cements; road-making materials; followed by a brief summary of the nature and distribution of ore deposits. Text-book and reference reading.
13. **ORE DEPOSITS** PROFESSOR HALL  
 Three credits (three hours per week) First semester  
 Open to seniors who have completed geology 1 and mineralogy 1.  
 History of mineral discovery and development in the Americas; a discussion of the origin and distribution of ore deposits, embracing the chemical processes involved in their formation and subsequent alterations; a description of the geology and mineralogy of ore bodies, particularly those yielding gold, silver, copper, iron, lead, and zinc.
14. **SPECIAL PROBLEMS** PROFESSOR HALL  
 Two credits (two hours per week) Second semester  
 Open to seniors who have completed course 1 or 13.  
 The investigation by individual students of particular problems, involving the field work of an investigation of some particular formation and the laboratory investigation and reading incident to the study of the material collected. The methods of systematically recording and interpreting geological and mineralogical data as observed in the field, the keeping of note-books, and the preparation of geological maps, profiles, and sections will be taught.
15. **THE METHOD AND MATERIAL OF GEOGRAPHY** ASSISTANT PROFESSOR LEHNERTS  
 Two credits (one hour per week) Both semesters  
 Open to juniors and seniors; designed specially for teachers.  
 The earth as an object of study in the grades and in the high school; guiding principles; the course of study; text-books and their use; practical laboratory work; excursions; collection and preparation of illustrative materials; map drawing, chalk modeling, and relief work; organization of geographical subject matter for class-room instruction; and the method of the recitation.
16. **OUTLINE STUDY OF MINERALS AND ROCKS** PROFESSOR HALL AND MR. GROUT  
 Two credits (one hour per week) Both semesters  
 Open to seniors; designed specially for teachers.  
 This course treats of the leading physiographic facts and principles; the macroscopic characters of the common rocks and a discussion of the general principles of petrographical and stratigraphical geology. Lectures and reading, supplemented by excursions and practical problems.

17. FIELD AND LABORATORY PRACTICE PROFESSOR HALL AND ASSISTANT PROFESSOR LEHNERTS  
 Two credits (one hour per week) Both semesters  
 Open to juniors and seniors; designed specially for teachers.  
 A study of the geography and geology of Minneapolis, St. Paul, and adjacent territory, embracing the salient physiographic, stratigraphic, and economic features of this interesting region. Relief, topography, and map work will receive attention in the laboratory as well as in the field. For teachers and others who wish to learn the methods of field geography and geology.
18. PETROGRAPHICAL PROBLEMS PROFESSOR HALL AND MR. GROUT  
 Both semesters  
 Open to graduate students; other arrangements may be ascertained upon application to the department.  
 A study of rocks as geological bodies; the genesis of rocks and their chemical and dynamical alterations, illustrated in the gneisses and gabbro schists of the Minnesota river valley or the granites and basic eruptives of central Minnesota.
19. THE KEWEENAWAN ERUPTIVES PROFESSOR HALL AND MR. GROUT  
 Both semesters  
 Open to graduate students; other arrangements may be ascertained upon application to the department.  
 This course treats first, eastern and northwestern Minnesota, their stratigraphic relations, textural and structural characters; second, other problem in the Keweenaw to be selected on consultation.
20. GLACIAL GEOLOGY PROFESSOR HALL  
 Both semesters  
 Open to graduate students; other arrangements may be ascertained upon application to the department.  
 The local features of glacial phenomena. Field work will form the special feature of this course, embracing the formations at Minneapolis or some area accessible from it, as a survey of the glacial lakes in the vicinity, the gorge of the Falls of Saint Anthony, the Dalles of the Saint Croix, and other problems. The special field to be selected on consultation.
21. PALEONTOLOGIC GEOLOGY ASSISTANT PROFESSOR SARDESON  
 Three credits (three hours per week)  
 Open to graduate students who have completed courses 1, 6, and 8.  
 A study of the Ordovician fauna with special illustrations from the Ordovician of Minnesota and neighboring states.
22. ADVANCED PALEONTOLOGY ASSISTANT PROFESSOR SARDESON  
 Six credits (three hours per week) Both semesters  
 Open to graduate students who have completed course 8.  
 The study of a selected group of fossils; a practical acquaintance with the forms and literature of the group is sought. The class work is to be supplemented by a thesis.

## MINERALOGY

1. ELEMENTS OF MINERALOGY PROFESSOR HALL AND MR. GROUT  
 Three credits (six hours per week) First semester  
 Open to sophomores, juniors, and seniors; the laboratory fee is three dollars.  
 (a) The morphology of minerals; the physical and chemical characters of minerals, with demonstrations; a study of the native elements and of economic minerals; the basis of classification. (b) Laboratory work; this consists of practice in the recognition of crystal forms, tests illustrating the range of minerals, and the application of chemical and blowpipe analysis to the identification of species.
2. DESCRIPTIVE MINERALOGY PROFESSOR HALL AND MR. GROUT  
 Three credits (six hours per week) Second semester  
 Open to sophomores, juniors, and seniors; the laboratory fee is three dollars.  
 (a) A study of the rock-forming minerals; the projection and construction of figures of crystals; the calculation of crystal-axes. Theses. (b) Laboratory work; includes quantitative blowpipe analysis, crystal measurement, the sight determination of minerals, and reference reading.

3. QUANTITATIVE MINERALOGY PROFESSOR APPLEBY AND ASSISTANT PROFESSOR CHRISTIANSON  
 (In the School of Mines)  
 Three credits (six hours per week) Second semester  
 Open to sophomores, juniors, and seniors, who have completed course 1; the laboratory fee is five dollars.  
 Determination of the value of ores. Lectures, recitations, and laboratory work. Identical with metallurgy 1 in the School of Mines.
4. OPTICAL MINERALOGY MR. GROUT  
 Three credits (six hours per week) Second semester  
 Open to juniors and seniors who have completed course 1.  
 A study of the microscopic structure of crystals and crystal grains. An application of methods used in determining minerals by their optical properties; goniometric and stauroscopic practice, embracing the elements of lithology. Lectures and laboratory work.
5. THE MORPHOLOGY OF MINERALS MR. GROUT  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors.  
 A study of crystallography, embracing projection and the geometric relations of crystal planes. The identification of minerals from crystal measurement and mathematical calculation. Crystal nomenclature.
6. PHYSICO-CHEMICAL METHODS WITH THEIR APPLICATIONS Second semester  
 Three credits (three hours per week)  
 Open to seniors.  
 The method of micro-chemical analysis described and demonstrated; the leading elements found in minerals are determined through the aid of crystalline precipitates of known compounds. Special attention is given to the study and determination of the rock-making minerals.
7. AN OUTLINE OF MINERALOGY MR. GROUT  
 Two credits (one hour per week) Both semesters  
 Open to juniors and seniors.  
 A study of methods of identification of minerals, with their applications. Conferences, reading, and demonstrations.
8. ORIGINAL PROBLEMS IN MORPHOLOGICAL AND PHYSICAL MINERALOGY PROFESSOR HALL AND MR. GROUT  
 Both semesters  
 Open to graduate students; other arrangements may be ascertained upon application to the department.  
 Investigations in mathematical crystallography and its application to crystal development and structure. Further applications than are made in course 4 of the optical characters of minerals in identification of mineral species.
9. SPECIAL INVESTIGATIONS IN CHEMICAL AND PHYSICAL MINERALOGY MR. GROUT  
 Open to graduate students; other arrangements may be ascertained upon application to the department.  
 Special attention is here given to tenacity and electrical properties and their relation to crystal form, cleavage, and fracture. Dimorphous compounds are investigated and the conditions governing their formation studied. The physical properties of artificial mineral compounds are compared with those of natural minerals.
10. MINERAL OCCURRENCES AND ASSOCIATION PROFESSOR HALL AND MR. GROUT  
 Both semesters  
 Open to graduate students; other arrangements may be ascertained upon application to the department.  
 A discussion of genetic relationships. Field work in connection with the different phases of the particular problem in hand.

## PHYSICS

The requirement for a major in physics is the completion of eighteen credits from the courses offered by the department; for a minor, twelve credits. For distinction in physics the special requirements of the department are the completion of courses 5, 6, and 7, and three other courses selected from those open to juniors and seniors, together with mathematics 6 and 7;

work in the department must be pursued during the senior year. To obtain the recommendation of the department for a teacher's certificate courses 1 to 4 inclusive, 20, four other credits in physics, and six credits in chemistry, or courses 5, 6, 20, and six credits in chemistry, must be completed.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Gen. Physics .....	1	3	Soph., Jr., Sr.	Math. 4
2.	Gen. Lab. Practice.....	1	1	Soph., Jr., Sr.	See statement
3.	Gen. Physics .....	2	3	Soph., Jr., Sr.	Course 1
4.	Gen. Lab. Practice.....	2	1	Soph., Jr., Sr.	See statement
5.	Adv. Gen. Physics.....	1	6	Soph., Jr., Sr.	Math. 4
6.	Adv. Gen. Physics.....	2	6	Soph., Jr., Sr.	Course 5
7.	Electrical Measurements	1	3	Jr., Sr.	Courses 5 and 6
8.	Physical Manip. and Lab. Technique .....	2	3	Jr., Sr.	Courses 5 and 6
9.	Dynamics .....	1	3	Jr., Sr.	Courses 5 and 6, and Math. 6 and 7
10.	Adv. Physical Measurements .....	1	3	Sr. Grad.	Courses 5 and 6
11.	Adv. Physical Measurements .....	1	6	Sr. Grad.	Courses 5 and 6
12.	Theory of Light .....	2	3	Grad.	Courses 5 and 6, and Math. 6 and 7
13.	Elect. Meas. of Precision	2	3	Sr.	Course 7
14.	Radioactivity .....	1, 2	6	Grad.	Courses 5 and 6
15.	Adv. Phys. Measurements .....	2	3	Grad.	Courses 5 and 6
16.	Adv. Phys. Measurements .....	2	6	Sr. Grad.	Courses 5 and 6
17.	Kinetic Theory of Gases	2	3	Grad.	Courses 5 and 6 Math. 6 and 7
18.	Discharge of Elect. thru Gases .....	1	3	Grad.	Courses 5 and 6, and Math. 6 and 7
19.	Math Theory of Elect. and Magnetism .....	2	3	Grad.	Courses 5 and 6, and Math. 6 and 7
20.	Teachers' Course .....	2	1	Sr.	Courses 1-4 incl., or 5 and 6

- GENERAL PHYSICS** PROFESSOR JOHN ZELFNY  
 Three credits (three hours per week) First semester  
 Open to sophomores, juniors, and seniors; may be taken separately or in conjunction with course 2.  
 Mechanics of solids and fluids, heat and sound. This is the first part of a general course in physics. The treatment is experimental rather than mathematical. The course is designed to give the student a general knowledge of the fundamental principles of the subject and will be found specially useful to those pursuing other sciences. There will be one experimental lecture and two recitations each week.
- GENERAL LABORATORY PRACTICE** MR. KOVARIK  
 One credit (two hours per week) First semester  
 Open to sophomores, juniors, and seniors, who have completed or are taking course 1; the laboratory fee is three dollars.  
 Physical measurements in the mechanics of solids and fluids, and in heat and sound, giving the student a knowledge of experimental methods.
- GENERAL PHYSICS** PROFESSOR JOHN ZELENY  
 Three credits (three hours per week) Second semester  
 Open to sophomores, juniors, and seniors, who have completed course 1; may be taken separately or in conjunction with course 4.  
 Light, electricity, and magnetism. This is the second part of a general course in physics. The treatment is experimental and the fundamental principles of the subjects, including those of radioactivity, ionization, X radiation, and the electrical constitution of matter, are discussed and illustrated. There will be one experimental lecture and two recitations each week.

4. **GENERAL LABORATORY PRACTICE** Mr. KOVARIK  
One credit (two hours per week) Second semester  
Open to sophomores, juniors, and seniors, who have completed or are taking course 2; the laboratory fee is three dollars.  
Physical measurements in light, electricity, and magnetism, giving the student a knowledge of experimental methods.
5. **ADVANCED GENERAL PHYSICS** PROFESSOR JONES, ASSISTANT  
PROFESSORS ANTHONY ZELENY, AND ERIKSON  
Six credits (seven hours per week) First semester  
Open to sophomores, juniors, and seniors, who have completed mathematics 4 (trigonometry); the laboratory fee is three dollars; adapted to those students who expect to specialize in physics, to teach the science, or to enter upon a technical course.  
Mechanics of solids and fluids, the properties of matter, heat, and sound. This course is intended to give a thorough training in general physics and includes the solution of numerous problems. There will be two lectures, three recitations, and one laboratory (double) period each week.
6. **ADVANCED GENERAL PHYSICS** PROFESSOR JONES, ASSISTANT  
PROFESSORS ANTHONY ZELENY, AND ERIKSON  
Six credits (seven hours per week) Second semester  
Open to sophomores, juniors, and seniors, who have completed course 5; the laboratory fee is three dollars; intended for those students who wish to specialize in the science, to teach the subject, or to enter upon a technical course.  
Light, electricity, and magnetism. This course completes the work in general physics. There will be two experimental lectures, three recitations, and one (double) laboratory period each week.
7. **ELECTRICAL MEASUREMENTS** ASSISTANT PROFESSOR ANTHONY ZELENY  
Three credits (five hours per week) First semester  
Open to juniors and seniors who have completed courses 5 and 6; the laboratory fee is five dollars.  
The course aims to give a thorough practical knowledge of electrical instruments and the fundamental electrical measurements. The system of electrical units is developed theoretically and experimentally. There will be two (double) laboratory periods each week, the class being divided into sections for that purpose.
8. **PHYSICAL MANIPULATION AND LABORATORY TECHNIQUE** PROFESSOR JOHN ZELENY  
Three credits (six hours per week) Second semester  
Open to juniors and seniors who have completed courses 5 and 6; the laboratory fee is three dollars; especially valuable to those who intend to teach the science or to specialize in it.  
The object of this course is to give the student a knowledge of the essential physical manipulations (such as the cleaning and distilling of mercury, soldering, glass blowing, glass cutting, glass grinding, making of quartz fibers, etc.), and to acquaint him with the use of some instruments of precision (such as the cathetometer, the dividing engine, the balance, mercury air pumps and gauges, etc.)
9. **DYNAMICS** PROFESSOR JONES  
Three credits (three hours per week) First semester  
Open to juniors and seniors who have completed courses 5 and 6, and mathematics 6 and 7 (calculus).  
A discussion of some problems in dynamics which are important in the study of advanced physics.
10. **ADVANCED PHYSICAL MEASUREMENTS** PROFESSOR JOHN ZELENY  
Three credits (six hours per week) First semester  
Open to seniors and graduate students who have completed courses 5 and 6; the laboratory fee is three dollars.  
The course consists of individual work in the laboratory on topics specially chosen to serve best the needs and capacity of each student. The course is intended to introduce the student to some of the more intricate physical measurements and to teach him self-reliance.

11. **ADVANCED PHYSICAL MEASUREMENTS** PROFESSOR JOHN ZELENY  
Six credits (twelve hours per week) First semester  
Open to seniors and graduate students who have completed  
courses 5 and 6; the laboratory fee is five dollars.  
The same as course 10 except that twice as much time is devoted to the  
subject.
12. **THE THEORY OF LIGHT** PROFESSOR JONES  
Three credits (three hours per week) Second semester  
Open to graduate students who have completed courses 5 and 6,  
and mathematics 6 and 7 (calculus).  
A study of the important optical phenomena. Preston's *Theory of Light*  
is used as a text.
13. **ELECTRICAL MEASUREMENTS OF PRECISION** ASSISTANT PROFESSOR  
ANTHONY ZELENY  
Three credits (six hours per week) Second semester  
Open to seniors who have completed course 7; the laboratory fee  
is three dollars; intended for electrical engineering and scien-  
tific students who desire to specialize in electrical work of the  
highest precision.  
The course is chiefly experimental and includes the following: making  
of standard cells; calibration of Wheatstone box bridge; adjustment of  
resistances, ammeters, and voltmeters; use of the potentiometer in measure-  
ments of highest precision; experimental problems involving capacity, in-  
ductance, and magnetic flux; measurement of temperatures by electrical  
methods.
14. **RADIO-ACTIVITY** MR. KOVARIK  
Six credits (three hours per week) Both semesters  
Open to graduate students who have completed courses 5 and 6.  
The course consists entirely of lectures, experimental and descriptive.  
The various theories and the methods of investigation are fully considered.
15. **ADVANCED PHYSICAL MEASUREMENTS** PROFESSOR JOHN ZELENY  
Three credits (six hours per week) Second semester  
Open to seniors and graduate students who have completed  
courses 5 and 6; the laboratory fee is three dollars.  
The course is the experimental study of some physical phenomena, the  
nature or laws of which are not yet understood.
16. **ADVANCED PHYSICAL MEASUREMENTS** PROFESSOR JOHN ZELENY  
Six credits (twelve hours per week) Second semester  
Open to seniors and graduate students who have completed  
courses 5 and 6; the laboratory fee is five dollars.  
The same as course 5, except that twice as much time is devoted to the  
subject.
17. **THE KINETIC THEORY OF GASES** ASSISTANT PROFESSOR ERIKSON  
Three credits (three hours per week) Second semester  
Open to graduate students who have completed courses 5 and 6,  
and mathematics 6 and 7 (calculus).  
This course is a study of Meyer's *Kinetic Theory of Gases*.
18. **DISCHARGE OF ELECTRICITY THROUGH GASES** PROFESSOR JOHN ZELENY  
Three credits (three hours per week) First semester  
Open to graduate students who have completed courses 5 and 6,  
and mathematics 6 and 7 (calculus).  
The course consists of lectures, with experimental illustrations, on the  
conduction of electricity through gases. A study is made of the conductivity  
imparted to gases by the action of X rays, ultra-violet light, radioactive  
substances, and glowing metals; of the discharge of electricity from points  
and in vacuum tubes; and of the spark and arc discharges. The methods of  
measuring the velocity of the ions and the charges carried by them are  
studied in detail.
19. **THE MATHEMATICAL THEORY OF ELECTRICITY AND MAGNETISM**  
PROFESSOR JOHN ZELENY  
Three credits (three hours per week) Second semester  
Open to graduate students who have completed courses 5 and 6,  
and mathematics 6 and 7 (calculus).  
This course consists in the study of J. J. Thomson's *Elements of the  
Mathematical Theory of Electricity and Magnetism*.

20. **TEACHERS' COURSE** PROFESSOR JONES  
 One credit (one hour per week) Second semester  
 Open to seniors who have completed courses 1 to 4 or courses  
 5 and 6.

No subject matter is discussed, but methods of presentation and the selection of lecture and laboratory experiments are considered. The work is conducted by the students under the direct supervision of the instructor.

## VI. Pure and Applied Mathematics

### MATHEMATICS

The requirement for a minor in mathematics is the completion of courses 3, 4, 5 and 6; for a major, the same courses and in addition course 7 and three other credits. For distinction in mathematics the special requirement of the department is one year of pure mathematics in addition to the requirements for a major. To obtain the recommendation of the department for a teacher's certificate an average of at least *good* must be obtained in courses 3, 4, 5, 6, and 8 or 9.

### MATHEMATICS

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Higher Alg. Part I. ....	1	5	Fresh.	See statement
2.	Solid Geom. ....	2	5	Fresh.	See statement
3.	Higher Alg. Part II. ...	1	3	Fresh.	See statement
4.	Trigonometry ....	2	3	Fresh.	See statement
5.	Analyt. Geom. ....	1	3	Soph., Jr., Sr.	Courses 3 and 4
6.	Differential Calculus...	2	3	Soph., Jr., Sr.	Courses 3, 4 and 5
7.	Integral Calculus ....	1	3	Jr., Sr.	Courses 3, 4, 5 and 6
8.	Adv. Algebra ....	1	3	Soph., Jr., Sr.	Courses 3 and 4
9.	Theory of Equations ...	2	3	Soph., Jr., Sr.	Courses 3, 4 and 8
10.	Differential Equations..	2	3	Jr., Sr.	Courses 3-7 incl.
11.	Adv. Plane Anal. Geom.	1	3	Jr., Sr.	Courses 3-6 incl.
12.	Solid Anal. Geom. ....	2	3	Jr., Sr.	Courses 3-8 incl.
13.	Math. Pedagogy ....	2	1		Courses 3 and 4
14.	Method of Least Squares	2	2	Jr., Sr.	Courses 3-7 incl.
15.	Descriptive Geom. ....	1, 2	4*	Jr., Sr.	Courses 3, 4 and 5
16.	Adv. Diff. and Int. Cal..	1, 2	4	Grad.	Courses 3 to 7 incl.
17.	Theory of Curves and Surfaces .....	1, 2	4	Grad.	Courses 3-7 incl. and 10 and 12
18.	Galois Theory of Equa- tions .....	1, 2	4	Grad.	Courses 3-9 incl.
19.	Functions of a Complex Variable .....	1, 2	4	Grad.	Courses 1-10 incl.
20.	Projective Geom. ....	1, 2	4	Grad.	Courses 3-7 incl., and 11 and 12
21.	Elliptic Integrals .....	1, 2	4	Grad.	Courses 3-7 incl., and 10

### MECHANICS

1. Applied Mechanics ..... 1, 2 10 Sr. Math. 3-7 incl.

\*Both semesters must be completed before credit is given for the first semester.

1. **FIRST PART OF HIGHER ALGEBRA** MESSRS MANCHESTER AND SHUMWAY  
 Five credits (five hours per week) First semester  
 Required of freshmen who do not have an entrance credit in  
 the subject; must be followed by course 3; not open to those  
 who have taken the subject in the preparatory school; not  
 credited toward a minor in mathematics.

The fundamental rules, factoring, highest common divisor, lowest common multiple, fractions, involution, evolution, surds, imaginaries, simple equations



with one, two or more unknown quantities, ratio, proportion, problems.

The examples and problems are more difficult than those under the same subjects in elementary algebra and demonstrations are an important part of the work.

2. **SOLID GEOMETRY** MESSRS. MANCHESTER AND SHUMWAY  
Five credits (five hours per week) Second semester  
Required of freshmen who have no entrance credit in the subject;  
not open to those who have taken the subject in the prepara-  
tory school; not credited toward a minor in mathematics; not  
to be offered after 1907-8.  
Demonstrations, exercises, and problems.
3. **SECOND PART OF HIGHER ALGEBRA** PROFESSOR BAUER, ASSISTANT  
PROFESSOR BUSSEY, MESSRS. DALAKER, MANCHESTER AND SHUMWAY  
Three credits (three hours per week) First semester  
Open to those who have completed course 1; required of all  
freshmen.  
Variation, quadratic equations, special higher equations, simultaneous  
equations of the second degree, maxima and minima of algebraic functions,  
differentiation of algebraic functions, development of functions, logarithms,  
theory of equations and solution of numerical higher equations.
4. **TRIGONOMETRY** PROFESSOR BAUER, ASSISTANT PROFESSOR BUSSEY,  
MESSRS. DALAKER, MANCHESTER, AND SHUMWAY  
Three credits (three hours per week) Second semester  
Open to those who have completed courses 1 and 3, and required  
of freshmen who take course 3.  
Text, tables, and numerous problems.
5. **ANALYTICAL GEOMETRY** PROFESSOR DOWNEY, ASSISTANT PROFESSOR  
BUSSEY, MESSRS. DALAKER AND MANCHESTER  
Three credits (three hours per week) First semester  
Open to those who have completed courses 3 and 4; courses 8 and  
9 can be taken in conjunction with this course and course 6,  
and this is recommended to students specializing in mathe-  
matics.  
Rectilinear and polar co-ordinates, producing equations of loci whose law  
of development is known, constructing and discussing such equations, trans-  
formation of co-ordinates, properties of the straight line, the conic sections  
and higher plane curves by means of their equations.
6. **DIFFERENTIAL CALCULUS** PROFESSOR DOWNEY, ASSISTANT PROFESSOR  
BUSSEY, MESSRS. DALAKER AND MANCHESTER  
Three credits (three hours per week) Second semester  
Open to those who have completed courses 3 to 5 inclusive.  
Differentiation of algebraic and transcendental functions, development of  
functions, indeterminate forms, maxima and minima, treatment of tangents,  
subtangents, normals, subnormals, asymptotes, direction and rate of curvature,  
evolutes, envelopes, and singular points.
7. **INTEGRAL CALCULUS** PROFESSOR DOWNEY  
Three credits (three hours per week) First semester  
Open to those who have completed courses 3 to 6 inclusive.  
Integration of the various forms, integration as summation, rectification  
of curves, quadrature of plane and curved surfaces, cubature of volumes,  
equations of loci by means of the calculus, successive integration with ap-  
plications to moment of inertia, areas and volume.
8. **ADVANCED COURSE IN ALGEBRA** MESSRS. DALAKER AND SHUMWAY  
Three credits (three hours per week) First semester  
Open to those who have completed courses 3 and 4; may be taken  
in conjunction with course 5.  
Indeterminate equations, Sturm's theorem and method, recurring equa-  
tions, series with applications to interpolation and piles of spheres, permuta-  
tions and combinations, determinants.
9. **THEORY OF EQUATIONS** MR. SHUMWAY  
Three credits (three hours per week) Second semester  
Open to those who have completed courses 3, 4, and 8; may be  
taken in conjunction with course 6.  
Based on the texts of Cojori and Burnside and Pantan.

10. DIFFERENTIAL EQUATIONS PROFESSOR DOWNEY  
Three credits (three hours per week) Second semester  
Open to those who have completed courses 3 to 7 inclusive.  
Text and lectures.
11. ADVANCED COURSE IN PLANE ANALYTICAL GEOMETRY PROFESSOR BAUER  
Three credits (three hours per week) First semester  
Open to those who have completed courses 3 to 6 inclusive.  
Supplementary to course 5, treating more fully some of the subjects of that course and taking up additional subjects.
12. SOLID ANALYTICAL GEOMETRY PROFESSOR BAUER  
Three credits (three hours per week) Second semester  
Open to those who have completed courses 3 to 8 inclusive.  
A lecture course. Elementary theorems of projection, co-ordinates, the plane, the line in space, quadric surfaces, transformation of co-ordinates, tangents, poles and polars, the general equation of the second degree. Numerous examples are assigned to illustrate the theory.
13. MATHEMATICAL PEDAGOGY PROFESSOR BAUER  
One credit (one hour per week) Second semester  
Open to those who have completed courses 3 and 4.  
A lecture course, in which special attention is paid to the fundamental principles of algebra and geometry.
14. METHOD OF LEAST SQUARES PROFESSOR LEAVENWORTH  
Two credits (two hours per week) Second semester  
Open to those who have completed courses 3 to 7 inclusive.  
A study of the combination and adjustment of observations and the discussion of their precision as applied especially to engineering, physics, and astronomy.
15. DESCRIPTIVE GEOMETRY PROFESSOR KIRCHNER  
(In the College of Engineering)  
Four credits (two hours per week) Both semesters  
Open to those who have completed courses 3 to 5 inclusive;  
both semesters must be completed before credit is given for the first semester.  
Problems relating to points, lines, planes, solids, surfaces of revolution and warped surfaces; orthographic, isometric, horizontal, oblique, and perspective projections; shades and shadows. Recitations, lectures, and practice.
16. ADVANCED DIFFERENTIAL AND INTEGRAL CALCULUS PROFESSOR DOWNEY  
Four credits (two hours per week) Both semesters  
Open to graduate students who have completed courses 3 to 7 inclusive.  
This course goes farther into some of the subjects treated in courses 6 and 7 and takes up some important subjects not included in those courses.
17. THEORY OF CURVES AND SURFACES PROFESSOR BAUER  
Four credits (two hours per week) Both semesters  
Open to graduate students who have completed courses 3 to 7 inclusive and 10 and 12.  
This is a course in differential geometry. The fundamental equations of the theory of curves and of surfaces will be developed. The work will be based upon Scheffer's *Theorie der Curven* and *Flaechen*.
18. THE GALOIS THEORY OF EQUATIONS ASSISTANT PROFESSOR BUSSEY  
Four credits (two hours per week) Both semesters  
Open to graduate students who have completed courses 3 to 9 inclusive.
19. THEORY OF FUNCTIONS OF A COMPLEX VARIABLE DR. MANCHESTER  
OR MR. DALAKER  
Four credits (two hours per week) Both semesters  
Open to graduate students who have completed courses 1 to 10 inclusive.  
Lectures, readings, and problems.
20. PROJECTIVE GEOMETRY ASSISTANT PROFESSOR BUSSEY  
Four credits (two hours per week) Both semesters  
Open to graduate students who have completed courses 3 to 7 inclusive and courses 11 and 12.

21. **ELLIPTIC INTEGRALS** ASSISTANT PROFESSOR BROOKE  
 (In the College of Engineering)  
 Four credits (two hours per week) Both semesters  
 Open to graduate students who have completed courses 3 to 7  
 inclusive and course 10.

## MECHANICS

1. **APPLIED MECHANICS** PROFESSOR EDDY  
 (In the College of Engineering)  
 Ten credits (five hours per week) Both semesters  
 Open to seniors who have completed mathematics 3 to 7 inclusive.  
 Recitations and lectures. Statics, dynamics, strength and elastic prop-  
 erties of the ordinary materials of construction, hydro-mechanics.

## ASTRONOMY

### ASTRONOMICAL OBSERVATORY

The students' astronomical observatory contains a ten and one-half-inch refracting telescope furnished with a third lens for converting it into a photographic telescope; a filar micrometer; a spectroscope by Brashear; a students' meridian circle and zenith telescope; a Repsold photographic measuring machine, a chronograph, and astronomical clocks.

The requirements for a major in astronomy are the completion of courses 1 and 2 (the latter as a six-hour course); for a minor, courses 1 and 2 (the latter as a three-hour course). For distinction in astronomy the special requirements of the department are the completion of courses 1 (taking in addition laboratory work with instruments three hours per week), 2 (as a six-hour course), and six credits in physics.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Gen. Astronomy	1, 2	6	Soph., Jr., Sr.	Math. 4
2.	Practical Astronomy	1, 2	6 or 12	Jr., Sr.	Course 1 and Math. 5, 6 and 7
3.	Adv. Practical Astronomy	1, 2	6	Grad.	Courses 1 and 2
4.	Celestial Mechanics	1, 2	6	Grad.	Courses 1 and 2
5.	Astrophotography	1, 2	6	Grad.	Courses 1 and 2

1. **GENERAL ASTRONOMY** PROFESSOR LEAVENWORTH  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed mathematics 4 (trigonometry).

A study of the general principles of astronomy illustrated by lantern slides and telescopic observations.

2. **PRACTICAL ASTRONOMY** PROFESSOR LEAVENWORTH  
 Six or twelve credits (three or six hours per week) Both semesters  
 Open to juniors and seniors who have completed course 1 and  
 mathematics 5, 6, and 7.

Theory and use of astronomical instruments in determining time, latitude, longitude, positions of heavenly bodies; astronomical photography, with measures of plates; study of the method of least squares.

3. **ADVANCED PRACTICAL ASTRONOMY** PROFESSOR LEAVENWORTH  
 Six credits (three hours per week) Both semesters  
 Open to graduate students who have completed courses 1 and 2.

4. **CELESTIAL MECHANICS** PROFESSOR LEAVENWORTH  
 Six credits (three hours per week) Both semesters  
 Open to graduate students who have completed courses 1 and 2.

5. **ASTROPHOTOGRAPHY** PROFESSOR LEAVENWORTH  
 Both semesters

Open to graduate students who have completed courses 1 and 2.  
 Photography of the heavenly bodies, measurement of plates, deter-  
 mination of positions, parallax, etc.

## VII. Philosophy, Education and Sociology

### PHILOSOPHY AND PSYCHOLOGY

The requirement for a major in philosophy and psychology is the completion of eighteen credits from courses offered by the department; for a minor, twelve credits. For distinction in philosophy and psychology the special requirement of the department is the completion of twenty-four credits from the courses offered by the department, of which at least three must be intensive courses.

The courses offered by the department fall into three groups:

1. *Introductory courses*: 1 and 2. Course 1 is required for all advanced work in psychology, and either 1 or 2 for all work in philosophy, but students are advised to take both.
2. *General courses*: 3 to 12 inclusive.
3. *Advanced intensive courses*: 13 to 23 inclusive. These courses are open only to graduates and properly qualified seniors. All will not be offered each year but a selection will be made to meet the qualifications of the students presenting themselves.

The courses may also be grouped according to their purpose as follows:

1. Of special value for education: 1, 2, 3, and 11.
2. Fundamental courses in psychology: 1, 3, 4, 5, 8 and 14.
3. Fundamental courses in philosophy: 1, 2, 9, 10, 11 and 13.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Introductory Psych. ....	1	3	Soph., Jr., Sr.	None
2.	Logic .....	1 or 2	3	Soph., Jr., Sr.	None
3.	Educational Psych. ....	2	3	Soph., Jr., Sr.	Course 1
4.	Exp. Psych.: The Senses	1	3	Jr., Sr.	Course 1
5.	Exp. Psych.: Higher Mental Processes ....	2	3	Jr., Sr.	Courses 1 and 4
7.	Psychological Interpretation .....	1	3	Jr., Sr.	Course 1
8.	Psychological Principles	2	3	Jr., Sr.	Courses 1 and 2
9.	Ancient and Med. Philos	1	3	Jr., Sr.	Course 1 or 2
10.	Modern Philosophy ....	2	3	Jr., Sr.	Course 1 or 2
11.	Principles of Ethics ....	1	3	Jr., Sr.	Course 1 or 2
12.	Phil. of Religion .....	2	3	Jr., Sr.	Course 1 or 2
13.	Logic of Science .....	2	3	Jr., Sr.	Course 2
14.	Psychological Problems.	1, 2	..	Sr. Grad.	Courses 1, 4 and 5
15.	Research in Psych. ....	1, 2	6†	Grad.	Course 14
*16.	Descartes, Spinoza, Leibnitz .....	1, 2	6†	Sr. Grad.	Courses 9 and 10
*17.	Kant .....	1, 2	6†	Sr. Grad.	Courses 9 and 10
*18.	Hume .....	1, 2	6†	Sr. Grad.	Courses 9 and 10
*19.	Herbert Spencer .....	2	3	Sr. Grad.	Courses 1 and 2
*20.	Metaphysics .....	1, 2	6†	Sr. Grad.	Courses 9 and 10, or 13
*21.	Systematic Ethics ....	1, 2	6†	Sr. Grad.	Courses 9, 10 and 11
*22.	Hist. of Ethics .....	1, 2	6†	Sr. Grad.	Courses 9, 10 and 11
*23.	German Idealism ....	1, 2	6†	Grad.	Courses 9, 10 and 17

†Both semesters must be completed before credit is given for the first semester.

\*Open to students only upon approval of the department.

#### INTRODUCTORY COURSES

1. **INTRODUCTORY PSYCHOLOGY** PROFESSOR WILDE, ASSISTANT PROFESSORS MINER AND SWENSON, AND MR. HAYNES  
Three credits (three hours per week) First semester

Open to sophomores, juniors, and seniors; required for all advanced work in psychology and for the teacher's certificate; it also serves as an introduction to the courses in philosophy.

The purpose of the course is to acquaint the student with the general characteristics and laws of mental life and with the aims and methods of modern psychology. In connection with the work several lectures and

demonstrations on the nature of the nervous system will be given in the neurological laboratory of the College of Medicine and Surgery. Text-book, essays, and discussions.

2. LOGIC PROFESSOR WILDE, ASSISTANT PROFESSOR SWENSON,  
AND MR. HAYNES  
Three credits (three hours per week) Repeated each semester  
Open to sophomores, juniors, and seniors.  
A study of the nature, knowledge, and laws of reasoning, and the principles and methods of scientific proof. The aim of the course is to produce accuracy of thought as well as to familiarize the student with the logical grounds of modern science. Text-book, lectures, and reports.

#### GENERAL COURSES

3. EDUCATIONAL PSYCHOLOGY ASSISTANT PROFESSOR MINER AND MR. HAYNES  
Three credits (three hours per week) Second semester  
Open to those who have completed course 1.  
The study of mental development in its relation to heredity and training. Lectures and student reports on the facts and theories of childhood and adolescence with special reference to their bearing on education.
4. EXPERIMENTAL PSYCHOLOGY: The Senses ASSISTANT PROFESSOR MINER  
AND MR. HAYNES  
Three credits (three hours per week) First semester  
Open to juniors and seniors who have completed course 1. As the number in each laboratory section will be limited, students must arrange with the instructor for their section before registration.  
This course, together with course 5, is designed to give a general survey of experimental methods and results as well as a training for laboratory research in psychology. The work involves typical experiments on sensation and movement. One hour of class discussion and two double hour laboratory periods are required.
5. EXPERIMENTAL PSYCHOLOGY: Higher Mental Processes ASSISTANT PROFESSOR MINER  
Three credits (three hours per week) Second semester  
Open to juniors and seniors who have completed courses 1 and 4.  
A continuation of course 4 with experiments on affection, memory, attention, and such other processes as can be studied by laboratory methods. The quantitative phase of experimental psychology is taken up for special discussion.
6. OUTLINE OF EXPERIMENTAL PSYCHOLOGY ASSISTANT PROFESSOR MINER  
Three credits (three hours per week) Second semester  
Open to juniors and seniors who have completed course 1; not given in 1908-9.  
A study of the methods and accredited results of experimental investigation in psychology. Class-room demonstrations, lectures, and discussion.
7. PSYCHOLOGICAL INTERPRETATION ASSISTANT PROFESSOR MINER  
Three credits (three hours per week) First semester  
Open to juniors and seniors who have completed course 1.  
Unusual and pathological mental states are studied for the light they throw upon normal mental life. The student is given drill in the detecting of mental defects and in the psychological explanation of characters in history and literature. The subconscious, dreams, suggestibility, telepathy, nervous disorders, insanity, secondary personalities, and the crowd are among the topics treated.
8. PSYCHOLOGICAL PRINCIPLES ASSISTANT PROFESSOR SWENSON  
Three credits (three hours per week) Second semester  
Open to juniors and seniors who have completed courses 1 and 2.  
An advanced course, treating in detail some of the more important theoretical problems connected with psychology. The discussions will center about the methods and aim of the science, its fundamental principles, and its relations to other sciences, regard being had to the general outlines of historical development in these respects.

9. ANCIENT AND MEDIAEVAL PHILOSOPHY PROFESSOR WILDE  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors who have completed course 1 or  
 course 2.

This and the following course are designed to give such an outline of the history of thought as is desirable in a general education. Emphasis is placed upon the human significance of philosophy rather than upon its purely technical aspect. In this first semester the main work will be upon the philosophies of Plato and Aristotle, but the later development will be traced as far as the Renaissance.

10. MODERN PHILOSOPHY PROFESSOR WILDE  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 1 or  
 course 2.

Lectures on the representative systems of modern philosophy from the Renaissance to our own day, the purpose of the course being to prepare the student to understand the philosophical tendencies of the present. The work will include a study of Bacon, Descartes, Spinoza, Leibnitz, Locke, Berkeley, Hume, Kant, Mill, Schopenhauer.

11. PRINCIPLES OF ETHICS PROFESSOR WILDE  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors who have completed course 1 or  
 course 2.

An introductory course, comprising a study of the distinction between moral and non-moral phenomena, an analysis of voluntary conduct, and a discussion of the nature of conscience, the meaning of right and wrong, the purpose of life, human responsibility, and the authority of moral law.

12. PHILOSOPHY OF RELIGION PROFESSOR WILDE  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 1 or  
 course 2.

A study of the religious consciousness, its origin, development and significance; an analysis of the conception of God and a discussion of the place and function of religion in modern life.

#### ADVANCED INTENSIVE COURSES

13. LOGIC OF SCIENCE ASSISTANT PROFESSOR SWENSON  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 2.

This course serves as an introduction to philosophy through the medium of the special sciences, its aim being to suggest a system of the sciences through a discussion of the nature and relations of their fundamental principles.

14. PSYCHOLOGICAL PROBLEMS ASSISTANT PROFESSOR MINER  
 Both semesters

Open to seniors and graduate students who have completed courses 1, 4, and 5; other arrangements may be ascertained upon application to the department.  
 Original work or special topics.

15. RESEARCH IN PSYCHOLOGY ASSISTANT PROFESSOR MINER  
 Six credits (three hours per week) Both semesters

Open to graduate students who have completed course 14; both semesters must be taken before credit is given for the first semester.  
 Minor or major research in experimental, educational, analytic, genetic, or comparative psychology.

16. THE PHILOSOPHY OF DESCARTES, SPINOZA, AND LEIBNITZ ASSISTANT PROFESSOR SWENSON  
 Both semesters

Six credits (three hours per week)  
 Open to seniors and graduates who have completed courses 1, 2, 9, and 10; both semesters must be completed before credit is given for the first semester.

A study of the pre-critical period of modern philosophy. The work will center in the discussion of the *Ethics* of Spinoza and *Monadology* of Leibnitz.

17. THE PHILOSOPHY OF KANT ASSISTANT PROFESSOR SWENSON  
Six credits (three hours per week) Both semesters  
Open to seniors and graduate students who have completed  
courses 1, 2, 9, and 10; both semesters must be completed  
before credit is given for the first semester.  
A critical reading of the three Critiques; the relation of Kant to the  
development of modern philosophy.
18. THE PHILOSOPHY OF HUME ASSISTANT PROFESSOR SWENSON  
Six credits (three hours per week) Both semesters  
Open to seniors and graduates who have completed courses 1,  
2, 9, and 10; both semesters must be completed before credit  
is given for the first semester.  
A critical reading of Hume's philosophical works; the position of Hume  
in the development of English philosophy.
19. THE PHILOSOPHY OF HERBERT SPENCER ASSISTANT PROFESSOR SWENSON  
Three credits (three hours per week) Second semester  
Open to seniors and graduate students who have completed  
courses 1 and 2.  
A critical reading of the *First Principles* with references to other im-  
portant features of the *Synthetic Philosophy* and to the philosophical charac-  
ter of the modern scientific movement. The course is intensive, the aim  
being to develop the power of philosophical criticism in regard to such  
questions as the logical foundations of the theory of evolution, the relations  
of science and religion, and the place of the scientific interest among the  
other interests of life.
20. METAPHYSICS ASSISTANT PROFESSOR SWENSON  
Six credits (three hours per week) Both semesters  
Open to seniors and graduate students who have completed course  
9 and course 10 or 11; both semesters must be completed  
before credit is given for the first semester.  
A critical and constructive discussion of theories of knowledge and  
reality.
21. SYSTEMATIC ETHICS PROFESSOR WILDE  
Six credits (three hours per week) Both semesters  
Open to seniors and graduate students who have completed  
courses 9, 10, and 11; both semesters must be completed before  
credit is given for the first semester.  
A detailed study of the principles of conduct and the basis of moral  
obligation.
22. HISTORY OF ETHICS PROFESSOR WILDE  
Six credits (three hours per week) Both semesters  
Open to seniors and graduate students who have completed  
courses 9, 10, and 11; both semesters must be completed before  
credit is given for the first semester.  
A critical study of the development of Greek, English, and German ethical  
thought. Chief attention will be paid to the work of Plato and Aristotle in  
ancient times, and to the relation between utilitarianism and idealism in  
modern philosophy.
23. GERMAN IDEALISM PROFESSOR WILDE  
Six credits (three hours per week) Both semesters  
Open to graduate students who have completed courses 9, 10,  
and 17; both semesters must be completed before credit is  
given for the first semester; a knowledge of German is  
required.  
A study of the development of German philosophy after Kant, especially  
as found in the writings of Fichte and Hegel.

EDUCATION

The requirement for a major in education is the completion of eighteen credits from courses offered by the department; for a minor, twelve credits.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Hist. of Educ. to Reformation .....	1	3	Jr., Sr.	None
2.	Hist. of Mod. Education .....	2	3	Jr., Sr.	Course 1
3.	Educational Psych. ....	2	3	Soph., Jr., Sr.	Philosophy 1
4.	Secondary Education ..	1	3	Jr., Sr.	Courses 1 and 2
5.	Prin. and Org. of El. Teaching .....	2	3	Sr.	Courses 1, 2 and Philosophy 1
6.	Prin. and Org. of Sec. Teaching .....	2	3	Jr., Sr.	Course 4
7.	Theory of Education ...	1	3	Jr., Sr.	Philosophy 1
8.	School Administration..	1	3	Sr.	Courses 1 and 2
9.	School Supervision ....	2	3	Sr.	See statement
10.	Comp. Study of Sch. System .....	2	3	Sr.	Courses 1 and 2
11.	Modern Educ. Theories..	2	3	Sr.	Courses 1 and 2, and Philosophy 1
12.	Current Prob. in Elem. Teaching .....	1	2	Sr. Grad.	Course 5
13.	Educational Classics ...	1	2	Sr.	Courses 1 and 2
14.	Current Prob. in Sec. Teaching .....	2	2	Sr. Grad.	Course 6
15.	Probl. in Sch. Administration .....	2	2	Sr. Grad.	Courses 1 and 2
16.	School Sanitation .....	1	2	Sr. Grad.	None
17.	Organization of Higher Education .....	2	1	Sr. Grad.	Courses 1 and 2

1. HISTORY OF EDUCATION TO THE REFORMATION ASSISTANT PROFESSOR SWIFT  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors.

An introductory study in the history of education, conducted by means of lectures, assigned readings, discussions, and reports. The purpose of the course is to arouse an interest in educational problems, to secure some perspective for use in current investigation, with some command of the facts of educational history, and some ease in the methods of historical study. An attempt is made to bring out education as one phase of civilization and to show the connection of schools with other social institutions. Attention will be given especially to the schools of Greece and of Rome, the education of the early Christian centuries, the development of different types of schools in medieval times, the rise of the university, and of the humanistic schools of the Renaissance.

2. HISTORY OF MODERN EDUCATION ASSISTANT PROFESSOR SWIFT  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 1.

A somewhat intensive study of the periods in the history of modern education, with special reference to the development of the various national systems of public instruction. Different types of educational theory are considered in connection with a study of the men who first advanced them, and of the schools in which they were first put into effect. This course is a direct preparation for an understanding of the educational systems, theories, and practices of the present.

3. EDUCATIONAL PSYCHOLOGY ASSISTANT PROFESSOR MINER AND MR. HAYNES  
 Three credits (three hours per week) Second semester  
 Open to sophomores and juniors who have completed philosophy 1.

Identical with philosophy 3. The study of mental development in its relation to heredity and training. Lectures and student reports on the facts and theories of childhood and adolescence with special reference to their bearing on education.



4. **SECONDARY EDUCATION** PROFESSOR JAMES  
 Three credits (three hours per week) First semester  
 Open to seniors who have completed courses 1 and 2.  
 A study of secondary education in the United States, with such references to the secondary schools of other countries as will lead to a clearer understanding of the place and function of the high school, its curriculum, the problems of present-day importance, and the relation of the high school to other parts of the system of public instruction. The course will be conducted by lectures, reports, and discussions.
5. **PRINCIPLES AND ORGANIZATION OF ELEMENTARY TEACHING** PROFESSOR RANKIN  
 Three credits (three hours per week) First semester  
 Open to seniors who have completed courses 1 and 2 and philosophy 1.  
 This course includes a consideration of the course of study of the elementary school and of the best methods of instruction. It is conducted by means of lectures, assigned readings, discussions, and reports. It is planned for all students who expect to teach in the high school or to be principals or superintendents. No credit is given in this course to graduates of normal schools who have received one year's credit at the University.
6. **PRINCIPLES AND ORGANIZATION OF SECONDARY TEACHING** PROFESSOR RANKIN  
 Three credits (three hours per week) Second semester  
 Open to seniors who have completed courses 1 and 2, and who have completed course 4 or are pursuing course 10.  
 This course includes lectures on the general methods of secondary teaching, assigned readings, reports, and discussions. It is planned more particularly for those who expect to teach in high schools.
7. **THE THEORY OF EDUCATION** PROFESSOR JAMES  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors who have completed philosophy 1.  
 An introductory course in educational theory, including a somewhat detailed study of the principles on which is based the present practice in teaching. No credit is given in this course to graduates of normal schools who have received one year's credit at the University.
8. **SCHOOL ADMINISTRATION** PROFESSOR RANKIN  
 Three credits (three hours per week) First semester  
 Open to seniors who have completed courses 1 and 2.  
 An introductory study of school administration, conducted by lectures, reports, and discussions; the organization of school systems, the work of school boards, superintendents, principals, and teachers. This course is planned for students without any teaching experience, who hope later to do work in supervision.
9. **SCHOOL SUPERVISION** PROFESSOR RANKIN  
 Three credits (three hours per week) Second semester  
 Open to seniors; intended only for students with experience in teaching; credit will not be given both for course 8 and for course 9.  
 An advanced course treating of the duties of principals and superintendents.
10. **COMPARATIVE STUDY OF SCHOOL SYSTEMS** PROFESSOR JAMES  
 Three credits (three hours per week) Second semester  
 Open to seniors who have completed courses 1 and 2.  
 This course deals with the school systems of Germany, France, England, and the United States, with special reference to principles and methods of administration. Elementary, secondary, and higher institutions are examined with emphasis varying in successive years. The course is conducted partly by lectures and partly by assigned readings, reports, and discussions.
11. **MODERN EDUCATIONAL THEORIES** PROFESSOR JAMES  
 Three credits (three hours per week) Second semester  
 Open to seniors who have completed courses 1 and 2, and philosophy 1.  
 An advanced course in educational theory, dealing particularly with the contributions of Rousseau, Froebel, and Herbart, special emphasis being laid upon one of these writers in each successive year.

12. CURRENT PROBLEMS IN ELEMENTARY TEACHING PROFESSOR RANKIN  
Two credits (two hours per week) First semester  
Open to seniors and graduate students who have completed  
course 5.

This is a seminar course, involving a general discussion of some current problems in elementary education, one or two of which are worked out practically by the student under the direction of the instructor through readings, the visiting of schools, and through class discussions.

13. EDUCATIONAL CLASSICS PROFESSOR JAMES  
Two credits (two hours per week) First semester  
Open to seniors who have completed courses 1 and 2, and to  
graduate students.

A seminar course for the reading of selected educational classics and for the detailed study of corresponding periods in educational history.

14. CURRENT PROBLEMS IN SECONDARY TEACHING PROFESSOR RANKIN  
Two credits (two hours per week) Second semester  
Open to seniors and graduate students who have completed  
course 6.

This is a seminar course for advanced students, preferably with teaching experience, who wish to pursue a theoretical and a practical study of some current problems in connection with secondary teaching. The course will be conducted by lectures, class discussions, readings, and by the visiting of schools.

15. PROBLEMS IN SCHOOL ADMINISTRATION PROFESSOR JAMES  
Two credits (two hours per week) Second semester  
Open to seniors and graduate students who have completed  
courses 1 and 2.

A research course for advanced students, preferably with teaching experience, who desire to take up the investigation of some question of educational administration. The course will be conducted by lectures, class discussions, assigned readings, and, when possible, by a study of actual school conditions falling within the proposed field.

16. SCHOOL SANITATION PROFESSOR RANKIN  
Two credits (two hours per week) First semester  
Open to seniors and graduate students.

This course will be conducted by text, by lectures, and by investigations into problems of school lighting, heating, ventilation, and other questions of school architecture and management connected with the physical well-being of the pupils.

17. ORGANIZATION OF HIGHER EDUCATION PROFESSOR JAMES  
One credit (one hour per week) Second semester  
Open to seniors and graduate students who have completed  
courses 1 and 2.

This course is intended for students who are interested in the general problems of educational administration and who look forward later to college teaching. It includes an historical sketch of the development of the American university, with discussions of modes of organization and administration, problems of departmental teaching, and questions of class instruction.

## ANTHROPOLOGY

See sociology and anthropology, pp. 109-111.

## VIII. Social Sciences

The departments of economics and political science, history, and sociology constitute a social science group. The subjects are intimately inter-related, and they are all of especial importance to students who intend to engage in law, business, public service at home or abroad, journalism, the work of charities and corrections, or to give instruction in one of the social sciences. Students who are interested in the work of any one of the departments of the social science group ought to be familiar at least with the elements of the subjects offered in the other departments. A student who takes his major in any one of them ought to have more than the elements of the others. To students who are interested in the work of these departments, but who do not care to elect their major before the end of the sophomore year, the departments unite in the following recommendations for the freshman and sophomore years:

## GENERAL RECOMMENDATIONS

## I. Freshman and Sophomore Years:

1. The student should take the elementary work of each department within the group as early as possible. Accordingly the following courses are recommended:

Freshman year: history 2 (English constitutional); sophomore year: history 5 (American); economics 1, first or second semester; political science 1, first or second semester.

2. The student is advised to take in these years his required minor in science from the departments of botany or animal biology, and his required minor in language from the French or German beginning courses, unless he has a reading knowledge of both these languages at entrance.

## II. Junior and Senior Years:

Elective under the direction of adviser selected from the department in which the major subject is taken.

## ECONOMICS AND POLITICAL SCIENCE

## DEPARTMENT REQUIREMENTS

Students taking a major (eighteen credits) in the department will take it all in one line of work (either economics or political science); and in addition will take a minor in the other line of work represented in the department.

Students taking one minor (twelve credits) in the department will take it all in either economics or political science. They may, however, take two minors, one in each line of work.

Students desiring a recommendation for a teacher's certificate must complete either a major or a minor in the department, according to the foregoing definitions. All desiring a recommendation to teach business subjects must complete a major in economics. For distinction in economics or political science the special requirements of the department are the completion of at least twenty-four credits in the line chosen and a minor in the other. The thesis must be typewritten and shall be filed in the department in the department.

All students taking a major in the department must secure the approval of their official advisers for forty-eight credits. Of these, not less than six credits in the case of an ordinary major, and not less than twelve credits in the case of a degree with distinction, shall be taken in other departments of the social science group.

## SUGGESTIONS TO STUDENTS

The work in economics and political science bears very directly on preparation for professional or business life and citizenship, no matter what occupation is finally chosen. But in order to aid students who have some idea as to their intended profession or calling to make a wise choice of courses, the following tabulated statement has been prepared.

Students intending to enter the law, for example, will find in the left-hand column the numbers of certain courses which are recommended to form a minor in economics; and in the next column, some additional courses which are suggested for those taking a major in economics. At the right, in like manner, are given the recommendations for a minor and a major in political science.

It should be noted: (1) that these recommendations are merely suggestive, not binding; (2) that more courses are sometimes recommended than suffice to make up a technical minor or major, with the understanding that the student will consult the instructors and choose those courses which interest him the most.

Economics 1 and political science 1 are not included in these recommendations, as they must in any case precede the advanced courses; nor is economics 4 included, as it is required of all taking a major in economics.

Students desiring merely a general acquaintance with economics or political science as part of a liberal education and as a preparation for citizenship are recommended to take the introductory courses and such others, amounting at least to a minor, as their interests may indicate.

ECONOMICS			POLITICAL SCIENCE	
Courses advised for a minor.	Additional advised for a major	In Preparation for	Courses advised for a minor	Additional advised for a major
6, 7, 11, 10, 27	5, 28, 8, 9, 24 or 30	Law	2, 3, 8, 15, 7	4, 5, 10, 9, 12, 14
3, 6, 7, 11, 10	29, 26, 27	Public Service	2, 3, 7, 15, 14, 9	8, 4, 5, 10, 12
2, 3, 12, 13, 29	5, 28, 8, 9	Consular and Diplomatic Service	2, 3, 5, 10, 14	4, 8, 12
5, 28, 6, 7, 11, 10	29, 30, 16, 26	Journalism	2, 3, 7, 8, 9, 10	4, 5, 12
8, 9, 11, 10	16, 19, 20, 22	Engineering or Railway Service	6, 7, 14, 15,	4, 8
2, 12, 13, 11, 16	19, 20, 22, 29	Chemistry or Manufactures	2, 3, 7, 14, 9	8, 12, 14
8, 9, 11, 16	2, 12, 13, 20	Mining	2, 3, 7, 15, 9	8, 12, 14
5, 28, 15, 29	19, 20, 25	Insurance or Banking	2, 3, 7, 14, 15	4, 8, 10, 12
2, 3, 5, 28, 12, 13	19, 20, 22, 25	General Business	2, 3, 7, 15, 9	8, 12, 15
2, 14, 23, 12, 13	8, 9, 5, 19, 20	Forestry or Agriculture	2, 3, 15, 14	9, 12, 8
2, 3, 5, 28, 30	19, 20, 22, 24	Teaching Business Subjects or American Government	2, 3, 7, 9, 15	4, 5, 12, 10, 8, 14
1, 3, 5, 18	6, 7, 11, 10	Medicine	2, 3, 7, 15, 9	8, 12, 15
3, 16, 17, 18	26, 27, 24 or 30	Charity Work or the Ministry	2, 3, 7, 8	9, 12, 15

## ECONOMICS

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
INTRODUCTORY COURSES:					
1.	Elements of Economics	1 or 2	3	Soph., Jr., Sr.	None
2.	Economic Geography...	1	3	Soph., Jr., Sr.	None
3.	Indus. and Com. Hist...	1, 2	3	Soph., Jr., Sr.	None
GENERAL COURSES:					
4.	Advanced Economics...	2	3	Soph., Jr., Sr.	Course 1
5.	Money and Banking...	1 or 2	3	Soph., Jr., Sr.	Course 1
28.	Financ. Hist. of the U. S.	2	3	Soph., Jr., Sr.	Courses 1 and 5
6.	Public Finance .....	1	3	Soph., Jr., Sr.	Course 1
7.	Problems in Taxation...	2	3	Soph., Jr., Sr.	Course 6
8.	Econs. of Transportation and Communication...	2	3	Soph., Jr., Sr.	Courses 1, 2 or 3
9.	*Railway Economics...	1	3	Soph., Jr., Sr.	Course 8
11.	The Modern Bus. Corporation .....	1	3	Soph., Jr., Sr.	Course 1
10.	Municipal Industries ...	2	3	Soph., Jr., Sr.	Course 1
12.	*Economics of Commerce	1	3	Soph., Jr., Sr.	Courses 1, 2 or 3
13.	*Econ. of Colonization...	2	3	Soph., Jr., Sr.	Courses 1, 2 or 3
26.	*Social Theories and Reforms .....	1	3	Soph., Jr., Sr.	Course 1
27.	*The State in Relation to Industry .....	2	3	Soph., Jr., Sr.	Course 26
16.	Labor Problems, Part I.	1	3	Soph., Jr., Sr.	Course 1
17.	Labor Problems, Part II.	2	3	Soph., Jr., Sr.	Course 1
18.	Charities and Corrections .....	1 or 2	3	Soph., Jr., Sr.	Courses 1 or 3, or Soc. 1
BUSINESS COURSES:					
19.	The Principles of Accounting .....	1, 2	3	Soph., Jr., Sr.	Course 1
20.	The Elem. of Bus. Law.	2	3	Soph., Jr., Sr.	Course 1
22.	Business Organization...	2	3	Soph., Jr., Sr.	Course 1
23.	Economics of Forestry and Irrigation .....	1	3	Soph., Jr., Sr.	Course 1 or 2
14.	Economics of Agriculture	2	3	Soph., Jr., Sr.	Course 1 or 2
15.	Economics of Insurance.	1	3	Soph., Jr., Sr.	Course 1
25.	Economics of Investment and Speculation .....	2	3	Jr., Sr.	Course 5
ADVANCED AND GRADUATE COURSES:					
29.	*Theory and Practice of Statistics .....	1	2	Jr., Sr.	Six credits in Econ.
30.	*Hist. of Econ. Thought	1	2	Jr., Sr.	Six credits in Econ.
24.	*Scope and Methods of Economics .....	1	2	Jr., Sr.	Six credits in Econ.
21.	Seminar in Economics..	1, 2	3-6	Sr.	Twelve cred. in Ec.

\*Starred courses are not given every year.

## INTRODUCTORY COURSES

- ELEMENTS OF ECONOMICS** PROFESSOR ROBINSON, DR. PHELAN AND MR. COULTER

Three credits (three hours per week) Repeated each semester

Open to sophomores, juniors, and seniors; designed for those who desire a general knowledge of economics and as an introduction to the more advanced courses offered in the department. Required of all taking the six year medical course.

A thorough course in the elements of economic theory, with special reference to present day economic and social problems. McVey's *Outline* and a text-book, supplemented by lectures and problems, with a weekly quiz.
- ECONOMIC GEOGRAPHY** PROFESSOR ROBINSON

Three credits (three hours per week) First semester

Open to sophomores, juniors, and seniors.

A study of the economic basis of modern civilization. The course embraces: (1) a brief survey of the history of commerce prior to the modern

period; (2) an analysis of the causes, both in nature and man, which control the development and the localization of industry and commerce; (3) a summary view of the development of transportation in relation to commerce; (4) some mention of the principal materials of commerce; and, (5) a more detailed consideration of the natural resources, chief industries, commercial products, and commercial relations of the leading countries. Special attention is given to the United States and to international trade routes, both by land and sea. Text-book, supplemented by lectures, reports on special topics, and quiz.

3. MODERN INDUSTRIAL AND COMMERCIAL HISTORY PROFESSOR GRAY  
 Three credits (three hours per week) Both semesters  
 Open to sophomores, juniors, and seniors; may be taken in conjunction with course 1 or course 2; both semesters must be completed before credit is given for the first semester.

The industrial and commercial history of western Europe and America since the middle of the eighteenth century. The effects of modern inventions and political changes on industry and trade. Lectures with prescribed topical readings. One written report of considerable length will be required each semester.

## GENERAL COURSES

4. ADVANCED ECONOMICS PROFESSOR ROBINSON  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 1; required for a major in economics.

An advanced course in general economics, devoted largely to a study of recent theories of distribution. Assigned readings, reports, and discussions.

5. MONEY AND BANKING DR. PHELAN  
 Three credits (three hours per week) Repeated each semester  
 Open to those who have completed course 1.

The history and theory of money; nature and uses of credit; functions of banks, trust companies, and other financial institutions; foreign exchange and the settlement of international balances. Lectures, text-book, assigned readings, and discussions.

28. FINANCIAL HISTORY OF THE UNITED STATES DR. PHELAN  
 Three credits (three hours per week) Second semester  
 Open to those who have completed courses 1 and 5.

The main lines of our financial development, including our monetary and banking history, are traced by means of lectures. Readings in the literature of the subject and topics for investigation are assigned. Lectures, text-book, assigned readings, topics, and discussions.

6. PUBLIC FINANCE PROFESSOR ROBINSON  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1.

The development of the state as an economic organism. Public expenditures from the view point of public wants. Budget systems of the leading countries with special emphasis on the United States. Public revenues from public domains and industries. Principles, incidence, and administration of taxation. The theory of public debts. Text-books, supplemented by lectures and assigned readings.

7. PROBLEMS IN TAXATION PROFESSOR ROBINSON  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 6.

Study of tax systems, tax reforms, and special forms of taxation, such as the mortgage, corporation, and inheritance taxes. Based on Seligman, *Essays in Taxation*, and reports of state tax commissions with lectures and reports on special topics.

8. ECONOMICS OF TRANSPORTATION AND COMMUNICATION PROFESSOR ROBINSON  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 1 and to students in the technical colleges.

A general course on the history and theory of transportation and communication with special reference to the United States; early routes and methods of migration and commerce; causes determining the location of railways; effect of steam and electricity in the consolidation of industries

and of nations; signal systems, the post, telegraph and telephone; parcels post and express service; economic functions and relations of highways, interurban electric lines, steam railways, inland waterways, and ocean transportation; the organization of ocean commerce. Lectures, assigned readings, and discussions.

9. RAILWAY ECONOMICS PROFESSOR ROBINSON  
 Three credits (three hours per week) First semester  
 Open to those who have completed courses 1 and 8, and to students in the technical colleges.

An advanced course devoted to the study of railway problems and administration, including: (1) conditions affecting economy of operation; (2) passenger and goods traffic; (3) economic principles underlying the making of railway rates; (4) competition in relation to rate wars, discrimination between persons, places, and commodities, pooling, and various forms of combination; (5) the great railway systems of the United States; (6) regulation by the states and the federal government; (7) government ownership and operation of railways in Europe and Australasia. Lectures, assigned readings, and special topics.

11. THE MODERN BUSINESS CORPORATION PROFESSOR GRAY  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1.

The organizing, financing, and managing of corporations; the position of the corporation before the law; methods of accounting; the relation of the government to the corporation; the question of trusts in its various phases. Text-books; Ripley, *Trusts, Pools, and Corporations*, Meade's *Trust Finance*, Wyman's *Cases*. Lectures, class discussions, and reports.

10. MUNICIPAL INDUSTRIES PROFESSOR GRAY  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 1; if possible, should be preceded by course 11.

The causes and the social and economic effects of the recent rapid development of municipal industries. A comparison of the results of public and of private ownership of such industries. The general question of municipal ownership. Text-books, lectures, and quizzes.

12. ECONOMICS OF COMMERCE PROFESSOR ROBINSON  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1, 2, or 3.

Causes and characteristics of commercial crises; theory and mechanism of international commerce; free trade, reciprocity and protection; the balance of trade; economic causes of the contest for foreign markets; organization of the export trade, commercial treaties and foreign politics, the consular and diplomatic service as a factor in commerce. Lectures, assigned readings, and reports on special topics.

13. ECONOMICS OF COLONIZATION PROFESSOR ROBINSON  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 1, 2, or 3.

The economic causes of human migration; historical survey of colonization and classification of colonies with reference to their economic bases; existing colonial systems, with special attention to the outlying possessions of the United States; colonial commerce in relation to modern commercial and foreign policies; preferential tariffs and imperial federation. Lectures, assigned readings, and reports on special topics.

26. SOCIAL THEORIES DR. PHELAN  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1.

A survey of social Utopias from Plato to Henry George, with special attention to modern scientific socialism as a philosophy of industrial evolution and as a program of economic reform. Lectures, assigned readings, reports, and discussions.

27. THE STATE IN RELATION TO INDUSTRY Second semester  
 Three credits (three hours per week)  
 Open to those who have completed courses 1 and 26.

A study of the influence exercised by society and by the state on the production and distribution of wealth. The force of custom; effect of private property and other social institutions; the results of economic legislation

designed to limit the freedom, or raise the plane, of competition. General survey of the relation of the state to industry. Lectures, assigned readings, and reports.

16. **LABOR PROBLEMS: Part I** DR. PHELAN  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1.

Labor unions, strikes, systems of wage payment, arbitration, poverty, child labor, etc. Efforts, public and private, to secure justice and social well-being. Lectures, text-book, assigned readings, and discussions.

17. **LABOR PROBLEMS: Part II** DR. PHELAN  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 1, but should also be preceded by course 16.

A study of races and immigrants in America, with reference to their economic and social contributions; the economic and social conditions in foreign countries that lead to emigration; the general problem of immigration; the special problems of the Slav, the Italian, the negro, the Chinese and the Japanese. Lectures, text-book, topics, and discussions.

18. **CHARITIES AND CORRECTIONS WITH SPECIAL REFERENCE TO ECONOMIC CONDITIONS IN AMERICAN CITIES** MR. LIES  
 Three credits (three hours per week) First or second semester  
 Open to those who have completed course 1, course 3, or sociology 1; required in the six year medical course.

A study of the causes of economic dependence in American cities, the standard of living, and the constructive agencies for economic betterment. Given by lectures with assigned readings and visits of inspection in the Twin Cities.

#### BUSINESS COURSES

19. **THE PRINCIPLES OF ACCOUNTING**  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed course 1.

The theory and practice of accounting, with a view to general business efficiency. Methods employed in manufacturing, mercantile, banking, and railway accounting. Analysis of industrial, bank, and railway reports. Lectures and exercises.

20. **ELEMENTS OF BUSINESS LAW** DR. PHELAN  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 1.

The principles of law governing ordinary commercial transactions. The aim is to teach so much of the law as every educated man ought to know for his guidance in everyday business affairs. Assigned readings, lectures, and quizzes.

22. **BUSINESS ORGANIZATION**  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 1.

A study of the internal organization and management of large-scale industry, covering typical manufacturing and mercantile concerns. Based on Sparling's *Introduction to Business Organization*, with lectures, assigned readings, and discussions.

23. **ECONOMICS OF FORESTRY AND IRRIGATION** MR. COULTER  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1 or course 2.

Preliminary survey of forest controls and forest influences. In this connection, special attention to the progress of the national irrigation works in relation to economic development, land laws, and land tenure. Location and value of the extant forest resources of the United States. Intensive study of the forest industry, covering: (1) history and processes, (2) employees, (3) division into stages (logging, sawing, etc.), (4) internal organization of each, (5) transportation and marketing, (6) economic relations to other industries, (8) share of forest products in foreign commerce, (9) economic necessity of a scientific system of forestry. Lectures, assigned reading, and reports.



14. **ECONOMICS OF AGRICULTURE** Mr. COULTER  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 1 or course 2, and to others by special permission of the instructor.
- Preliminary survey and classification of industries as extractive, manufacturing, and distributive; and comparison of the several extractive industries in the United States, viz. fishing, forestry, grazing, farming, and mining. Historic development of agriculture and comparison of existing systems, with reference to stage of economic development and geographic conditions. Transition in the United States from extensive to intensive and from general to specialized farming in relation to the law of decreasing returns. Markets, transportation facilities, and other causes affecting the value of land and the prices of farm products. The size, organization, labor-system, and ownership of farms as bearing on economic efficiency and social and political conditions. Lectures, assigned readings, reports on special topics, and quiz.
15. **ECONOMICS OF INSURANCE** First semester  
 Three credits (three hours per week)  
 Open to those who have completed course 1 and to others by special permission of the department.
- Kinds and economic functions of insurance: life, fire, marine, accident, fidelity; history and theory of life insurance, forms of standard policies, public supervision. The aim is to treat those aspects of insurance which are of importance to practical men of affairs.
25. **ECONOMICS OF INVESTMENT AND SPECULATION** First semester  
 Three credits (three hours per week)  
 Open to juniors and seniors who have completed course 5.
- The causes affecting the values of securities; classes of investments and methods of calculating income; bearings of investment on the formation of social classes; the economic functions of speculation; organization and working of stock and produce exchanges; their relation to industry and to the money market; the work of Wall Street. Lectures, assigned readings, and exercises in the interpretation of current quotations for securities.
- ADVANCED AND GRADUATE COURSES**
29. **THEORY AND PRACTICE OF STATISTICS** First semester  
 Two credits (two hours per week)  
 Open to those who have completed six credits in economics.
- An introduction to the theory and method of statistics; aspects of economic and social life which are capable of statistical measurement; use and limitations of index numbers; theory of prices and price levels; based on the works of Bowley and Mayo-Smith, with lectures and practical exercises.
30. **HISTORY OF ECONOMIC THOUGHT** PROFESSOR ROBINSON  
 Two credits (two hours per week) First semester  
 Open to those who have completed six credits in economics.
- A survey of economic thought, especially since Adam Smith. Emphasis is placed on the most recent period. Lectures, assigned readings, and reports on special topics.
24. **SCOPE AND METHODS OF ECONOMICS** PROFESSOR ROBINSON  
 Two credits (two hours per week) Second semester  
 Open to those who have completed six credits in economics.
- Consideration of the successive views which have prevailed as to the scope and logical method of economics; relation of economics to the other social sciences and to ethics. Lectures, assigned readings, and discussions.
21. **SEMINAR IN ECONOMICS** PROFESSORS GRAY AND ROBINSON,  
MR. GBOULD, DR. PHELAN AND MR. COULTER  
 Six credits (three hours per week) Both semesters  
 Open to graduate students and to seniors who have completed at least twelve credits in economics and are capable of making original investigations; both semesters must be completed before credit is given for the first semester.
- A course in research and in methods of investigation. The course will be conducted jointly by all the instructors, each striving to be of special service to students who choose topics within the field of his special interests: Professor Gray in connection with local public service corporations; Professor Robinson in connection with taxation, transportation, and industries of importance in this section, such as wheat and iron; Dr. Phelan in connection with currency questions, labor, socio-economic theories, and taxation.

POLITICAL SCIENCE

Table of Courses Offered in 1908-9.

INTRODUCTORY COURSE					
No.	Title	Semester	Credits	Offered to Soph., Jr., Sr.	Prerequisite
1.	Am. Gov't	1 or 2	3		None
GENERAL COURSES					
2.	Comp. Gov't	1	3	Jr., Sr.	Courses 1 and 2
3.	Elements of Jurisp.	1	3	Jr., Sr.	Course 1
7.	Municipal Adm.	2	3	Soph., Jr., Sr.	Course 1
9.	Political Parties	1	2	Sr.	Course 1
10.	Diplomacy	2	2	Soph., Jr., Sr.	Course 1
12.	Colonial Adm.	2	3	Sr.	Courses 1 and 2
15.	State and Local Adm.	2	3	Soph., Jr., Sr.	Course 1
SPECIAL COURSES					
13.	Teachers' Gov't	2	1		Course 1
16.	Engineers' Am. Gov't	...	..		None
6.	Engineering Law	1	2	Sr.	None
ADVANCED AND GRADUATE COURSES					
4.	Am. Const. Law	1, 2	4*	Sr.	Courses 1, 2 and 8
8.	Theory of the State	2	3	Sr.	Courses 1 and 2
5.	International Law	1, 2	6	Sr.	Courses 1 and 2
11.	Seminar	...	..		
14.	Adm. Law	2	2	Sr.	Courses 1, 2 and 8

\*Both semesters must be completed before credit is given for the first semester.

- 1. AMERICAN GOVERNMENT** PROFESSOR SCHAPER AND MR. ALLIN  
 Three credits (three hours per week) Repeated each semester  
 Open to sophomores, juniors, and seniors.  
 An elementary course in American government intended as a preparation for the advanced courses in political science, for teaching in secondary schools, and for good citizenship; a study of the organization and actual workings of the national and local governments; a series of lectures on the nature and origin of the American governmental system precedes a study of the text and assigned topics; special attention will be given to important statutes on naturalization, organization of the judiciary, and of executive departments, interstate commerce, trusts, etc. Text, lectures, and special topics.
- 2. COMPARATIVE GOVERNMENT** MR. ALLIN  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1.  
 A description and analysis of the government as the agent of the state; a comparative study of the organization and working of the governments of the great European powers of today, especially of France, Germany, Great Britain and Italy. Text, with lectures and assigned readings.
- 3. THE ELEMENTS OF JURISPRUDENCE** PROFESSOR SCHAPER  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1.  
 A study of those human relations requiring legal regulation considered from the American point of view; the nature and source of law, status, rights and wrongs, partnership, corporations, etc. The course is intended for active citizenship and for the study of law. The student will practice looking up cases and summarizing leading principles. The course is based on a text, with lectures and assigned reading.
- 4. AMERICAN CONSTITUTIONAL LAW** PROFESSOR SCHAPER  
 Four credits (two hours per week) Both semesters  
 Open to those who have completed courses 1, 2, and 8; both semesters must be completed before credit is given for the first semester; given in alternate years; not offered in 1908-9.  
 This is an advanced course in the study of the principles of our constitutional law based on important Supreme Court decisions and standard works.

5. **INTERNATIONAL LAW** MR. ALLIN  
 Six credits (three hours per week) Both semesters  
 Open to those who have completed courses 1 and 2.  
 This course treats of the nature, sources, and sanction of international law; of the general principles as developed by positive agreement, common usage, and judicial decisions, in particular of the status of nations, the rules of peace, neutrality, and war, and the arbitration movement. Text, lectures, and supplementary reading.
6. **ENGINEERING LAW** MR. ALLIN  
 Two credits (two hours per week) First semester  
 Intended primarily for seniors in the College of Engineering.
7. **MUNICIPAL ADMINISTRATION** PROFESSOR SCHAPER  
 Three credits (three hours per week) Second semester  
 Open to those who have completed course 1.  
 A comparative study in modern city charters and methods of administration, the relation of the city to the state, the delimitation of its sphere of activity, its liability for tort, and an investigation into the causes of municipal corruption and merits of proposed reforms. A text, lectures, and special topics.
8. **THEORY OF THE STATE** PROFESSOR SCHAPER  
 Three credits (three hours per week) Second semester  
 Open to those who have completed courses 1 and 2.  
 A study in the theory of the state, its origin, nature, purpose and justification, the elements of population and territory. Important theories, like the divine, contract, modern socialistic, individualistic, and social welfare, are considered; also the question of state interference and state management of industries. This course includes a study of classification of law, governments, and states. A text-book, with lectures and topical readings.
9. **POLITICAL PARTIES** PROFESSOR SCHAPER  
 Two credits (two hours per week) First semester  
 Open to those who have completed courses 1 and 2.  
 An advanced course in political parties, their origin, development, and function. Such topics as methods of making nominations, securing minority representation, the recall, the initiative and referendum are taken up. Text, lectures, and special topics.
10. **DIPLOMACY** MR. ALLIN  
 Two credits (two hours per week) Second semester  
 Open to those who have completed course 1.  
 The object of this course is to outline the growth of international relations, the mode of conducting foreign affairs, the relation of the treaty-making power to legislation, the duties and immunities of diplomats, the consular service, the framing, interpretation, and termination of treaties and compacts, and the character and procedure of courts of arbitration. Considerable attention will be given to concrete illustrations of the principles of international practice as exemplified in such matters as the fisheries question, the Geneva arbitration, the Caroline incident, etc. Text, lectures, and supplementary reading.
11. **SEMINAR IN POLITICAL SCIENCE** PROFESSOR SCHAPER AND MR. ALLIN  
 Six credits (three hours per week) Both semesters  
 Open to graduate students and seniors of suitable preparation.  
 A seminar for research in the field of political science. A feature of the seminar is the discussion of current problems in politics and administration.
12. **COLONIAL ADMINISTRATION** MR. ALLIN  
 Three credits (three hours per week) Second semester  
 Open to those who have completed courses 1 and 2.  
 This course embraces a discussion of the principal classes of colonies, the causes of colonization, the social, economic, and political tendencies of colonial development, imperial relations, preferential trade, and independence. A study is made of the political systems of modern colonial governments, of the organization and administration of the Spanish, English, French, Dutch, German, and American colonies. Lectures, assigned reading, and special topics.
13. **TEACHER'S COURSE IN GOVERNMENT**  
 One credit (one hour per week) Second semester  
 Open to students of suitable preparation who intend to teach American government in the secondary schools.  
 Lectures and the examination of text-books, maps, and other materials useful to teachers.

14. ADMINISTRATIVE LAW PROFESSOR SCHAPER  
 Two credits (two hours per week) Second semester  
 Open to those who have completed courses 1, 2, and 8, and to graduates.  
 A course dealing with administration as a science, its origin and development, the law of officers under the national government, the merit system, and the growth of special administrative tribunals. Text, lectures, and cases.
15. STATE AND LOCAL ADMINISTRATION PROFESSOR SCHAPER  
 Two credits (two hours per week) Second semester  
 Open to those who have completed course 1.  
 A special course in the problems of our state and local governments; a comparative study of new experiments in legislation and administration, the workings of our courts, the jury system, and the new state police. Lectures, cases, and special topics.
16. AMERICAN GOVERNMENT First semester  
 Two credits (two hours per week)  
 Intended for students in the College of Engineering; not given until the new curriculum goes into effect.

## HISTORY

The requirements for a major in history are the completion of at least twenty-four credits from courses offered by the department; for a minor, twelve credits. For distinction in history the special requirements of the department are that thirty-six credits, of which nine shall be in intensive courses, must be completed and at least twelve credits must be obtained in other departments of the social science group. To obtain the recommendation of the department for a teacher's certificate twenty-four credits must be completed from courses offered by the department, including at least six credits in intensive courses and course 16.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Europe 31 B.C.-1500 A.D.	1, 2	6‡	All	None
2.	Eng. Const. ....	1, 2	6	All	Two yrs. prep. hist.
3.	Ren. and Reform. ....	1	3	Soph., Jr., Sr.	Course 1 or 2
4.	Europe since 1789 ....	1, 2	6	Soph., Jr., Sr.	Course 1 or 2
5.	American to 1840 ....	1, 2	6	Soph., Jr., Sr.	Course 2
6.	American since 1840 ....	1	3	Jr., Sr.	Course 5
7.	Making of Const'n ....	1, 2	6*	Jr., Sr., Grad.	See statement
9.	Am. Statesmen ....	2	3	Jr., Sr., Grad.	Course 5
10.	Hist. Masterpiece ....	1	3	Jr., Sr., Grad.	See statement
11.	Am. Dipl. ....	1	3	Jr., Sr., Grad.	Course 5
12.	Europe Dipl. ....	2	3	Jr., Sr., Grad.	Course 4
14.	Auth's for N. E. ....	1, 2	4*	Sr. Grad.	See statement
15.	Hist'l Method ....	2	2	Soph.; Jr., Sr.	Course 1 or 2
16.	Teacher's Course ....	2	1	Sr. Grad.	See statement
18.	Eng. Judiciary ....	2	3	Jr., Sr., Grad.	See statement
21.	Hist. of Greece ....	1	3	Soph., Jr., Sr.	Course 1 or 2
22.	Greek Political Inst's ...	2	3	Jr., Sr., Grad.	See statement
23.	Roman Imp. Organ. ...	2	3	Jr., Sr., Grad.	Twelve credits

‡Juniors and seniors receive only half credit; not counted toward a minor in history.

\*Both semesters must be completed before credit is given for the first semester.

## INTRODUCTORY COURSES

Freshmen who have taken two years of history in the preparatory school may omit course 1 and begin with course 2. Course 1 admits directly to courses 2, 3, 4, 15, and 21. Course 2 is required as a prerequisite for all courses in American history (5 to 9 inclusive, 11, 13 and 14). Students who intend to specialize in history or in any social science should elect course 2 in the freshman year.

1. EUROPEAN HISTORY FROM THE ESTABLISHMENT OF THE ROMAN EMPIRE TO THE REFORMATION. 31 B. C.-1500 A. D.

ASSISTANT PROFESSOR WESTERMANN

Six credits (three hours per week) Both semesters  
Open to all, but juniors and seniors receive only half credit;  
especially designed for freshmen who have had less than two  
years of history in the preparatory school; not credited toward  
a minor in history.

The course will show how modern institutions are largely derived from Roman imperial institutions. The leading topics will be the gathering up of the contributions of the older world by Rome, the imperial organization of the first "political people," the Germanic invasions, the growth of the Frankish state and Charlemagne's premature attempt at organization, the medieval church, the feudal system, the crusades, the rise of the towns, and the development of modern nations. This last topic will be studied mainly as it is illustrated in the history of Germany and of France from 814 to 1500. A definite portion of the course (about one-third) will go to the careful use of source material.

2. ENGLISH CONSTITUTIONAL HISTORY TO THE ACCESSION OF GEORGE I

PROFESSOR WHITE AND MISS JUDSON

Six credits (three hours per week) Both semesters  
Open to all who have had two years of history in the preparatory  
school or who have completed course 1.

While the general narrative of English history is not neglected, the making and testing of the English government are the main themes of the course. Much time is spent upon the study of documents which illustrate the origin and development of important institutions.

### GENERAL COURSES

3. THE RENAISSANCE AND REFORMATION

PROFESSOR WHITE

Three credits (three hours per week) First semester  
Open to those who have completed course 1 or course 2.

The Renaissance and Reformation will be studied as general European movements, with the emphasis upon the work of individual men and upon ideas rather than upon politics and institutions. The purpose of the course will be to show how the medieval world became the modern world.

4. EUROPE SINCE 1789

PROFESSOR ANDERSON

Six credits (three hours per week) Both semesters  
Open to those who have completed course 1 or 2.

The history of France occupies the most prominent place in the course, that of other countries being grouped about it, as far as possible. Much attention is given to international affairs, the principal territorial changes being illustrated with a series of wall maps prepared for the course under the direction of the instructor. A special effort is made to put the students into a position to understand the present governments and politics of the leading European states. The entire class meets twice each week for lectures or recitations. The third exercise is devoted to the study of important historical documents, drawn principally from Anderson's *Constitutions and other Select Documents Illustrative of the History of France 1789-1901*. This work is done in small groups which meet in the European history seminar room.

5. AMERICAN CONSTITUTIONAL HISTORY TO 1840

PROFESSOR WEST

Six credits (three hours per week) Both semesters  
Open to those who have completed course 2; required for courses  
6 to 9 inclusive, 11, 13, 14, and 19, and therefore to students  
who intend to specialize in history recommended for the  
sophomore year.

The aim is to make this a "practice course"; the work is done partly by co-operative topical reports, and students are expected to consult primary sources to a greater degree than is possible in most undergraduate courses. During part of the year the class will meet once a week in small sections for the study of documents.

15. HISTORICAL METHOD AND BIBLIOGRAPHY PROFESSOR WHITE  
Two credits (two hours per week) Second semester  
Open to those who have completed course 1 or course 2, but  
designed only for those who intend to specialize in history.

This course aims to make clear to the student the genesis of the modern historical method and to introduce him in a practical way to the use of the best tools in historical study. The work divides naturally as follows:

1. Exercises in historical criticism and interpretation. One or more important historical sources will be studied intensively by the class.

2. History of historical writings; especially the work of Ranke and his followers and the origin of the seminar system. Some account will be taken of present methods and advantages of study in Germany and France.

3. Bibliography. Purpose, to gain a working knowledge of existing helps to historical study, such as standard bibliographies, historical magazines, source material, etc.

While the knowledge of Latin or the modern languages is an advantage, it is not a necessity in this course.

16. TEACHERS' COURSE PROFESSOR WEST  
One credit (one hour per week) Second semester  
Open to seniors and graduates who have, including courses in  
progress, twenty-four credits in history; required for those who  
obtain a teacher's recommendation in history.

This course is designed to assist those who expect to teach history in high schools. Professor West will be aided by other members of the department.

20. ENGLAND SINCE 1815 PROFESSOR ANDERSON  
Three credits (three hours per week) Second semester  
Open to those who have completed course 2; may be taken to  
advantage in connection with course 4; not given in 1908-9.

The course opens with a rapid survey from the point where course 1 stops down to 1815. From there on the work is more intensive. Through topics and assigned readings an opportunity is afforded to become acquainted with the principal British reviews and with two or three of the leading British newspapers.

21. HISTORY OF GREECE ASSISTANT PROFESSOR WESTERMANN  
Three credits (three hours per week) First semester  
Open to those who have completed course 1 or course 2.

The course is general in its nature and will cover the political and social development of the Greek states to the time of their incorporation into the Roman Empire, with particular emphasis upon the later part of the period. Especial attention will be given to the permanent influence of Greek civilization.

#### ADVANCED OR INTENSIVE COURSES

6. AMERICAN CONSTITUTIONAL HISTORY, 1841-1885 PROFESSOR ANDERSON  
Three credits (three hours per week) First semester  
Open to those who have completed course 2 and at least the  
first semester of course 5; given in 1908-9, and in alternate  
years thereafter.

Special attention is given to the development of the slavery issue in politics, the political history of the civil war, and reconstruction.

7. THE MAKING OF THE CONSTITUTION PROFESSOR WEST  
Six credits (three hours per week) Both semesters  
Open to juniors, seniors, and graduates, who have completed  
course 5, but only on approval of the instructor; both semesters  
must be completed before credit is given for the first semester.

Each member of the class studies in detail the transition in one of the original American colonies to commonwealth government, with the constitution of his chosen state. The work of the Philadelphia convention is then taken up and the accounts of later writers are compared with the sources. "We the people," the "compact" theory, and the province of the Supreme Court as "final arbiter," are topics especially investigated, with such further aids as the writings of the day and the discussions of the ratifying state conventions afford. Besides the class work each student will present a written report upon the history of some important bill providing for the admission of a state, and some constitutional question in connection with congressional legislation.

8. AMERICAN HISTORY SINCE 1789 AS SHOWN IN THE DEVELOPMENT OF CONSTITUTIONAL LAW  
 PROFESSOR WEST  
 Three credits (three hours per week) First semester  
 Open to seniors and graduate students who have completed courses 2, 5, 6, and 7; not given in 1908-9.  
 This course is not designed to be a systematic treatment of either history or constitutional law. It consists of a careful analysis of cases selected from *Thayer's Cases on Constitutional Law*, studied in their historical setting and with reference to the course of development.
9. STUDIES IN AMERICAN STATESMEN  
 PROFESSOR ANDERSON  
 Three credits (three hours per week) Second semester  
 Open to juniors, seniors, and graduate students, who have completed course 2 and at least the first semester of course 5.  
 A research course. Each member of the class makes a study of some prominent American statesman who has left a considerable body of materials valuable for information upon his own career and the general history of the United States. The greater part of the work consists in the sifting of these materials and the preparation of brief reports in regard to points assigned for investigation. The class exercises are chiefly devoted to the criticism of these reports and the synthesis of the results thus obtained. Only a limited period is traversed. In 1908-9 the work will be confined to the period of the the Federalist supremacy, 1789-1801.
10. A CRITICAL STUDY OF A HISTORICAL MASTERPIECE  
 PROFESSOR ANDERSON  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 5.  
 The object of this course is to develop the habit of reading history critically. Each year a masterpiece of historical literature will be minutely and critically studied. Each student will be required to read critically the entire work studied and, in addition, to analyze and report upon assigned portions of it. These reports will be made the basis of the class work, which will consist mainly of discussions carried on by the students under the direction of the instructor. In 1908-9 Rhodes' *History of the United States from the Compromise of 1850 to the Restoration of Home Rule in the South in 1877* will be read.
11. THE HISTORY OF AMERICAN DIPLOMACY  
 PROFESSOR ANDERSON  
 Three credits (three hours per week) First semester  
 Open to seniors and graduates who have completed course 5.  
 A research course dealing principally with the more important features of American foreign policy during the earlier years of the federal government.
12. THE HISTORY OF EUROPEAN DIPLOMACY SINCE 1789  
 PROFESSOR ANDERSON  
 Three credits (three hours per week) Second semester  
 Open to seniors and graduates who have completed or are taking course 4; ability to read easy French is required.  
 This course centers about the critical reading of the principal treaties and numerous state papers dealing with international relations.
13. COLONIAL EXPANSION AND ADMINISTRATION  
 PROFESSOR WEST  
 Three credits (three hours per week) Second semester  
 Open to seniors and graduate who have completed course 4 or course 5; given in alternate years; not offered in 1908-9.  
 The history of the colonial acquisitions of the great nations will be surveyed rapidly and colonial institutions and governments will be studied and compared in detail.
14. A CRITICAL STUDY OF AUTHORITIES FOR EARLY NEW ENGLAND HISTORY  
 PROFESSOR WEST  
 Four credits (two hours per week) Both semesters  
 Open to seniors and graduates who have completed, eighteen credits, including course 5; both semesters must be completed before credit is given for the first semester; given in alternate years.  
 This is primarily a course in historical criticism, based on a minute study of Winthrop's *History of New England*. Each member of the seminar has a group of secondary authorities assigned him which he is to criticize in the light of the original sources. The study involves also a careful comparison of the chief sources with one another, and incidentally it leads to a minute treatment of political, social, and economic development in early New England. The number admitted to the course is limited to seven.

17. MEDIAEVAL ECONOMIC DOCUMENTS PROFESSOR WHITE  
Two credits (two hours per week) Second semester  
Open to seniors and graduates who have completed twelve credits  
in history; not given in 1908-9.

Characteristic documents relating mainly to twelfth and thirteenth century economic history are to be carefully studied with reference both to language difficulties and historical criticism. Such documents will be selected as will tend to throw the most light on the leading economic problems of the medieval period. The work is to be based on Fagniez's *Documents relatifs a l'histoire du commerce en France*.

18. ORIGIN OF THE ENGLISH JUDICIAL SYSTEM PROFESSOR WHITE  
Three credits (three hours per week) Second semester  
Open to juniors, seniors, and graduates, who have completed six  
credits, including course 2, and obtain the permission of the in-  
structor; students must be able to read medieval Latin, and  
Latin 9 is recommended to give this preparation.

The work will consist of detailed study in the sources of the twelfth and thirteenth centuries, and will aim to show how the kings' court, from which the present judicial system has grown, superseded the older communal and private courts, the development of the primitive king's court into a system of courts, and the growth in it of a new procedure. In this last connection the critical stages in the early history of the jury will receive special attention.

19. THE EXPANSION OF AMERICA, STUDIED IN ITS HIGHWAYS OF EMIGRATION  
Six credits (three hours per week) Both semesters  
Open to seniors and graduates who have completed course 5;  
both semesters must be completed before credit is given for the  
first semester; not given in 1908-9.

This is a study of roads and methods of pioneer travel in that westward movement of population which extended the inhabited area of the United States from the seaboard to the Mississippi.

22. GREEK POLITICAL INSTITUTIONS ASSISTANT PROFESSOR WESTERMANN  
Three credits (three hours per week) Second semester  
Open to juniors, seniors, and graduates, who have completed  
courses 1 or 2, 21, and six additional credits.

A study of the development of Greek political forms and of their operation as seen in typical oligarchic, democratic, federal, and monarchic states.

23. ROMAN IMPERIAL ORGANIZATION ASSISTANT PROFESSOR WESTERMANN  
Three credits (three hours per week) Second semester  
Open to juniors, seniors, and graduates, who have completed  
twelve credits.

This course will survey the development and organization of the imperial system from the beginning of Roman expansion outside of Italy to the time of the Germanic invasion. Special attention will be given to the administration of the municipalities and provinces under the Empire and to the development of despotism.

## SOCIOLOGY AND ANTHROPOLOGY

The requirement for a major in sociology and anthropology is the completion of eighteen credits from courses offered by the department; for a minor, twelve credits. For distinction in sociology and anthropology the special requirements of the department are the completion of twenty-four credits, at least six of which shall be advanced work, three of which shall be from courses offered below, and three from individual work done under special direction of the department.



Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Descrip. Sociology.....	1	3	Jr., Sr.	None
2.	Elements of Sociol. ....1 or 2		3	Jr., Sr.	None
3.	Social Pathology .....	1	3	Jr., Sr.	None
4.	Social Theory .....	1	3	Sr.	Course 1 or 2
5.	Social Groups .....	1	3	Sr.	Course 1
6.	Institutions .....	1	3	Sr.	Course 1
7.	Anthropology .....	1	3	Jr., Sr.	None
8.	Philology .....	2	3	Jr., Sr., Grad.	Course 1, 2 or 7
9.	Philippine People .....	2	3	Jr., Sr., Grad.	None
10.	Physical Anthropology..	2	3	Jr., Sr., Grad.	Course 7 or 8
11.	Am. Negro Race.....	2	3	Jr., Sr., Grad.	None
12.	Am. People .....	1	3	Jr., Sr., Grad.	None
13.	Biblical Sociology .....	1	3	Jr., Sr., Grad.	None
14.	Mod. Soc. Institutions..	1	3	Sr.	Course 7

1. **DESCRIPTIVE SOCIOLOGY** PROFESSOR JENKS  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors.  
 This is a preliminary course designed as the first work of students in the department. It presents concrete data concerning human association showing groups of peoples living in the four grades of culture called savagery, barbarism, civilization, and enlightenment; and it discovers the activities and institutions natural and peculiar to these cultures. Text-book, lectures, assigned readings, and thesis.
2. **ELEMENTS OF SOCIOLOGY** ASSISTANT PROFESSOR REEP  
 Three credits (three hours per week) Repeated each semester  
 Open to juniors and seniors.  
 This course is designed to give a general knowledge of the field of modern sociology, the attempt being to prepare students for such special sociological investigations as they may wish to make. Text-book, lectures, assigned readings, and thesis.
3. **SOCIAL PATHOLOGY** PROFESSOR SMITH  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors.  
 Dealing with problems of poverty, crime, insanity, social degeneration, and a discussion of the child problem and methods of social amelioration.
4. **SOCIAL THEORY** ASSISTANT PROFESSOR REEP  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1 or 2.  
 This course includes a study of the leading American, English, French, and German writers to discover their methods of approach to the science and the leading results they have secured.
5. **SOCIAL GROUPS** PROFESSOR SMITH  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1.  
 An examination of the clan and the village in primitive life, a study of demography to discover the effect of environment upon social organization, and a comparison with the nature of and reasons for the modern city.
6. **THE STUDY OF INSTITUTIONS** PROFESSOR SMITH  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 1.  
 The genesis of custom and the beginnings of law with the geographical and race influence in the growth of states will be studied as well as the various forms of the family and their relation to forms of civilization.
7. **ANTHROPOLOGY** PROFESSOR JENKS  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors.  
 This is an elementary course studying the essential characteristics of mankind and the general features of the several races of men. It also investigates the origin and development of the series of activities and various institutions which have had their beginnings in primitive society. Text books, lectures, assigned readings, and thesis.

8. **ETHNOLOGY** PROFESSOR JENKS  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 1, 2,  
 or 7, and to graduate students.  
 This is a study of the different races of men in America, Europe, Asia, Africa, and Oceania; the various historical classifications of men into races are presented; the causes of the origin and distribution of the several races and subraces are sought, and from historical perspective and present indications an attempt is made to judge of the future development of races; ethnological problems are also presented. Text-books, lectures, assigned readings, and thesis.
9. **THE PHILIPPINE PEOPLE** PROFESSOR JENKS  
 Three credits (three hours per week) Second semester  
 Open to juniors, seniors, and graduate students.  
 This course presents the geography, natural resources, and ethnology of the Philippine Islands. A careful comparative study of the four large ethnic and culture groups of people is made; tropical influences are noted; the present policy of the Insular Civil Government is outlined, so far as it tends to modify the natural characteristics and modern culture of the inhabitants, and to affect American home interests in the orient. This course aims to present a practical model for the investigator of human culture, and to introduce students to oriental race problems; it will also better fit students for government, business, or missionary service in the orient. Lectures, illustrated lectures, assigned readings, and thesis.
10. **PHYSICAL ANTHROPOLOGY** PROFESSOR JENKS  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 7 or 8,  
 and to graduate students.  
 This course studies the physical variations in the human body. It pays special attention to those variations which distinguish one race or group of men from another; and it seeks the cause and significance of such variations. It also attempts to trace the physical evolution of the human body and to forecast its future, studying both its development and decline. Six lectures on the development and anatomy of the human brain are given by Dr. Charles A. Erdmann of the medical faculty. This course is of prime importance to advanced students preparing for the medical course. Lectures, laboratory work, assigned readings, and thesis.
11. **THE AMERICAN NEGRO RACE** PROFESSOR JENKS  
 Three credits (three hours per week) Second semester  
 Open to juniors, seniors, and graduate students; not given in 1908-9.  
 This course begins with a study of the negro's African tribal kinsmen, and traces the rise and development of the American negro race from the birth of American slavery. The present characteristics, traits, and conditions of the negro are especially considered. The developing tendencies of the negro are studied for the purpose of considering the probable future of the American negro race. Lectures, assigned readings, and thesis.
12. **THE AMERICAN PEOPLE** PROFESSOR JENKS  
 Three credits (three hours per week) First semester  
 Open to juniors, seniors, and graduate students.  
 This course presents the distribution in the United States of the different peoples of the world found here. It seeks the natural genius of the peculiar home development of these peoples, and notes the modifications of this development in America, thus portraying the ethnic contribution of each to American civilization. It aims to discover the dominant physical, mental, and moral characteristics of each people, and attempts to determine the relative ethnic and culture importance of each to the nation.
13. **BIBLICAL SOCIOLOGY** PROFESSOR SMITH  
 Three credits (three hours per week) First semester  
 Open to juniors, seniors, and graduate students.  
 Lectures, and the Old Testament as a text book.
14. **MODERN SOCIAL INSTITUTIONS** ASSISTANT PROFESSOR REEP  
 Three credits (three hours per week) First semester  
 Open to those who have completed course 7.  
 The fundamental social institution, the family, will be studied, as also the development of modern industrial, political, educational, and ecclesiastical institutions in their relation to human progress.

## IX. Fine Arts

## DRAWING

The practical aim of this work in the University is two-fold, to help the students who need drawing for scientific work and to train those who wish to prepare for teaching drawing. The educational side of the work is emphasized in the development of the powers of the mind in the order of observation, memory, and imagination. Special efforts are made toward educating the taste to an appreciation of what is good in form, construction, and color, and in showing the relation of artistic and esthetic principles to life.

A certain amount of work is given in the different mediums used in the schools and in the representative, decorative and constructive work found in all educational courses in drawing.

Lectures are offered on the theory and practice of drawing as related to education and on the principles which are at the foundation of all art, illustrating those by the best examples of pictorial and decorative work.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Representative Drawing.	1	3	Jr., Sr.	None
2.	Adv. Drawing . . . . .	2	3	Jr., Sr.	Course 1
3.	Design . . . . .	1, 2	6	Sr.	Course 1 or 2
4.	Historical Design . . . . .	1, 2	6	Jr., Sr.	Course 1
5.	Drawing and Education.	1	3	Sr.	
6.	Teaching of Drawing . . . . .	2	3	Sr.	Course 3

1. REPRESENTATIVE DRAWING MISS CLOPATH  
 Three credits (three hours per week)  
 Open to juniors and seniors. First semester  
 The course includes: Drawing from objects, plants, landscape, and figure poses in pencil and in water color; the study of perspective; work from cast in charcoal; brush drawing.
2. ADVANCED REPRESENTATIVE DRAWING MISS CLOPATH  
 Three credits (three hours per week) Second semester  
 Open to juniors and seniors who have completed course 1.  
 More advanced work from objects and from cast; work in water color and colored chalks; pen and ink drawing; simple exercises in lettering and composition.
3. DESIGN MISS CLOPATH  
 Six credits (three hours per week) Both semesters  
 Open to seniors who have completed courses 1 and 2.  
 Exercises in composition, illustrating the various principles of decorative work; adaptation of plant forms, stencils, illuminated lettering; designs applied to simple forms of handicraft; lectures on the fundamental principles of designs illustrated by art masterpieces.
4. HISTORICAL DESIGN MISS CLOPATH  
 Six credits (three hours per week) Both semesters  
 Open to juniors and seniors who have completed course 1.  
 Original designs in different styles applied to articles of household use; color harmony; simple forms of pottery with applied designs. Lectures and collateral reading.
5. DRAWING AS RELATED TO EDUCATION MISS CLOPATH  
 Three credits (three hours per week) First semester  
 Open to juniors and seniors who have completed course 1.  
 Exercises in all the different kinds of art work used in the schools; advanced work in black and white, and in color.
6. THE TEACHING OF DRAWING MISS CLOPATH  
 One credit (one hour per week) Second semester  
 Open to seniors who have completed course 3.  
 This course is conducted by lectures and collateral reading on the methods and educational value of drawing, as revealed through a study of the instincts and mental processes of the child.

MUSIC

Students entering the University for the express purpose of studying music must register for courses 1 and 4 and in addition two other three-hour subjects outside of the department of music.

The practical aim of the theoretical courses is to acquaint the student with the laws underlying musical composition, enabling him at the same time through critical analysis to arrive at the keenest preception and appreciation of master works in music, and finally to stimulate latent talent to self-expression of musical thoughts in correct form. A certificate of proficiency in music will be granted to students who having completed the theoretical courses and two years of pianoforte, are able to play one of the standard concertos, and in addition show marked musical ability.

Table of Courses Offered in 1908-9.

No.	Title	Semester	Credits	Offered to	Prerequisite
1.	Harmony	1, 2	4	Jr., Sr.	None
2.	Counterpoint	1, 2	4	Jr., Sr.	See statement
3.	Form and Composition	2	2	Sr.	See statement
4.	Pianoforte	1, 2	3 or 6	Jr., Sr.	See statement
6.	History of Music	1, 2	2	Jr., Sr.	None

1. HARMONY ASSISTANT PROFESSOR SCOTT  
 Four credits (two hours per week) Both semesters  
 Open to juniors and seniors; the fee is four dollars per semester.

The study of chords, their construction, relations, and progressions. The work consists of written exercises on basses, and the harmonization of given melodies. Foote and Spaulding's *Modern Harmony* is used as text book.

2. COUNTERPOINT ASSISTANT PROFESSOR SCOTT  
 Four credits (two hours per week) Both semesters  
 Open to juniors and seniors who have a thorough knowledge of harmony; the fee is four dollars per semester.

The work will include the harmonization of melodies in two, three, and four voices in the different orders of counterpoint. Spaulding's *Tonal Counterpoint* is used as a text-book.

3. MUSICAL FORM AND FREE COMPOSITION ASSISTANT PROFESSOR SCOTT  
 Two credits (two hours per week) Second semester

Open to seniors who have completed course 1 and the first semester of course 2; intended for those specializing in music and can be taken only with the consent of the instructor; the fee is four dollars per semester.

At the close of the year a program of original composition will be given.

4. PIANOFORTE PROFESSOR OBERHOFFER AND ASSISTANT PROFESSOR SCOTT  
 Three or six credits (one and a half or three hours per week) Both semesters

Open to juniors and seniors; intended for those who intend to pursue the higher branches of the pianoforte, the art of playing, or to fit themselves for piano teachers; other arrangements may be ascertained upon application to the department.

While private lessons are the rule, classes of not more than four students may be arranged. Students in this course should have mastered technical difficulties of the degree of Czerny's *School of Velocity* and the easier Haydn and Mozart sonatas.

5. CHORAL CULTURE PROFESSOR OBERHOFFER  
 Four credits (two hours per week) Both semesters

Open to juniors and seniors; a single credit may be secured for chorus work, provided that students pursuing the work for credit pursue courses 1 or 2 at the same time; students may pursue the chorus work, without credit, by paying the required fee and securing consent of the director.

A popular course in choral practice for four-part mixed voices, with occasional selections for male voices and female voices separately; features: sight singing with hints on proper tone-production, correct breathing, vocalization and solfeggio; the art-forms in choral compositions will be studied and analyzed. (Chorus a capella, motet, cantata, oratorio.)

6. HISTORY OF MUSIC ASSISTANT PROFESSOR SCOTT  
 Two credits (one hour per week) Both semesters  
 Open to juniors and seniors; the fee is four dollars per semester.  
 A literary course. Lectures are given on the development of music from the time of Palestrina to the present day.

## X. Military Science and Tactics

CAPTAIN EDWARD SIGERFOOS, Ph.B., 5th U. S. Infantry, Commandant.

Drill is required of all men in the freshman and sophomore classes. It may be taken voluntarily by others outside of the freshman and sophomore classes; and, to encourage this, as it is considered beneficial, not only to the individual student, but to the state generally, the extra work is considered by allowing a year's drill to count as a two-hour credit for one semester, but no credit will be allowed for such drill for less than one year.

For the instruction in military drill and administration the students are organized into a corps of cadets, consisting of three battalions of infantry, a band and a platoon of artillery.

A uniform of prescribed pattern is worn by all cadets during drill. The uniform consists of blouse, trousers, and cap, modelled after the United States Military Academy cadet uniform. It costs in Minneapolis about fifteen dollars and is as neat and economical a dress as the student can obtain.

Each student registered for military drill is required to make a deposit of five dollars with the accountant of the university to cover loss and breakage of equipments. The deposit is returned to the student on the return of the equipments issued to him.

Military instruction is intended to be so conducted as to develop a soldier-like bearing and foster a spirit of gentlemanly courtesy, soldierly honor, and obedience to lawful authority, as well as to familiarize students with company and battalion manoeuvres, guards, and the theoretical and practical use of firearms.

On the graduation of each class the commandant will report to the adjutant general of the army the names of three graduates who have shown special aptitude for the military service and furnish a copy thereof to the adjutant general of the state.

The officers and non-commissioned officers are required to be good students in the other departments, soldier-like in the performance of their duties, exemplary in their general deportment, and able to pass a creditable examination in drill regulations. In general, the officers are selected from the senior class; the sergeants from the junior class; and the corporals from the sophomore class.

The required course of instruction in military science consists of:

Freshman year: practical instruction in schools of the soldier, company, and battalion; signals, ceremonies; schools of the cannoneer and battery.

Sophomore year: practical and theoretical instruction in schools of the company and battalion; advance and rear guard drill; practical and theoretical instruction in guard duty; gallery practice; ceremonies.

During the second semester a course of instruction, two hours per week, is open to juniors and seniors. When satisfactorily completed it will give, in connection with the year's drill, four credits. The course includes theoretical instruction in field service, consisting of organization, orders, advance and rear guards, out posts, reconnaissance, camping; duties of company commanders; articles of war; records.

### ROSTER OF THE CORPS OF CADETS.

#### CADET COLONEL

H. P. Councilman

#### CADET MAJORS

D. I. Oakes, Second Battalion  
 L. H. Frye, First Battalion  
 A. B. Lathrop, Third Battalion

BAND

B. A. Rose, Instructor of Music  
J. S. Mikesch, Cadet Chief Musician  
R. T. Glyer, Cadet Principal Musician

CADET CAPTAINS

J. H. Ray, Regimental Adjutant  
C. S. Wilson, Company I  
A. L. McAfee, Regimental Quartermaster  
Edwin G. Eklund, Company B  
W. D. Shaw, Company C  
W. B. Crosby, Company F  
H. C. Deering, Company G  
H. D. Frary, Battery  
H. G. Knowlton, Company H  
Guy C. Bland, Company E  
C. C. Houston, Company D  
J. R. Smith, Company A  
J. W. Haw, Company K  
C. J. Eklund, Company L  
W. F. Cantwell, Company M  
F. E. Shumway, Company N  
E. H. King, Company O.

CADET FIRST LIEUTENANTS

L. W. King, Adjutant Second Battalion  
L. S. Diamond, Adjutant First Battalion  
L. E. Swain, Adjutant Third Battalion  
P. L. Sheaf, Quartermaster Third Battalion  
W. T. Newton, Company B  
R. V. Hauser, Company E  
C. Dana McGrew, Company F  
Walter Mallory, Company A  
F. G. Scobie, Company D  
R. H. Cone, Company H  
M. B. Moyer, Company C  
W. L. Councilman, Company I  
R. W. Foulke, Company G  
E. Reiff, Battery  
H. N. Bush, Company K  
C. A. Jones, Company L  
E. A. Maylott, Company M  
H. A. Folingstad, Company N  
C. F. Dow, Company O

CADET SECOND LIEUTENANTS

Willis Shippan, Company B  
S. G. Mooney, Company G  
R. Nelson, Company A  
H. J. Cliff, Company C  
M. V. Jeness, Company D  
A. B. Stork, Company D  
C. L. Hamilton, Company A  
W. G. Workman, Company E  
J. R. Buffington, Company F  
Zenas Potter, Company H  
W. D. Timperly, Battery  
G. M. Briggs, Assistant Adjutant Third Battalion  
H. R. Blackburn, Company K  
M. C. Brownell, Company L  
C. L. Adly, Company M  
W. E. Mather, Company N

## PHYSICAL CULTURE

## For Women

MISS BUTNER AND MISS MATSON

The course in physical culture is offered to the women of the University as a regular part of their work in the freshman year, and may be taken in any of the following years. A full year of work, in addition to the work required in this department, counts as a two-hour credit in the second semester of the senior year. The work consists of systematic exercises for the development of all parts of the body. Women pursuing this course are required to provide themselves with a gymnasium suit, consisting of a blouse waist and bloomers, with the regulation gymnasium shoes. All suits must be of black material.

It is a common observation that students often enter the University with an imperfect physical development because of an excessive use of some muscles, while others are weakened through disuse. This occasions attitudes and movements that are unseemly in appearance and unhealthful in their general effect. The purpose of this course, therefore, is to develop a strong and symmetrical physique with a graceful and easy carriage. A physical examination is made of each student and physical measurements are taken in the fall and again in the spring.

In addition to the regular class work, sports and pastimes are open to all young women of the University. These include basket ball, battle ball, numerous other ball games, and also running games, all of which tend to cultivate the play instinct and give the nerve stimulus that comes from natural play.

## For Men

DR. COOKE AND DR. LITZENBERG

A well-equipped gymnasium in charge of a professional medical director is open for the young men. The training and exercise is under the immediate oversight and authority of the medical director and is wholly with a view to the healthful physical development of the whole student body.

All young men are required to be examined by the medical director of physical culture upon registration and during the course as often as the indications of the physical condition may require.

The decision of the director will be either:

1. Advisory, indicating what course of hygiene and exercise will best sustain and improve the health of the student, or
2. Mandatory requiring the students to pursue the course of hygiene and physical exercise necessary for the proper care of health and the discharge of their duties as students.

Gymnasium work is required of all men in the freshman class, one hour per week (in two half-hour periods, if the director so decides) throughout the year. The required work includes a course of lectures on personal hygiene during the first semester.

## Six Years Medical Course

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In the year 1903-04 the University established a six years course of study arranged especially for students of medicine. The first two years of the course are given in the College of Science, Literature and the Arts, and the last four years are given in the College of Medicine and Surgery. It leads to the degree of bachelor of science at the end of the first four years, and to the degree of doctor of medicine at the end of the six years course.

In the College of Science, Literature, and the Arts the year is divided into two semesters. In the College of Medicine and Surgery the year is divided into four quarters (half semesters). In the College of Medicine and Surgery the work is given on a concentration plan, but two subjects being carried at a time, and consequently a greater number of hours per week.

Students who enter without French or German are required to take German one, ten credits, and German three (scientific), six credits.

Students entering with two years of German may take French one, ten credits, in either first or second year, and German three, six credits, in the other year.

### COURSES IN THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

Page references refer to the bulletins of the College of Science, Literature and the Arts, and of the College of Medicine and Surgery for more detailed information.

#### FIRST YEAR

##### ANIMAL BIOLOGY (See p. 69)

- |                                  |  |
|----------------------------------|--|
| 1. GENERAL ZOOLOGY               | PROFESSOR SIGERFOOS, ASSISTANT PROFESSORS<br>OESTLUND, BROWN, AND DOWNEY |
| Six credits (six hours per week) | First and second semesters   |

##### BOTANY (See p. 72)

- |                                  |  |
|----------------------------------|--|
| 1. GENERAL BOTANY                | PROFESSOR CLEMENTS, ASSISTANT PROFESSORS<br>TILDEN AND ROSENDAHL AND INSTRUCTORS |
| Six credits (six hours per week) | First and second semesters   |



## CHEMISTRY (See pp. 75-76)

1. GENERAL CHEMISTRY MISS COHEN AND MR. BADGER  
OR,  
2. ADVANCED GENERAL CHEMISTRY PROFESSOR FRANKFORTER, MISS COHEN,  
AND MR. BADGER  
Six credits (six hours per week) First and second semesters
- GERMAN (See p. 63)
1. BEGINNING GERMAN PROFESSOR SCHLENKER, ASSISTANT PROFESSORS  
WILKIN AND JURGENSEN, MR. BURKHARD AND MR. WILLIAMS  
Ten credits (five hours per week) First and second semesters
  3. SECOND PART HIGHER ALGEBRA PROFESSOR BAUER, ASSISTANT PROFESSOR  
BUSSEY, DR. MANCHESTER, MR. DALAKER AND MR. SHUMWAY  
Three credits (three hours per week) First semester
  4. TRIGONOMETRY PROFESSOR BAUER, ASSISTANT PROFESSOR BUSSEY  
DR. MANCHESTER, MR. DALAKER AND MR. SHUMWAY  
Three credits (three hours per week) Second semester
- MILITARY DRILL CAPTAIN EDWARD SIGERFOOS, U. S. A.  
Required of all men First and second semesters
- GYMNASIUM DR. COOKE  
Required of all men First and second semesters

## SECOND YEAR

## ANIMAL BIOLOGY (See p. 70)

4. COMPARATIVE ANATOMY OF VERTEBRATES ASSISTANT PROFESSOR BROWN  
MR. JOHNSON  
Six credits (six hours per week) First and second semesters

## CHEMISTRY (See p. 76)

3. QUALITATIVE ANALYSIS ASSISTANT PROFESSOR NICHOLSON,  
MR. FRARY AND ASSISTANTS  
Six credits (six hours per week) First and second semesters

## ECONOMICS (See pp. 98 and 101)

1. ELEMENTS OF ECONOMICS PROFESSOR ROBINSON, DR. PHELAN, AND  
MR. COULTER  
Three credits (three hours per week) First semester
18. CHARITIES AND CORRECTIONS MR. LIES  
Three credits (three hours per week) Second semester

## FRENCH (See p. 65)

1. BEGINNING FRENCH ASSISTANT PROFESSORS ANDRIST AND  
FRELIN, MADAME BERTIN  
Ten credits (five hours per week) First and second semesters
- GERMAN (See p. 63)

3. SCIENTIFIC INTERMEDIATE ASSISTANT PROFESSOR JUERGENSEN  
Six credits (three hours per week) First and second semesters

## PHYSICS (See pp. 82-83)

- 1 and 3. GENERAL PHYSICS PROFESSOR JOHN ZELENY  
Six credits (three hours per week) First and second semesters
- 2 and 4. GENERAL LABORATORY PRACTICE MR. KOVARIK  
Two credits (two hours per week) First and second semesters

RHETORIC (See p. 54)

- 1a. RHETORIC                                     Mr. FIRKINS, Mr. NICHOLS, Miss MALEY,  
  Miss GRIFFITH, Miss WHITNEY  
Six credits (three hours per week)             First and second semesters
- MILITARY DRILL                                 CAPTAIN EDWARD SIGERFOOS, U. S. A.  
Required of all men                             First and second semesters

COURSES IN THE COLLEGE OF MEDICINE AND SURGERY.

THIRD YEAR

ANATOMY (See p. 45)

1. OSTEOLOGY                                   PROFESSOR ERDMANN, DR. HARE  
Six credits (18 lectures and recitations per week for six weeks)             First quarter
2. SYNDESMOLOGY                             PROFESSOR ERDMANN, DR. HARE  
Three credits (18 lectures and recitations per week for three weeks)             First quarter
3. DISSECTIONS                                 ASSISTANT PROFESSOR MEYER, Drs. HARE AND TYRELL  
Seven and one-half credits (21 hours per week for nine weeks)             Second quarter

CHEMISTRY (See p. 50)

6. ORGANIC CHEMISTRY                         PROFESSOR FRANKFORTER, ASSISTANT  
  PROFESSOR DERBY, MR. HANDY  
Fifteen credits (six lectures, six laboratory periods)             Third and fourth quarters

HISTOLOGY AND EMBRYOLOGY (See pp. 46-48)

1. GENERAL VERTEBRATE MORPHOLOGY AND HISTOLOGY     PROFESSOR LEE  
  ASSOCIATE PROFESSOR NICKERSON  
Four and one-half credits (six lectures and recitations, three laboratory periods)             First quarter
2. MICROSCOPIC ANATOMY OF MAN AND VERTEBRATES     PROFESSOR LEE,  
  ASSOCIATE PROFESSOR NICKERSON  
Four and one-half credits (six lectures and recitations, three laboratory periods)             Second quarter
11. ELEMENTS OF VERTEBRATE EMBRYOLOGY     PROFESSOR LEE, ASSOCIATE  
  PROFESSOR JOHNSTON  
Four and one-half credits (six lectures and recitations, three laboratory periods)             First quarter
12. ADVANCED VERTEBRATE EMBRYOLOGY             PROFESSOR LEE, ASSOCIATE  
  PROFESSOR JOHNSTON  
Three credits (two lectures and recitations, one laboratory period)             Second quarter

PHYSIOLOGY (See pp. 51-52)

1. GENERAL CELLULAR PHYSIOLOGY             PROFESSOR BEARD, ASSISTANT  
  PROFESSOR WILCOX, DR. SEDGWICK  
Four and one-half credits (twelve lectures and recitations, six laboratory periods)             Third quarter
2. PHYSIOLOGY OF MUSCULO-NERVOUS MECHANISMS     PROFESSOR BEARD,  
  ASSISTANT PROFESSOR WILCOX, DR. SEDGWICK  
Four and one-half credits (twelve lectures and recitations, six laboratory periods)             Third quarter

3. SYSTEMIC PHYSIOLOGY PROFESSOR BEARD, ASSISTANT PROFESSOR  
WILCOX, DR. SEDGWICK  
Four and one-half credits (twelve lectures and recitations, six  
laboratory periods) Fourth quarter
4. SYSTEMIC PHYSIOLOGY (Continued) PROFESSOR BEARD, ASSISTANT  
PROFESSOR WILCOX, DR. SEDGWICK  
Four and one-half credits (twelve lectures and recitations, six  
laboratory periods) Fourth quarter

## FOURTH YEAR

## ANATOMY (See p. 45)

4. DISSECTIONS ASSISTANT PROFESSOR MEYER, DRs. HARE AND TYRELL  
Nine credits (twenty-four hours per week for nine weeks) Third quarter

## CHEMISTRY (See p. 50)

7. TOXICOLOGY, WATER AND FOOD ANALYSIS PROFESSOR FRANKFORTER,  
ASSISTANT PROFESSORS HARDING AND DERBY  
Three and three-quarter credits (three lectures, three laboratory  
periods) Second quarter

## HISTOLOGY AND EMBRYOLOGY (See pp. 46-48)

3. MICRO-TECHNIQUE AND THE MORPHOLOGY OF THE SPECIAL SENSE  
ORGANS PROFESSOR LEE  
Four and one-half credits (six lectures and recitations, three lab-  
oratory periods) Third quarter
13. SPECIAL EMBRYOLOGY OF MAN AND VERTEBRATES PROFESSOR LEE  
Four and one-half credits (six lectures and recitations, three lab-  
oratory periods) Third quarter
22. THE HUMAN NERVOUS SYSTEM ASSOCIATE PROFESSOR JOHNSTON,  
DR. INGBERT  
Four and one-half credits (six lectures and recitations, three lab-  
oratory periods) First quarter

## PATHOLOGY AND BACTERIOLOGY (See pp. 56-57)

1. GENERAL PATHOLOGY PROFESSOR WESBROOK  
Three credits (six lectures, recitations and demonstrations) Fourth quarter
2. GENERAL PATHOLOGY DRs. MULLIN AND ROBERTSON  
Three credits (six lectures, recitations and demonstrations) Fourth quarter
3. GENERAL PATHOLOGY PROFESSOR WESBROOK, DRs. MULLIN AND ROBERTSON  
Three credits (twelve hours laboratory) Fourth quarter
4. GENERAL BACTERIOLOGY ASSISTANT PROFESSOR HILL, DR. PRATT  
Three credits (six lectures, recitations and demonstrations) Fourth quarter
5. GENERAL BACTERIOLOGY PROFESSOR WESBROOK, ASSISTANT  
PROFESSOR HILL, DR. PRATT  
Four and one-half credits (eighteen hours laboratory) Fourth quarter

## PHARMACOLOGY (See p. 53)

1. ELEMENTARY PHARMACY PROFESSOR BROWN  
Four and one-half credits (six lectures and recitations, three lab-  
oratory periods) First quarter
2. GENERAL PHARMACODYNAMICS PROFESSOR BROWN  
Four and one-half credits (six lectures and recitations, three lab-  
oratory periods) Second quarter

PHYSIOLOGY (See p. 52)

5. METABOLISM AND NUTRITION      PROFESSOR BEARD, ASSISTANT  
PROFESSOR WILCOX, DR. SEDGWICK  
Four and one-half credits (twelve lectures and recitations, six  
laboratory periods)      First quarter
6. PHENOMENA OF STIMULATION      PROFESSOR BEARD, ASSISTANT  
PROFESSOR WILCOX, DR. SEDGWICK  
Four and one-half credits (twelve lectures and recitations, six  
laboratory periods)      First quarter
7. PHYSIOLOGY OF SPECIAL SENSE ORGANS      PROFESSOR BEARD, ASSISTANT  
PROFESSOR WILCOX, DR. SEDGWICK  
Four and one-half credits (twelve lectures and recitations, six  
laboratory periods)      Second quarter
8. PHYSIOLOGY OF CENTRAL NERVOUS SYSTEM      PROFESSOR BEARD, ASSISTANT  
PROFESSOR WILCOX, DR. SEDGWICK  
Four and one-half credits (twelve lectures and recitations, six  
laboratory periods)      Second quarter

# Students

SENIORS—233

Anderson, Anetta, Estherville, Ia.  
Anderson, Frank F., St. Paul.  
Anderson, Theodora H., Montevideo.  
Anderson, Tryphena, Montevideo.  
Armstrong, Mary E., Minneapolis.  
Aust, Franz, Minneapolis.  
Aygarn, Edwin, Choice.  
Aylmer, Albert R., Minneapolis.  
Barber, Marion L., Minneapolis.  
Beckman, Emma, Minneapolis.  
Benz, Laura, St. Paul.  
Billings, Vera D., St. Paul.  
Blanchard, Naneen M., St. Paul.  
Bland, Guy C., Anoka.  
Blossom, Nina M., St. Paul.  
Brainerd, Rena C., Blooming Prairie.  
Breen, Elizabeth M., St. Paul.  
Brewster, Grace, Mankato.  
Brock, Emma L., St. Paul.  
Brown, Mildred, Minneapolis.  
Bruce, Ellen M., St. Paul.  
Bruchholz, Elizabeth, Minneapolis.  
Buchanan, Margaret M., Minneapolis.  
Cannon, Raymond C., Watertown, S. D.  
Casey, Catherine, St. Paul.  
Cater, Louise, St. Cloud.  
Clark, Miriam, Minneapolis.  
Cliff, Howard J., Ortonville.  
Clough, Lee, Minneapolis.  
Colgrove, Vivian G., Minneapolis.  
Colter, Lillian E., St. Paul.  
Colter, Ruth M., St. Paul.  
Craven, Jennie G., Faribault.  
Crawford, William H., Minneapolis.  
Crosby, Walter B., Willmar.  
Cummings, Helen S., St. Paul.  
Cuzner, Fay, Minneapolis.  
Davenport, John E., Fairfield.  
Day, Juanita, St. Paul.  
Deal, Florence D., Truman.  
Deering, Harold C., Minneapolis.  
Deering, Robert L., Minneapolis.  
Denfeld, Margaret, Duluth.  
Dougherty, Kathryn, Mankato.  
Dowdall, Augustus S., Minneapolis.  
Doyle, Anastasia, St. Paul.  
Dunivon, Nellie, St. Paul.  
Duxbury, Lloyd L., Caledonia.  
Ebeltoft, Carl T., Lake Park.  
Edwards, Marjorie, Minneapolis.  
Eklund, Edwin G., Moorhead.  
Elliott, Grace J., Minneapolis.  
Elmqvist, Elmer W., St. Paul.  
Elwell, Margaret A., Minneapolis.  
Enegren, Cecile L., Minneapolis.  
Evans, Albert G., Duluth.  
Faegre, Minnie, Flandreau, S. D.  
Farwell, Edith L., Zumbrota.  
Feeny, Agnes E., St. Paul.  
Fellows, Murlen, Minneapolis.  
Finch, Alice M., Clinton Falls.  
Firmin, Kate M., Minneapolis.  
Fleming, Beryl, St. Paul.  
Fleming, Lou B., St. Paul.  
Fletcher, Ruby H., Minneapolis.  
Fletcher, Victor W., Farmington.  
Fligelman, Leah, Minneapolis.  
Gaghagen, Grace L., Minneapolis.  
Gessell, Walter J., Heron Lake.  
Gilbertson, Albert N., Willmar.  
Gippe, Louise, Watson.  
Gleason, Caroline J., Minneapolis.  
Goddard, Jessie C., Minneapolis.  
Godley, Florence, Minneapolis.  
Gordinier, Fannie, St. Paul.  
Greeley, Kate, Stillwater.  
Green, Alice E., Minneapolis.  
Grime, Florence L., Minneapolis.  
Halvorson, Ella J., Dawson.  
Hansen, Thorwald, Benson.  
Harter, Clarence M., Minneapolis.  
Hartson, Daisy J., Minneapolis.  
Haynes, Jack E., St. Paul.  
Hille, Julie, Fergus Falls.  
Hillesheim, Emma M., Sleepy Eve.  
Hitchings, Vinnie, Sutherland, Ia.  
Hoffmann, Minnie C., St. Paul.  
Holen, Julia, Minneapolis.  
Hopkins, Lorena, Minneapolis.  
Hovey, Inez I., Minneapolis.  
Howe, Ida E., St. Anthony Park.  
Hubbard, William A., Minneapolis.  
Hutchinson, Lura C., Minneapolis.  
Inglis, Rewey Belle, Minneapolis.  
Jenks, Florence K., Minneapolis.  
Johnson, Anna J., Minneapolis.  
Johnson, Anna M., Crookston.  
Johnson, Edward W., Rockford.  
Johnson, Guy C., Minneapolis.  
Johnson, Jay G., Minneapolis.  
Johnson, Ruth, Minneapolis.  
Johnson, Thekla E., Lake City.  
Jones, Florence, Gaylord.  
Jones, William M., Minneapolis.  
Keating, Monica C., St. Paul.  
Kelly, Margaret, St. Paul.  
Kennedy, Anne, St. Paul.  
Kingsley, Grace M., Minneapolis.  
Knight, Ralph T., Minneapolis.  
Koessler, Rudolph F., Heron Lake.  
La Due, Mabel, Minneapolis.  
Laybourn, Hortense, Minneapolis.

- Leavenworth, Louise, Minneapolis.  
 Leck, Bertha, Owatonna.  
 Levin, Harriet E., Aurora.  
 Lewis, Margolee, St. Paul.  
 Lien, Arnold J., Delevan.  
 Lillehei, Ingebrigt, Luverne.  
 Linnan, Margaret, St. Paul.  
 Lockman, Jessie F., Minneapolis.  
 Lougee, Clare L., Minneapolis.  
 Lucas, Mary A., Minneapolis.  
 Lumley, Stella, Minneapolis.  
 Lunn, Joseph E., Carleton.  
 Lyon, Mabel E., Hastings.  
 Lyon, Maude H., Hastings.  
 McGarvey, George A., Minneapolis.  
 McGrew, Dana, Howard Lake.  
 McGuigan, Dora, Millville.  
 MacKenzie, Harriett M., Minneapolis.  
 Mansfield, Mabel, Minneapolis.  
 Marsh, Jessie M., Claremont.  
 Marshall, Sara, Minneapolis.  
 Martens, Josephine, Minneapolis.  
 Meech, Robert L., Minneapolis.  
 Melony, Alice F., Minneapolis.  
 Mikesh, James S., Spillville, Ia.  
 Miller, Hilda, St. Paul.  
 Millie, Mabel F., Minneapolis.  
 Moore, Harriet D., St. Paul.  
 Morse, Arthur A., Minneapolis.  
 Mottley, F. Wilbur, Red Wing.  
 Nesta, Elmina R., Minneapolis.  
 Newton, Mary M., St. Paul.  
 Nordbergh, Marion, Minneapolis.  
 Nordin, Elsa R., St. Paul.  
 Norlander, Inez J. F., St. Paul.  
 O'Brien, Emma F., St. Paul.  
 Oakes, Reuben W., Worthington.  
 Olson, Didrick J., Bellevue.  
 Olson, Mathias N., Bellevue.  
 Osia, Catherine, Minneapolis.  
 Ott, Hildegard L. E., Minneapolis.  
 Palmer, Andrew H., Minneapolis.  
 Paul, Florence E., Minneapolis.  
 Pennington, Hazel M., St. Paul.  
 Peterson, Albert S., Wheaton.  
 Peterson, Cora A., Elbow Lake.  
 Peterson, Paul W., Minneapolis.  
 Petterson, Bernard, Madelia.  
 Phelps, Aura I., Minneapolis.  
 Pickler, Alfred A., Faulkton.  
 Plummer, Lillian, Minneapolis.  
 Polley, Grace E., Grand Rapids.  
 Pope, Alice G., Minneapolis.  
 Putnam, Alice E., Minneapolis.  
 Ray, John H., Jr., Minneapolis.  
 Remer, Charles F., Minneapolis.  
 \*Richmond, Margaret, Minneapolis.  
 Rittenhouse, Catherine, Minneapolis.  
 Robb, Walter C., Minneapolis.  
 Rosdahl, Signe A., Wheaton.  
 \*Died, 1907.
- Rossman, Claude W., Minneapolis.  
 Rouse, Honore V., Minneapolis.  
 Rowberg, Herbert C., Hanley Falls.  
 Runey, Madge, Minneapolis.  
 Sachs, Gustave M., New Prague.  
 Safford, Orren E., Aitkin.  
 Salisbury, Maurice E., Minneapolis.  
 Sanford, LeRoy W., Minneapolis.  
 Saterlie, Julia K., Milan.  
 Sawyer, Alma P., Minneapolis.  
 Schaetzel, Mina, Minneapolis.  
 Schmidt, Pauline, Minneapolis.  
 Schneiderhan, Albert G., Jordan.  
 Schons, Emily, St. Paul.  
 Schow, Susie S., Minneapolis.  
 Schroeder, Florence, Perham.  
 Seaton, Fay N., Minneapolis.  
 Sevaton, Ella, Windom.  
 Shadewald, Elsie A., Minneapolis.  
 Shaw, Wilbur D., Minneapolis.  
 Shiely, Mary E., St. Paul.  
 Simerman, Helen, St. Paul.  
 Sly, Florence A., Minneapolis.  
 Smith, Anna M., Minneapolis.  
 Smith, Harriet L., Minneapolis.  
 Smith, Irma P., Minneapolis.  
 Smith, J. Russell, Minneapolis.  
 Smith, Winifred R., Duluth.  
 Solensten, Rudolph T., Minneapolis.  
 Stake, Alma L., Anoka.  
 Sterling, Georgina, Red Wing.  
 Stewart, Dorothea, Minneapolis.  
 Stewart, Edna, Minneapolis.  
 Streissguth, Thomas O., Arlington.  
 Sveeggen, Petr A., Minneapolis.  
 Swan, James E., Mankato.  
 Swanstrom, Henry, Lake Park.  
 Switzer, Abbie D., Minneapolis.  
 Thompson, Della F., Minneapolis.  
 Thompson, Gertrude M., Minneapolis.  
 Thorson, Ella B., Winthrop.  
 Trimble, Margaret, Minneapolis.  
 Van Rhee, George J., Milaca.  
 Waddell, Mamie E., St. Louis Park.  
 Walker, Margaret E., Williston, N. D.  
 Walston, Genevieve, Minneapolis.  
 Wasser, Ruby S., Minneapolis.  
 Watson, Alice A., St. Paul.  
 Weinstein, Freda, Helena, Mont.  
 Whitney, Helen, Minneapolis.  
 Whittle, Anna, Minneapolis.  
 Whittle, Sadve, Minneapolis.  
 Wiggen, Charlotte A., Red Wing.  
 Wilder, Susan, Minneapolis.  
 Williams, Beatrice I., Minneapolis.  
 Williams, Mary L., Cedar Lake.  
 Wilson, Chester S., Stillwater.  
 Wolfe, Elizabeth, Ruthon.  
 Woodke, Luella, Le Mars, Iowa.  
 Yerxa, Elizabeth, Minneapolis.  
 Ziegler, Augusta G., Minneapolis.

## JUNIORS—242

- Acomb, Marie R., Minneapolis.  
 Adams, C. Roy, Austin.  
 Ahlquist, Perry K., North St. Paul.  
 Altenburg, Carl L., Wells.  
 Anderson, Carl A., Hutchinson.  
 Anderson, Herbert I., Goodhue.  
 Anderson, Roscoe B., Minneapolis.  
 Austin, Alice, Minneapolis.  
 Babcock, Fager M., Minneapolis.  
 Bailliff, Matilda, Osakis.  
 Bakalyar, George, Lakefield.  
 Balcom, Winfred G., Chatfield.

Bardsley, Myrtle, Duluth.  
 Beals, James B., Minneapolis.  
 Beardsley, Edythe, Hibbing.  
 Beck, Clara L., St. Paul.  
 Bell, Grace, St. Paul.  
 Bennett, Lillian, Madison.  
 Berchem, Pauline J., St. Paul.  
 Berger, Nanda M., St. Paul.  
 Bibb, Frank L., Minneapolis.  
 Bickford, E. Abbi, Battle Lake.  
 Birkenhauer, Mary G., Minneapolis.  
 Blakey, Roy, Minneapolis.  
 Blanchett, Frederic J., Elk River.  
 Bredvold, Louis, Belview.  
 Briggs, Florence M., St. Paul.  
 Brink, Irma, Minneapolis.  
 Brooks, Frank N., Minneapolis.  
 Brown, Caro, Minneapolis.  
 Brown, Mayme E., Granite Falls.  
 Bruhn, Louise H., Minneapolis.  
 Burgan, Myrle E., Minneapolis.  
 Burk, Ellen I., Minneapolis.  
 Burns, Margaret F., Graceville.  
 Buswell, Claire, St. Paul.  
 Cant, Harold G., Duluth.  
 Carlson, Anna C., St. Cloud.  
 Carlson, Charles E., Albert Lea.  
 Cassidy, Anna C., Eyota.  
 Chase, Marjorie C., Minneapolis.  
 Child, Emily, Minneapolis.  
 Child, Sherman, Minneapolis.  
 Christensen, O. Amelia, Minneapolis.  
 Churchill, Alta P., Minneapolis.  
 Colburn, Algernon O., Minneapolis.  
 Connelly, John, Savage.  
 Conway, Ethelyn, Detroit.  
 Cosgrove, Ethel C.,  
     State Fair Grounds.  
 Crozier, Lulu H., Minneapolis.  
 Dahlen, Harry W., Maynard.  
 Dale, Ludwig S., Minneapolis.  
 Danielson, Jessie L., Litchfield.  
 Davidson, Hazel B., Minneapolis.  
 Davis, Alfred, Minneapolis.  
 Davis, William E. C., Minneapolis.  
 Dellinger, Virginia E., St. Paul.  
 Deming, Portia C., Minneapolis.  
 Diamond, Lewis S., Mankato.  
 Dickerson, Helen, Minneapolis.  
 Dinsmoor, Viola C., Austin.  
 Dunning, Frances D., Minneapolis.  
 Duvigneaud, Jeanette, Minneapolis.  
 Eddy, Beatrice E., Minneapolis.  
 Engle, Marguerite, Minneapolis.  
 Engstrom, Lillian F., Minneapolis.  
 Erickson, Jennie S., Anoka.  
 Ewv, Edwin W., Butterfield.  
 Finkle, Lillian S., Minneapolis.  
 Ford, Gertrude, St. Paul.  
 Foulke, Robert W., St. Paul.  
 Fraiken, Wanda, Minneapolis.  
 Francis, Helen E., St. Paul.  
 Franklin, Laura G., Blue Earth.  
 Freigh, Wilfred P., Stillwater.  
 French, Anna M., Minneapolis.  
 French, Lafayette, Austin.  
 Frenzel, Rose M., St. Paul.  
 Gardner, Alice, Minneapolis.  
 Gansemel, Arthur N., Kenyon.  
 Gilbert, Grace E., St. Paul.  
 Gould, Marian R., Minneapolis.  
 Grimes, Gordon, Minneapolis.  
 Hale, Beatrice E., Spring Valley.  
 Hallock, Mary J., Duluth.  
 Hanaford, A. Ruth, Minneapolis.  
 Hanratty, Catherine, Graceville.  
 Hanson, Bertha Mary C., Minneapolis.  
 Harding, Fred A., Minneapolis.  
 Harrison, Ruth, Minneapolis.  
 Hart, Una M., Anoka.  
 Hellickson, Blanche, Mabel.  
 Herum, Helen, Minneapolis.  
 Hess, Charles L., Sleepy Eye.  
 Hewitt, Marie Alden, Minneapolis.  
 Hill, Clarence E., Minneapolis.  
 Hixon, Agnes, Minneapolis.  
 Hoag, Richard L., Minneapolis.  
 Holcomb, Dora M., Warren.  
 Holm, Eva C., Stillwater.  
 Holt, Blanche M., Minneapolis.  
 Hoovel, Violet S., Minneapolis.  
 Hovey, Albert P., Minneapolis.  
 Hudson, Neva B., Minneapolis.  
 Hull, Harold J., Wahpeton, N. D.  
 Hull, Mabel B., Litchfield.  
 Hull, William M., Minneapolis.  
 Hunt, Thomas F., Le Sueur Centre.  
 Jackson, Mabel C., St. Paul.  
 Jenness, Maurice V., Willmar.  
 Jensen, Louise, Minneapolis.  
 Johnson, Esther C., Minneapolis.  
 Kelley, Frances R., Minneapolis.  
 Kessel, Martha C., Cresco, Ia.  
 Kline, Gertrude, Minneapolis.  
 Knutson, Dagny, St. Cloud.  
 Kreis, Cora, Monticello.  
 Krueger, Richard G., Bellingham.  
 Kuethe, Emma S., Preston.  
 Lambert, Percy, Sauk Centre.  
 Lambie, Ethel L., Minneapolis.  
 Lawton, George T., Minneapolis.  
 Leach, Grace, Spring Valley.  
 Lees, Millicent, Minneapolis.  
 Leland, Rosamond, Minneapolis.  
 Leonard, Elva L., Minneapolis.  
 Leslie, Ruth, Minneapolis.  
 Leuthold, Walter M., Minneapolis.  
 Leveroos, Ethel, Minneapolis.  
 Leviston, Alice M., St. Paul.  
 Lewis, E. Genevieve, Minneapolis.  
 Longstaff, Wm., Huron, S. D.  
 Lovick, Paul J., Minneapolis.  
 Lowenthal, Max, Minneapolis.  
 Lvcan, Donna M., Bemidji.  
 McPettridge, Auverne, St. Paul.  
 McIvor, Helen L., St. Paul.  
 McKennan, Pearl G., Minneapolis.  
 McQuat, Frances M., Minneapolis.  
 Mabie, Harriet, Minneapolis.  
 Maland, Joseph O., Elmore.  
 Mallory, Walter, St. Paul.  
 Manderfeld, Cornelia B., Minneapolis.  
 Matson, Charlotte, Minneapolis.  
 Maul, Earl C., Minneapolis.  
 Mecklenburg, George, Cedar.  
 Melin, E. Luther, Minneapolis.  
 Miles, Worel C., Minneapolis.  
 Mooney, Florence H., Duluth.  
 Moore, Edna, St. Paul.  
 Mouser, Carl B., Minneapolis.

- Mousley, Josephine, Litchfield.  
 Munro, Margaret H., Minneapolis.  
 Murfin, Jennie, Minneapolis.  
 Neils, Walter E., Cass Lake.  
 Neilson, Anna L.  
 Neilson, Robert, Minneapolis.  
 Nielsen, Marie B., St. Paul.  
 Norelius, Wm. A., Luverne.  
 Norris, Sadie A., Minneapolis.  
 Norton, Wm. W., Minneapolis.  
 Nystrom, Hilda, Minneapolis.  
 Olsen, Clare, Minneapolis.  
 Olsgard, Constance, Minneapolis.  
 Ostby, Gena, Minneapolis.  
 Overn, Orlando, Albert Lea.  
 Overpeck, Nell, St. Paul.  
 Palmer, Alice H., Minneapolis.  
 Palms, Edith, Minneapolis.  
 Pidgeon, Vernon C., Minneapolis.  
 Pitblado, Annie, Minneapolis.  
 Ponthan, Marie W., St. Paul.  
 Potter, Zenas L., Minneapolis.  
 Putnam, Gladys, Minneapolis.  
 Quigley, Alice R., Bird Island.  
 Quigley, Catherine, Bird Island.  
 Reely, Stella Anne, Minneapolis.  
 Rehnke, Edgar B., Minneapolis.  
 Reid, Harry C., Sleepy Eye.  
 Rice, Mary G., Minneapolis.  
 Richards, Grace E., Minneapolis.  
 Riheldaffer, Helen, Minneapolis.  
 Ringsred, Ruth E., Duluth.  
 Robertson, William P., Litchfield.  
 Robinson, Fred H., Scobey, Mont.  
 Rockwood, Edith, Minneapolis.  
 Rossman, Harold, St. Paul.  
 Rothrick, H. B., Winona.  
 Roverud, Nora, Caledonia.  
 Rowe, Elsie, Minneapolis.  
 Ruger, Rosa C., Minneapolis.  
 St. Amour, Ruby C., Minneapolis.  
 Salisbury, Eva, Minneapolis.  
 Scharf, A. L., Minneapolis.  
 Schriber, Alice E., St. Paul.  
 Schroeder, Anna T., Perham.  
 Seaman, Susie, Minneapolis.  
 Shanley, Helen M., St. Paul.  
 Shepardson, Elizabeth, Minneapolis.  
 Shonts, Mary O., Fergus Falls.  
 Simmons, Juliet, Hunter, N. D.  
 Simms, Marjorie, Minneapolis.  
 Sinclair, Catherine, Fairmont.  
 Sleeper, Raymond A., Sheldon, Ia.  
 Smiley, William Yale, Minneapolis.  
 Smith, Audrey N., Minneapolis.  
 Smith, Corinne J., St. Paul.  
 Smith, Marjorie, Minneapolis.  
 Snyder, Maybelle, Minneapolis.  
 Solon, Lorraine, Minneapolis.  
 Spear, Florence, Minneapolis.  
 Spink, Helen E., White Bear.  
 Stegner, Hope A., St. Paul.  
 Stork, Allen B., Harmony.  
 Strate, Clara, Moorhead.  
 Stromgren, Lucia, Center City.  
 Sturtevant, Abby, Minneapolis.  
 Svensrud, Ida, Minneapolis.  
 Tallant, Ruth L., Minneapolis.  
 Tanikawa, Yoshio, Tsu Ise, Japan.  
 Todd, Erma E., Minneapolis.  
 Toomey, Mary, St. Paul.  
 Trask, Bertha M., Herman.  
 Turnbull, Lloyd W., Minneapolis.  
 Ueland, Elsa, Minneapolis.  
 Uzzell, Thomas H., Morgan Park,  
 Chicago, Ill.  
 Van Slyke, Lois C., Minneapolis.  
 Waite, Camelia, Minneapolis.  
 Wales, Geneva, Minneapolis.  
 Wedge, Vera E., Zumbrota.  
 Weese, Asa O., Hutchinson.  
 Welch, Louise, St. Paul.  
 Weld, Helen, Minneapolis.  
 Whaley, Amanda M., St. Paul.  
 Wigforss, Nanna, Red Wing.  
 Willits, Nettie, Sioux Falls, S. D.  
 Wilson, Clyde H., Minneapolis.  
 Woolsey, Leona, Minneapolis.  
 Yates, Fanny A., St. Paul.  
 Yeaton, Walter J., Minneapolis.

## SOPHOMORES—320

- Aichele, Johanna, St. Paul.  
 Ainsworth, Charles L.,  
 Chippewa Falls, Wis.  
 Akerson, George E., Minneapolis.  
 Allen, Jennie E., Minneapolis.  
 Amundsen, Albert E., St. Paul.  
 Anderberg, Irene A., Sisseton, S. D.  
 Anderson, Clara S., Milan.  
 Anderson, Walter E., Stillwater.  
 Andrews, Dalton M., St. Paul.  
 Bamber, Carlotta, Rochester.  
 Barclay, Luvia, Minneapolis.  
 Barke, Arthur R., Fergus Falls.  
 Barlow, Frank, Kasson.  
 Barr, Jean B., Minneapolis.  
 Bell, Julia B., Minneapolis.  
 Benson, Eva, Maple Plain.  
 Berrisford, Mercedes, St. Paul.  
 Berrisford, Paul D., St. Paul.  
 Bethke, William, Franklin.  
 Bookwalter, Hazel, Minneapolis.  
 Bowen, Mercy H., St. Paul.  
 Boyes, Earle, Spring Valley.  
 Boyson, Maybelle, Minneapolis.  
 Brackett, Helen L., Charles City, Ia.  
 Brezler, Anna P., Anoka.  
 Brigham, Helen, Minneapolis.  
 Brinsmaid, Martha M., Minneapolis.  
 Brown, Edna M., Minneapolis.  
 Brown, Thirza, Minneapolis.  
 Browne, Marie, Minneapolis.  
 Bruce, Edna A., Minneapolis.  
 Buck, Florence, Minneapolis.  
 Burton, Lois L., Alden.  
 Buswell, Arthur M., Minneapolis.  
 Butler, Florence, Winona.  
 Caldwell, Josephine, St. Paul.  
 Cameron, Bula, Wahpeton, N. D.  
 Cammack, William R., St. Paul.  
 Campbell, Hugh B., Stillwater.  
 Campbell, Stella, Tracy.  
 Carleton, George, Minneapolis.  
 Carlson, C. Arthur, Minneapolis.  
 Carlson, Esther E., Minneapolis.



Carlson, Ethel Belle, Minneapolis.  
 Cawley, Charles J., Minneapolis.  
 Cawley, F. Stanton, Minneapolis.  
 Chance, Harold K., Minneapolis.  
 Chenery, Isabella, Jamestown, N. D.  
 Clapp, Ella, St. Paul.  
 Clark, Harriet O., Minneapolis.  
 Clendening, Gladys, Minneapolis.  
 Clifford, C. May, West Concord.  
 Clouston, Edith, Minneapolis.  
 Coleman, Myrtle, Minnetonka Beach.  
 Collier, Frances L., Minneapolis.  
 Collins, Lucile, Minneapolis.  
 Collins, Thos. J., Minneapolis.  
 Comstock, Belle May, St. Paul.  
 Confer, L. Marie, Minneapolis.  
 Cook, Lillian E., Northome.  
 Coon, Chauncey C., Minneapolis.  
 Cowling, Helen, Ely.  
 Cram, Walter, Minneapolis.  
 Crawford, Ruth, Minneapolis.  
 Critchett, Francis E., New Ulm.  
 Crittenden, Ethel, Minneapolis.  
 Crocker, Katherine, Minneapolis.  
 Crogan, Mattie, Minneapolis.  
 Currie, Helen H., Minneapolis.  
 Curtis, Josephine, Minneapolis.  
 Cutler, Mary E., Minneapolis.  
 Dahl, Olga, Minneapolis.  
 Davis, Homer, Dickinson, N. D.  
 Dedolph, Theodore, St. Paul.  
 Dix, Gertrude Ethel, Minneapolis.  
 Dodge, George P., Minneapolis.  
 Donaghue, Belle, Minneapolis.  
 Donahoe, Stephen A.,  
     Hot Springs, S. D.  
 Donohue, Gertrude, Minneapolis.  
 Dorsey, Cora, Minneapolis.  
 Dorsey, James E., Minneapolis.  
 Douglas, Leila, St. Paul.  
 Downey, Vina K., Minneapolis.  
 Duxbury, Leland S., Caledonia.  
 Eakins, Bessie, Gary, S. D.  
 Eckholdt, Laura B., Minneapolis.  
 Eddy, Helen F., Minneapolis.  
 Eenkema, Katherine, Clara City.  
 Eidsmoe, Sever B., Minneapolis.  
 Eisengraeber, Gustav, St. Paul.  
 Elke, Estella L., Chaska.  
 Ellis, Lynn, Minneapolis.  
 Elmquist, Marie, St. Paul.  
 Elwell, Georgia B., Minneapolis.  
 Engson, Edward, Hallock.  
 Erdall, Agnes R., St. Paul.  
 Erdall, Leonard T., St. Paul.  
 Erickson, Hilma E., Alexandria.  
 Evans, Nevada S., Minneapolis.  
 Fagerstrom, Albert H., Minneapolis.  
 Fagundus, Ruth, Minneapolis.  
 Ferguson, Clare, Minneapolis.  
 Feton, Augusta A., Canby.  
 Fisher, Harold C., Minneapolis.  
 Fiske, Cyrus H., St. Paul.  
 Fitzsimmons, Mary A., St. Paul.  
 Fluke, Helen, Akeley.  
 Foley, Mabel M., Minneapolis.  
 Freeman, Howard H., Washburn Park.  
 Fritzberg, Huldah, Biwabik.  
 Gaylord, Robert M., Minneapolis.  
 Gibbs, Velzora A., Waterville.  
 Gilger, Bessie, Minneapolis.  
 Giltinan, Eleanor, Minneapolis.  
 Goldsmith, G. W., Hutchinson.  
 Gould, Anna M., Glencoe.  
 Graham, Reginald D., West Duluth.  
 Grapes, Iva, Adrian.  
 Green, Ethelinda B., Stillwater.  
 Gullickson, Glenn, Minneapolis.  
 Gundersen, Margaret E., Minneapolis.  
 Gurley, George P., Minneapolis.  
 Hague, Gertrude M., Minneapolis.  
 Haines, Helen B., Minneapolis.  
 Hall, Ruth M., St. Paul.  
 Halvorson, Gustav, Minneapolis.  
 Hamilton, Carl L., Dubuque, Ia.  
 Hamilton, William J., Minneapolis.  
 Hammond, Eva G., Minneapolis.  
 Hankey, Clara, Minneapolis.  
 Hanson, Minnie O., Morris.  
 Hardick, Florence, St. Paul.  
 Harms, Samuel F., Norwood.  
 Haupt, Mary C., St. Paul.  
 Hayes, Mary C., Minneapolis.  
 Heneman, Herbert, Lester Prairie.  
 Heritage, Mary Hill, Minneapolis.  
 Herring, Hazle S., Riceville, Ia.  
 Hobbs, Marabeth, Minneapolis.  
 Hodgson, Marie, Minneapolis.  
 Hoffmann, Pauline, St. Paul.  
 Holm, Gustave S., Minneapolis.  
 Hudson, Mabelle, Minneapolis.  
 Hutchinson, Enid M., Minneapolis.  
 Jacobsen, Nora, Luverne.  
 Jewett, Helen E., Fergus Falls.  
 Johnson, Ella, Winona.  
 Johnson, Fred R., New Richland.  
 Johnson, Freda D., St. Paul.  
 Johnson, Jennie, Excelsior.  
 Johnson, Marie, Minneapolis.  
 Johnson, Millie E., Minneapolis.  
 Kelley, Aris R., Minneapolis.  
 Kellogg, Ada B., St. Paul.  
 Kemp, Etheleen, Minneapolis.  
 Kent, Fay, Minneapolis.  
 Kepner, Ben Hur, Appleton.  
 Kimball, Ruth A., Minneapolis.  
 King, James C., Minneapolis.  
 Kling, David T., Donnelly.  
 Koerner, Ila, St. Paul.  
 Lampert, Edna, Minneapolis.  
 Lane, Anna M., St. Paul.  
 Larrabee, Walter F., Minneapolis.  
 Lathrop, Elsie L., Minneapolis.  
 Laughlin, Vera M., Eau Claire, Wis.  
 Lawler, Frank J., Minneapolis.  
 Lawrence, Marion, Minneapolis.  
 Lenart, Elta, Minneapolis.  
 Leonard, F. Perry, Minneapolis.  
 Lia, Alma, Hancock.  
 Lien, Luella C., Granite Falls.  
 Lloyd, Frances H., St. Paul.  
 Long, Will H., Elysian.  
 Loomis, Veda, Minneapolis.  
 Losse, Hyme, Minneapolis.  
 Luckert, Edith M., Minneapolis.  
 Lundeen, Marie, Minneapolis.  
 Lydon, Helen, Minneapolis.  
 Lyford, Stella E., Minneapolis.

- Lyon, Mary Anna, Minneapolis.  
 McDermott, Joseph C., Clontarf.  
 McKenzie, Harriet E., Lake Benton.  
 McKenzie, John, Jr., Lake Benton.  
 MacLagan, Bonnie, St. Paul.  
 McMillan, Effie, Luverne.  
 \*McNutt, Rebecca, Algona, Ia.  
 McRostie, Wm. Morris, Lake City.  
 Maloy, Agnes C., St. Cloud.  
 Marden, Irene, Barnesville.  
 Markham, Royal E., Rush City.  
 Martindale, Bess, Litchfield.  
 Mathes, Florence, St. Paul.  
 Merrill, Robert C., Minneapolis.  
 Miller, Arleigh R., Minneapolis.  
 Miller, Jensine, Minneapolis.  
 Miller, Lillian G., Minneapolis.  
 Molenaar, Richard, Raymond.  
 Montgomery, John, Minneapolis.  
 Moriguchi, Saifichi, Minneapolis.  
 Munck, Harold, Owatonna.  
 Murseth, M. Lillian, Minneapolis.  
 Naeve, Edith A., Minneapolis.  
 Nelson, Edna C., Red Wing.  
 Nelson, Herbert, Minneapolis.  
 Nelson, O. Norman, St. Paul.  
 Nesse, James N., Mabel.  
 Newhall, Richard A., Minneapolis.  
 Newton, Caroline, Minneapolis.  
 Nichols, Marjorie P., Pipestone.  
 Nickell, Marion, Minneapolis.  
 Nienhauser, Roy B., St. Paul.  
 Nixon, Hugh H., Wells.  
 Nordley, Harry, Minneapolis.  
 Nutter, Hannah, Minneapolis.  
 Nye, Katherine A., Minneapolis.  
 Ober, Mary L., Duluth.  
 Olsen, Phoebe M., Minneapolis.  
 Olsgard, Eugene, Minneapolis.  
 Olson, Mary D., Lake Park.  
 Ovestrud, Edmund, Spring Grove.  
 Paddock, Laura, Minneapolis.  
 Painter, Helen D., Minneapolis.  
 Parkell, Irene M., Minneapolis.  
 Parker, Alonzo E., North Branch, Ia.  
 Peterson, Celius, Mabel.  
 Peterson, Ernest A., Albert Lea.  
 Petterson, Huldah O., Madelia.  
 Pinkus, Olga, St. Paul.  
 Pitts, Eva L., Alton, Ia.  
 Pomeroy, Eunice, Minneapolis.  
 Prime, Ruth, Minneapolis.  
 Probst, Ilse G., St. Paul.  
 Putnam, Leslie R., Minneapolis.  
 Race, Adah M., Minneapolis.  
 Ramsey, Grace, Minneapolis.  
 Ramsland, Rudolph J., Sacred Heart.  
 Rankin, Edward P., Jamestown, N. D.  
 Reed, Abbie N., Minneapolis.  
 Reed, Ethel E., Minneapolis.  
 Reum, Arthur W., Minneapolis.  
 Rickard, Marian, Minneapolis.  
 Ringdahl, N. Robert, Minneapolis.  
 Ripley, Ava A., Minneapolis.  
 Robbins, Esther M., Robbinsdale.  
 Roberts, Marjorie, Minneapolis.  
 Roberts, Thomas C., Minneapolis.  
 Robinson, Sarah, Minneapolis.  
 Rogers, Caroline E., Minneapolis.  
 Rossi, Julia, Mantorville.  
 Rowe, Ina, Minneapolis.  
 Sackett, Ina P., Minneapolis.  
 Salzer, Helen C., Minneapolis.  
 Schaller, Karl A., Hastings.  
 Schneider, Jessie J., Minneapolis.  
 Schulte, Henry, Plato.  
 Schutte, Helen, St. Paul.  
 Seabury, Paul R., St. Paul.  
 Sedgwick, Fred G., Minneapolis.  
 Sefton, Adel, St. Paul.  
 Sell, Erna L., Fairfax.  
 Shellenberger, Olive W., St. Paul.  
 Shook, Margaret M., Northome.  
 Simmons, Marjorie M., Hunter, N. D.  
 Sinclair, Myra Jean, Minneapolis.  
 Sinderson, Grace, Minneapolis.  
 Skartum, Bess, Lake Benton.  
 Skoglund, Alma G., North St. Paul.  
 Sly, Gertrude B., Minneapolis.  
 Smart, Alice L., Minneapolis.  
 Smart, Anna A., Minneapolis.  
 Smith, A. Blanche, Rochester.  
 Smith, Eunice H., Minneapolis.  
 Smith, Maude M., Miles City, Mont.  
 Snere, Irma L., Minneapolis.  
 Soloway, Paul S., Minneapolis.  
 Souba, Lucie, Hopkins.  
 Spain, Lillian, Minneapolis.  
 Spring, Arthur D., Minneapolis.  
 Starr, Elizabeth, Deephaven.  
 Stoff, Esther, Minneapolis.  
 Stratton, Ethel, Minneapolis.  
 Strong, Louise A., Minneapolis.  
 Sumpter, Arlo M., Le Roy.  
 Sutton, Pearl G., Stillwater.  
 Swanson, Gertrude M., St. Paul.  
 Swedberg, Luella C., Luverne.  
 Swinburne, Gertrude, Minneapolis.  
 Tate, Elizabeth, Faribault.  
 Tebbets, Marion, Minneapolis.  
 Thompson, Susan B., Minneapolis.  
 Thomson, Theodore W., Minneapolis.  
 Thuot, Julia, Minneapolis.  
 Tillotson, Alice, Minneapolis.  
 Tisdale, Mary Vaill, Slayton.  
 Tornstrom, Mary, Stillwater.  
 Toupin, Joseph A., Red Lake Falls.  
 Turner, Winifred E., Minneapolis.  
 Turnquist, Florence, Minneapolis.  
 Utendorfer, George W., Gaylord.  
 Vance, Erskine W., Crookston.  
 VanderHiden, Alice, St. Paul.  
 Ware, Elizabeth R., Minneapolis.  
 Ware, Frederick W., Minneapolis.  
 Warren, Jessie A., Minneapolis.  
 Wash, Allan J., Minneapolis.  
 Watson, Anna, St. Paul.  
 Webster, Jennie, Minneapolis.  
 Wenberg, Ernest A., Calumet, Mich.  
 Wessberg, May, Fergus Falls.  
 White, Lucy J., Luverne.  
 Williams, Charles A., Luverne.  
 Williams, Howard, Minneapolis.  
 Wingate, John, Minneapolis.  
 Winterer, Florence, Valley City, N. D.  
 Winterquist, Albert L., Little Falls.

\*Died March 31, 1908.

Witchie, Hazel M., Minneapolis.  
Woodis, Clark N., Amboy.

Wretling, Hilma E., Alexandria.  
Yorke, Georgia M., Minneapolis.

## FRESHMEN—446

Ainsworth, Caroline, Minneapolis.  
Allen, Arthur E., Minneapolis.  
Allen, William L., Minneapolis.  
Ames, Georgiana, Minneapolis.  
Amundson, Mark H., Alexandria.  
Amy, Helen L., Minneapolis.  
Anderson, Alice E., Minneapolis.  
Anderson, Hilda A., St. Paul.  
Anderson, Joseph Elmer, Amboy.  
Anderson, Marie L., Minneapolis.  
Applebee, Ruby M., Anoka.  
Arnold, Benjamin E., Brainerd.  
Avis, Samuel Lee, Jamestown, N. D.  
Ayers, Grace F., Minneapolis.  
Babeock, Lana, Minneapolis.  
Baillie, James G., Virginia.  
Barber, Ralph, Long Prairie.  
Bathhurst, John, Minneapolis.  
Beddall, Claude R., Ellsworth, Wis.  
Becman, Elna, Minneapolis.  
Bell, Edward E., Minneapolis.  
Bell, Ruth, Minneapolis.  
Benoit, Albert, Crookston.  
Bergh, Gertrude, Kerkhoven.  
Bernhagen, Clara H., Minneapolis.  
Bieber, Louise, Minneapolis.  
Billau, Helen, St. Paul.  
Bingen, Wm. I., Webster, S. D.  
Blake, Frances E., St. Paul.  
Bobb, Bessie E., Minneapolis.  
Boland, George H., St. Paul.  
Bolstad, Sigvard, Dawson.  
Bonniwell, Donna, Minneapolis.  
Borden, Ethel, Minneapolis.  
Bowman, Clementine, Howard Lake.  
Boyd, George, Monticello.  
Boyd, Susan E., Minneapolis.  
Braden, Elizabeth, Minneapolis.  
Brand, Myrtle, Minneapolis.  
Brande, G. Herbert, Minneapolis.  
Branham, Alice, Minneapolis.  
Breen, Genevieve R., Minneapolis.  
Broecker, Lydia M., Afton.  
Brogmus, Walter H., Minneapolis.  
Brown, Arthur V., Alexandria.  
Brown, Doris L., Alexandria.  
Brown, Dorothy W., Alexandria.  
Brown, Mabelle, Sauk Center.  
Brownson, Ralph, St. Paul.  
Bruchholz, Henry V. A., Minneapolis.  
Bruder, Victor W., Minneapolis.  
Brunelle, Henry D., Cloquet.  
Buckley, Irene H., Minneapolis.  
Burgett, Georgia L., Faribault.  
Burkhard, Arthur C., Preston.  
Burns, Bessie, Graceville.  
Byrnes, Lyle, Minneapolis.  
Cabot, Verne S., Hector.  
Cadwell, Nellie M., Stewartville.  
Carey, Elisabeth, Minneapolis.  
Carnan, Paul I., Minneapolis.  
Carr, Marguerite H., Minneapolis.  
Carvill, Ernest H., Minneapolis.  
Casey, Elizabeth, St. Paul.  
Casey, Joseph T., Franklin.  
Casey, Nellie, St. Paul.  
Chapin, George, St. Paul.  
Cheatham, Susie E., Minneapolis.  
Chilton, Alice, Howard Lake.  
Chilton, Edward, Frazee.  
Clark, Jennie, St. Paul.  
Clark, Margaret B., Minneapolis.  
Clark, Mary R., Minneapolis.  
Cliff, F. Neill, Ortonville.  
Collins, Elsie M., Crookston.  
Corbett, Louise, St. Paul.  
Corcoran, Ben, Minneapolis.  
Cornia, Albert P., Plato.  
Cornia, Francis, Plato.  
Cotnam, Louise, St. Paul.  
Cox, F. Hanford, Cloquet.  
Cox, Marie, Minneapolis.  
Crampton, Lora, Minneapolis.  
Crawford, Fred G., Faribault.  
Curley, Roy F., Stillwater.  
Currier, Helen L., Minneapolis.  
Curtis, Carolyn, Minneapolis.  
Dahl, Sigvert S., Virginia.  
Dane, Harold J., St. Paul.  
Davies, Pearl J., Afton.  
Davis, Margaret G., Minneapolis.  
Dawson, Lillian, Minneapolis.  
Dayton, Josephine, Minneapolis.  
Decker, Lynn W., Minneapolis.  
De la Barre, Louise, Minneapolis.  
Dickinson, Rhoda, Buffalo.  
Didier, Marcelle C., Minneapolis.  
Dockstader, Mildred, Highwood.  
Doherty, Vivienne R., Minneapolis.  
Donery, Gertrude E., Minneapolis.  
Donohue, John N., St. Paul.  
Doremus, Fern, Duluth.  
Douglass, Ralph E., Minneapolis.  
Dowsell, Walter J., Minneapolis.  
Drake, Edward R., St. Paul.  
Drake, Leah R., Detroit.  
Dunn, Ney, Minneapolis.  
Du Toit, Dana W., Chaska.  
Eder, Walter H., Blue Earth.  
Edmonds, Clarence P., Groton, S. D.  
Edsall, Mary Louise, Minneapolis.  
Ehri, Eda, Minneapolis.  
Eisler, Charles J., Minneapolis.  
Elliott, William T., Minneapolis.  
Ellis, Theodora, Minneapolis.  
Engberg, Edward John, Cambridge.  
Erd, Marie, Minneapolis.  
Erickson, Beda, Minneapolis.  
Erickson, Edwin O.,  
Cooperstown, N. D.  
Erickson, Ruth, Minneapolis.  
Ewing, Louise, St. Paul.  
Faege, J. Barthell, Flandreau, S. D.  
Farmer, Fayette, Minneapolis.  
Farrell, Jeannette, Minneapolis.  
Ferguson, Ida M., Minneapolis.  
Fischer, William H., Wabasha.  
Fish, Edwin A., Minneapolis.

- Fissel, Walter, Le Mars, Ia.  
 Flahavan, Frances, Minneapolis.  
 Fleming, James J., St. Paul.  
 Fletcher, Margaret N., Minneapolis.  
 Fligelman, Frieda, Helena, Mont.  
 Foley, Florence, Stillwater.  
 Ford, Beth E., Mazeppa.  
 Foss, Florence A., Milaca.  
 Foss, Lillian E., Milaca.  
 Foster, Bernice, Duluth.  
 Foster, Evelyn, Minneapolis.  
 Foster, Mary, Duluth.  
 Frey, Henry, St. Paul.  
 Fuller, Ruth, Minneapolis.  
 Gee, Marian, Minneapolis.  
 Gibson, Mildred C., St. Paul.  
 Gillette, Raymond M., Minneapolis.  
 Gleason, Clara, Minneapolis.  
 Goodman, A. Laird, Duluth.  
 Gorham, Ira B., Minneapolis.  
 Graff, Fred W., Cooperstown, N. D.  
 Grand-Maitre, Blanche, Floodwood.  
 Griffin, John F., Shakopee.  
 Grondahl, Mabel, Red Wing.  
 Guttersen, Alvin W., Lake Crystal.  
 Haggard, Charles H., Worthington.  
 Hammond, May A., Minneapolis.  
 Hank, Eva, Minneapolis.  
 Hanke, Ethel F., Minneapolis.  
 Hanks, Mabelle L., Minneapolis.  
 Hansen, Anna M. K., Minneapolis.  
 Hansen, Pearl C., Duluth.  
 Harris, Charles L., Minneapolis.  
 Hart, Verna M., Minneapolis.  
 Hartgering, Genevieve,  
     Rapid City, S. D.  
 Hartney, Agnes Jean, Maynard.  
 Heffner, Bernhardina, Minneapolis.  
 Heilig, Charles A., Milaca.  
 Henderson, Elizabeth, Minneapolis.  
 Hensel, Kenneth N., St. Paul.  
 Hermann, Ruth E., Minneapolis.  
 Hibbard, Hazel L., Minneapolis.  
 Higley, Merle, Minneapolis.  
 Hillman, Merton S., Minneapolis.  
 Hitchcock, Blanche S., Minneapolis.  
 Hodgson, Drusilla M., Elbow Lake.  
 Hokanson, John A., Hector.  
 Holmer, Adolph F., Virginia.  
 Holmes, Donald S., Duluth.  
 Houck, Margaret, Minneapolis.  
 Houghtaling, Elma, Fairmont.  
 Howard, H. Lynne, Champlin.  
 Hull, Anne, Minneapolis.  
 Hunt, Frances, St. Paul.  
 Jackson, Teckla, Eveleth.  
 Jacobson, Albert, Jewell, Ia.  
 Jenkins, Louise, Minneapolis.  
 Jensen, Dora, Minneapolis.  
 Johnson, Allina, Minneapolis.  
 Johnson, Irene B., Minneapolis.  
 Johnson, Lydia Mathilda, Minneapolis.  
 Johnson, Margaret M., Minneapolis.  
 Jones, Edith L., Minneapolis.  
 Jones, Elinor, Wabasha.  
 Jones, Gladys, Cedar Falls, Ia.  
 Jones, H. Malcolm, Minneapolis.  
 Jones, Margery N., Minneapolis.  
 Joyce, Helen, Minneapolis.  
 Jude, Margaret, Libby.  
 Julien, Margaret, St. Paul.  
 Kaiser, Walter, Stillwater.  
 Karatz, Lucian, Minneapolis.  
 Keefe, Percy, Minneapolis.  
 Kelley, Alta, Crystal Bay.  
 Kellogg, Helen, St. Paul.  
 Kells, Lyman, Sauk Center.  
 Kenety, William F., Fulda.  
 Kennedy, Agnes, St. Paul.  
 Kennedy, Roger, St. Paul.  
 King, William A., Grand Rapids.  
 Kipp, Ivan J., St. Paul.  
 Kirkevold, Hans P., Hendricks.  
 Klein, Kenneth O., Minneapolis.  
 Klimenthagen, Ray R., St. Paul.  
 Klossner, Lulu, Winthrop.  
 Knappen, Marjorie, Minneapolis.  
 Knight, Mary, Minneapolis.  
 Knoblauch, Frank B., Minneapolis.  
 Kramer, Anna, Minneapolis.  
 Kueffner, Wm. R., St. Paul.  
 Lamoth, Arthur, Minneapolis.  
 Lane, L. Emmett, Minneapolis.  
 Lange, John W., Elysian.  
 Lange, Lorna, St. Paul.  
 Larsen, Einer W., Hopkins.  
 Latimer, S. Roy, Gladstone, Mich.  
 Laughlin, Elmer B., Tracy.  
 La Vayea, George, Minneapolis.  
 Lee, Agnes A., Akeley.  
 Lee, Ruth, Stillwater.  
 Leete, Helen P., Sparta, Wis.  
 Lemon, Kenneth, St. Paul.  
 Lenning, A. Viola, Duluth.  
 Lester, Flora R., Breckenridge.  
 Lindem, Zelma M., Herman.  
 Lindgren, Agnes A., Minneapolis.  
 Linton, Hildur T., Minneapolis.  
 Longstaff, R. S., Huron, S. D.  
 Love, Genevieve, Wayzata.  
 Lowell, Frances E., Minneapolis.  
 Lutz, Pearl A., Minneapolis.  
 Lyle, Marie C., Minneapolis.  
 McCall, Margaret, Minneapolis.  
 MacCallum, Marion S., Minneapolis.  
 McConkey, Clyde J., Brewster.  
 McConnell, Vera G., Minneapolis.  
 McCray, Alice R., St. Paul.  
 McDavitt, Sarah, St. Paul.  
 McDermott, Helen C.,  
     Rhinelander, Wis.  
 McDivitt, Florence A., Minneapolis.  
 McGrath, Margaret, Minneapolis.  
 McGrath, Vera, Minneapolis.  
 McGregor, Della, St. Paul.  
 McKeen, Edwin, Minneapolis.  
 McKenzie, John Wallace, Groton, S. D.  
 McNally, William J., Minneapolis.  
 McNamee, Ruth, Helena, Mont.  
 Magnuson, Ida, Red Wing.  
 Mallory, Arthur, St. Paul.  
 Mann, Walter L., Lake Benton.  
 Mannheimer, George, St. Paul.  
 Mansfield, Esther, Minneapolis.  
 Mansfield, Lavinia, Minneapolis.  
 Maps, Alta I., Minneapolis.  
 Marshall, Lila M., Minneapolis.  
 Marshall, Minnie E., Minneapolis.

- Martens, Irma, Minneapolis.  
 Marvin, Mary M., Zumbrota.  
 Mason, Harold C., Minneapolis.  
 Matson, Ethel R., Minneapolis.  
 Melbourn, Della, Minneapolis.  
 Menefee, Guy C., Albert Lea.  
 Merriman, Mildred, Minneapolis.  
 Michie, Roy G., Montevideo.  
 Mielke, Edwin J., Glencoe.  
 Miles, Alice M., St. Paul.  
 Millar, Marguerite I., Minneapolis.  
 Miller, Faith E., St. Paul.  
 Mitchell, Ethel M., Minneapolis.  
 Moir, Agnes P., Minneapolis.  
 Monaghan, John, Duluth.  
 Moulton, Nettie, Dawson.  
 Murnane, Winnifred, St. Paul.  
 Murphy, Paul, Minneapolis.  
 Murphy, William T., Minneapolis.  
 Nash, Malcolm A., Tracy.  
 Nelson, Nan, St. Paul.  
 Neumeier, Karl G., Stillwater.  
 Nordberg, John, Minneapolis.  
 Norman, Sigvald, Ortonville.  
 Nygren, Selma, Lake City.  
 O'Connor, Irene, Renville.  
 O'Hare, Edward S., Minneapolis.  
 O'Leary, Abigail, Wabasha.  
 Oliver, Pearl, Minneapolis.  
 Olsen, Myrtle F., Minneapolis.  
 Osborn, Byrle J., Excelsior.  
 Ostergren, Ralph C., Gladstone.  
 Ostlund, Haddon A., Minneapolis.  
 Otterstein, Earl, Amboy.  
 Overlock, Ellen, Minneapolis.  
 Palmer, Ben, St. Paul.  
 Parker, James K., Minneapolis.  
 Parks, Carl H., Montevideo.  
 Parmele, Margaret H., St. Paul.  
 Parsons, B. France, Minneapolis.  
 Paschal, Franklyn C., Davenport, Ia.  
 Patterson, Helen, Minneapolis.  
 Payette, Charles T., Minneapolis.  
 Pearce, Amy E., Hibbing.  
 Pearce, Will, Duluth.  
 Peik, Wesley E., Jordan.  
 Pershon, Erich, Young America.  
 Petersen, Berenice, Minneapolis.  
 Petersen, Laura Muller, Minneapolis.  
 Peterson, Andrew M., St. Paul.  
 Peterson, Harry H., St. Paul.  
 Peterson, Julian M., Bemidji.  
 Peterson, Gustav S., Battle Lake.  
 Phillips, Mellie R., Minneapolis.  
 Piemeisl, Rudolph, Jordan.  
 Pond, Katherine L., Minneapolis.  
 Pope, Anna E., Minneapolis.  
 Pratt, Maud M., Pipestone.  
 Prest, Helen, St. Paul.  
 Prevay, Paul, Beardsley.  
 Ramsland, Odin, Sacred Heart.  
 Rankin, Charlotte, Minneapolis.  
 Rathbun, Russell B., Minneapolis.  
 Reasoner, Shirley W., New Brighton.  
 Reed, Mary L., Duluth.  
 Rees, Lester, Minneapolis.  
 Reese, Frank, Minneapolis.  
 Reque, Anna Diderikke, Minneapolis.  
 Richmond, Hazle F., Clark, S. D.  
 Rickert, Paul M., Minneapolis.  
 Riebeth, Chester E. E., Minneapolis.  
 Rippe, Lorena E., Fairmont.  
 Roberts, Caroline D., Minneapolis.  
 Roberts, Edward B., Minneapolis.  
 Robinson, Grace E., Minneapolis.  
 Robinson, Rhea B., Minneapolis.  
 Roenisch, Clinton W., Minneapolis.  
 Rogerson, Eleanor H., Minneapolis.  
 Ronan, Neil T., Lewiston.  
 Root, Dorothy A., Minneapolis.  
 Rosenwald, Reuben M., Plato.  
 Rosholt, Norma, Minneapolis.  
 Rosing, Marguerite, St. Paul.  
 Ruble, Edna, Albert Lea.  
 Rude, Emil, Pelican Rapids.  
 Ryan, Clara, Freeport, Ill.  
 Sage, Edith, Minneapolis.  
 Sanborn, Helen A., Minneapolis.  
 Sanford, Bertha B., Minneapolis.  
 Sather, Harold C., Barron.  
 Sawyer, Sara E., Minneapolis.  
 Saxton, Florence, Minneapolis.  
 Schabacker, Carrie, Menomonie, Wis.  
 Schmidt, Nelson A., Le Mars, Ia.  
 Schrader, Hilde, St. Paul.  
 Schulstad, Einar T., St. Paul.  
 Schulz, Alma, Brainerd.  
 Seaton, Edward A., Muncie, Ind.  
 Selover, William F., Lake City.  
 Sende, Jonas A., Monticello.  
 Shearer, Hermione, Minneapolis.  
 Shedd, J. Lotta, Pasadena, Cal.  
 Shepardon, Charlotte, Minneapolis.  
 Shepley, Clara, Minneapolis.  
 Sherwin, Eva, Monticello.  
 Sherwood, Rachael M., Minneapolis.  
 Shipley, Albert L., Virginia.  
 Sias, De Forrest J., Madison.  
 Simmons, Frank H., Minneapolis.  
 Simmons, Ralph A., St. Paul.  
 Simons, Leighton R., Virginia.  
 Sinclair, Nora F., Fairmont.  
 Skinner, Miriam, Minneapolis.  
 Sleeper, Agnes J., Minneapolis.  
 Smart, Ruth A., St. Paul.  
 Smith, Alice L., Minneapolis.  
 Smith, Arthur P., Minneapolis.  
 Smith, Elizabeth M., Minneapolis.  
 Smith, F. Paul, Groton, S. D.  
 Smith, Ralph G., Groton, S. D.  
 Smith, Vera C., Minneapolis.  
 Snell, Ella M., St. Paul.  
 Souther, M. Edwin, Coleman, S. D.  
 Spates, Marjorie, St. Paul.  
 Spencer, Ethel, Minneapolis.  
 Springer, George T., Gladstone, Mich.  
 Stadsvold, Sidney, Austin.  
 Starrett, Raymond L., Minneapolis.  
 Stearn, Harriett M., Minneapolis.  
 Steinmetz, Jennie C., Minneapolis.  
 Stellwagen, Grace, Minneapolis.  
 Stevens, Dorothy C., Minneapolis.  
 Stiles, Glenn S., Minneapolis.  
 Stone, Philip M., Morris.  
 Storer, Mary F., Minneapolis.  
 Strate, Johanna, Duluth.  
 Sturtevant, F. Hardy, Detroit.  
 Suffel, Wm. Reynolds, Duluth.

Sutton, George E., Prior Lake.  
Swain, Lila, Powers.  
Swenson, Clarence E., Luverne.  
Swenson, Esther L., Minneapolis.  
Switzer, Elsie L., Minneapolis.  
Taylor, Benjamin E., St. Paul.  
Taylor, Charles P., Excelsior.  
Taylor, Harold R., Chaska.  
Temple, Jesse, St. Louis, Mo.  
Thelen, Edward, Stillwater.  
Totton, Frank M., Minneapolis.  
Townsend, Mary E., Hutchinson.  
Trautman, Olivia, Minneapolis.  
Traxler, Marion, Minneapolis.  
Trevette, Hazel E., Minneapolis.  
Tupper, Emily H., Minneapolis.  
Tupper, Marion, Minneapolis.  
Van Vliet, Florence L., Minneapolis.  
Vicker, Selma H., Halstad.  
Vig, Richard, Fosston.  
Walsh, Rose, St. Paul.  
Warren, Louise, Minneapolis.  
Wash, Carlyle H., Minneapolis.

Washburn, Charles A. E., Minneapolis.  
Waugh, Charlotte, St. Paul.  
Weesner, Baulah, Minneapolis.  
Werner, Henry, Fulda.  
West, Walter M., Minneapolis.  
Whaley, Clementine R., St. Paul.  
Whipple, Elleen, St. Paul.  
Wilcox, Leslie W., Hancock.  
Will, F. Edward, Minneapolis.  
Williams, Louis A., Sauk Center.  
Willis, Hazel M., Minneapolis.  
Winslow, Vera J., St. Paul.  
Wise, Vivien C., Minneapolis.  
Withee, Hazel E., St. Paul.  
Wolff, Bertha A., St. Paul.  
Woolsy, Lillian L., Minneapolis.  
Worrell, Howard S., St. Paul.  
Wyckoff, George S., Worthington.  
Wyman, Harold C., Minneapolis.  
Yahn, Clarence, Kasson.  
York, Anne G., Minneapolis.  
Young, Blanche M., Minneapolis.

UNCLASSED—155.

Anderson, Fred A., Minneapolis.  
Andrews, Florence, Mankato.  
Aust, Clara L., Minneapolis.  
Bailey, Lucretia, Minneapolis.  
Barclay, Durant, Stillwater.  
Barnard, Paul, Minneapolis.  
Barney, Beth, Minneapolis.  
Benton, Elma H., Minneapolis.  
Blodgett, May A., St. Paul.  
Borgman, Melville B., Minneapolis.  
Bourne, M. Louisa, Minneapolis.  
Bowler, Helen, Duluth.  
Braley, Love, Crookston.  
Brann, Josephine, Minneapolis.  
Bright, Elizabeth, Minneapolis.  
Brooke, Helen L., Minneapolis.  
Bryan, Agnes S., Rochester.  
Bulen, Leon L., Minneapolis.  
Bullard, Elizabeth, St. Paul.  
Bullard, John R., Waseca.  
Burns, F. Roger, Le Mars, Ia.  
Buswell, Calvin E., Minneapolis.  
Buswell, Florence, Winona.  
Cahill, Thomas, Mabel.  
Caster, Elizabeth, Minneapolis.  
Castner, Florence B., Minneapolis.  
Christ, Lydia B., Minneapolis.  
Cosgrove, Edward B.,  
State Fair Grounds.  
Currier, George W., Jr., St. Paul.  
Day, Constance, St. Paul.  
Degnan, John P., Winona.  
De Laittre, Evelyn, Minneapolis.  
Dickinson, H. L., Minneapolis.  
Dickinson, Margaret E., Minneapolis.  
Dinehart, Florence E., Slayton.  
Donaldson, Zoc, Minneapolis.  
Donohue, Gertrude, Minneapolis.  
Doolittle, Madeleine, Minneapolis.  
Dorn, Helena, St. Paul.  
Downing, Harold L., Minneapolis.  
Edwards, Mary E., Minneapolis.  
Elliott, Charles W., Minneapolis.

Emery, Lila R., Northwood, Ia.  
Ervin, William S., Mankato.  
Eva, Sister M., St. Paul.  
Farnam, Josephine, Winona.  
Fernald, Robert W., St. Paul.  
Flaherty, Sheridan S., Morris.  
Goldstein, Harriet, Gladstone, Mich.  
Goodenow, Rae L., St. Paul.  
Graves, A. Richard, Minneapolis.  
Gray, Amy, Valley City, N. D.  
Green, E. J., Minneapolis.  
Grove, C. J., St. Paul.  
Haistensgaard, Alice, Fertile.  
Hanggi, John A., St. Paul.  
Harwood, Evelyn, Minneapolis.  
Hayes, Annie M., Minneapolis.  
Hayes, Bridget T., Minneapolis.  
Hedtke, Anna E., Henderson.  
Henrica, Sister, St. Paul.  
Hitchcock, Helen, Minneapolis.  
Hofflin, Elizabeth, Hopkins.  
Honberger, F. H., Chicago.  
Hopkins, Ella F., Minneapolis.  
Houck, Norman A., Minneapolis.  
Hull, Gertrude, Minneapolis.  
Jensen, Harvey T., Minneapolis.  
Johnson, Lydia M., Minneapolis.  
Johnston, Lisle A., Madelia.  
Kelsey, Flora, Minneapolis.  
Kitaji, Sentaro, Minneapolis.  
Kjelland, A. A., Rushford.  
Klossner, Olivia, Winthrop.  
Kohn, J. Louis, Minneapolis.  
Knewbuhl, Emily R., Minneapolis.  
Krieg, Berenice L., Minneapolis.  
Larsen, John G., St. Cloud.  
La Vayea, Florence, Minneapolis.  
Lemon, Kenneth, St. Paul.  
Lilienthal, Charlotte, Minneapolis.  
Loberg, Nellie M., Minneapolis.  
Lochren, William A., Minneapolis.  
Lonquist, Ernest W., Minneapolis.  
MacDermott, Leila F., Minneapolis.

McFarland, William D., Minneapolis.  
 McIntyre, Lois L., Minneapolis.  
 Manning, Ray L., Minneapolis.  
 Mather, William S., Groton, S. D.  
 Melvin, Milton W., Minneapolis.  
 Mielke, Wilhelmina, Lonsdale.  
 Mills, Helen, Mankato.  
 Milton, Evalyn, St. Paul.  
 Mitchell, Hattie E., Minneapolis.  
 Moore, Nettie B., Minneapolis.  
 Morris, Marie, Minneapolis.  
 Morrissey, Mabel, St. Paul.  
 Mowry, J. L., Minneapolis.  
 Nehls, Marie S., Minneapolis.  
 Neumann, Ella, St. Paul.  
 Nichols, Florence E., Minneapolis.  
 Nichols, Ruth, St. Paul.  
 Nicholson, Mrs. E. E., Minneapolis.  
 Oredalen, Mary, Kenyon.  
 Owen, Dana Cavour, Osseo.  
 Papez, James W., Hector.  
 Pepper, Dorothy S., Minneapolis.  
 Phillips, Grace, Minneapolis.  
 Phillips, Milo A., Minneapolis.  
 Plant, Helen, Minneapolis.  
 Prigge, Lambert F., Ada.  
 Randall, Robert C., Mankato.  
 Rees, Inez, Minneapolis.  
 Richards, Chloe E., Duluth.  
 Rodeen, Charles, Minneapolis.  
 Ronning, A. G., Boyd.  
 Russell, Loretta, Mankato.  
 Schladinski, Frank E., Winona.  
 Schmidt, Hans W., St. Paul.  
 Schmidt, Mathilda, Minneapolis.  
 Schroeder, Herman W., Minneapolis.  
 Schrueth, J. L., Duluth.  
 Schuknecht, John R., Minneapolis.  
 Shaleen, Anna, St. Paul.  
 Smith, Emmett W., Minneapolis.  
 Sommermeyer, Louise W., Minneapolis.  
 Spies, A. Agnes, Graettinger, Ia.  
 Stellwagen, Mrs. S. A., Minneapolis.  
 Stephens, Stella M., Minneapolis.  
 Stokes, Ralph S., St. Paul.  
 Storms, R. L., Minneapolis.  
 Stratte, Arthur, Dawson.  
 Swanson, Elaine, St. Paul.  
 Tallant, Webster, Minneapolis.  
 Tatham, Ayrtton, St. Paul.  
 Thompson, Ida B., Grandy.  
 Tillotson, Benjamin F., Moorhead.  
 Tincher, Coyle C., Minneapolis.  
 Trimble, Alice B., Minneapolis.  
 Von Scholten, Toska M., Minneapolis.  
 Wadden, Agnes R., Madison, S. D.  
 Walker, Frank G., Minneapolis.  
 Ware, Jennie, St. Paul.  
 Webster, Florence P., Minneapolis.  
 Wilk, Harry, Minneapolis.  
 Williams, Lorenzo, Minneapolis.  
 Williams, Lotta, Spring Park.  
 Williams, Olive, Minneapolis.  
 Winton, Maynard, Minneapolis.  
 Witchie, Leila A., Minneapolis.  
 Wolff, De Graff, St. Paul.  
 Wright, Mary, Minneapolis.  
 Young, Frances L., St. Paul.  
 Zeliadt, Ernest A., Minneapolis.  
 Zellar, Enza A., St. Paul.

## Six Years Medical Course

### SOPHOMORES—33

Bailey, Herbert B., Jackson.  
 Berrisford, Paul D., St. Paul.  
 Bratrud, Arthur F., Warren.  
 Carroll, William C., St. Paul.  
 Dorge, Richard L., Minneapolis.  
 Douglass, Jesse E., Blue Earth.  
 Eisengraeber, Gustav, St. Paul.  
 Frisch, Frank, Grogan.  
 Gardner, Edwin L., Minneapolis.  
 Grant, Malcolm, Faribault.  
 Griffin, Patrick J., Shakopee.  
 Hand, Robert D., Elbow Lake.  
 Handy, John A., Good Thunder.  
 Haugen, Leslie, Albert Lea.  
 Kirsch, Ralph L., Crookston.  
 Klein, Harry, Duluth.  
 Lepper, Lawrence E., Minneapolis.  
 Michelson, Henry E., Bismarck, N. D.  
 Morris, Mary, Minneapolis.  
 Nordley, Harry, Minneapolis.  
 Oppel, Arthur F., Fulda.  
 Paulson, Carl W., Minneapolis.  
 Peppard, Thomas A., Minneapolis.  
 Pollock, Lee W., Rochester.  
 Satterlund, Victor L., Minneapolis.  
 Seifert, Otto J., New Ulm.  
 Snell, Charles F., Detroit.  
 Snyder, George W., St. Paul.  
 Undine, Clyde A., Minneapolis.  
 Weed, Frank E., Conway, N. D.  
 Wetherby, Victor L., Minneapolis.  
 Whittier, Raymond W., Minneapolis.  
 Workman, Warner G., Tracy.

### FRESHMEN—55

Aldes, Harry, St. Paul.  
 Badeaux, George I., Brainerd.  
 Blake, Henry S., Minneapolis.  
 Bonness, Hazel, Minneapolis.  
 Bratrud, Edward, Spring Valley.  
 Brodie, Walter D., St. Paul.  
 Campbell, Lowell M., Minneapolis.  
 Carman, Paul I., St. Paul.  
 Clune, J. Leo, Minneapolis.  
 Cooley, John Ford, Madelia.  
 Davis, Thayer C., Akeley.  
 Finley, William F., Ferryville, Wis.  
 Gordon, Frank A., Williston, N. D.  
 Hall, Joseph M., Minneapolis.

Hening, Robert M., Minneapolis.  
Hilger, Leo A., St. Paul.  
Howe, Archibald W., St. Paul.  
Jenson, Oscar, Minneapolis.  
Josewitch, Alexander, Minneapolis.  
Karras, Ray W., Hudson, Wis.  
Kleinmann, Francis, Hutchinson.  
Kucera, William J., Hutchinson.  
Langworthy, Effie W., Minneapolis.  
Langworthy, Willis H., Minneapolis.  
Larson, Wilmer, St. Paul.  
McCrary, Willis G., Owatonna.  
McGuire, Lee, St. Paul.  
McIntosh, Henry C., St. Paul.  
McMillan, Ralph, Minneapolis.  
Mariette, Ernest S., Minneapolis.  
Mintz, Harry A., St. Paul.  
Moersch, Fred P., St. Paul.  
Morell, Clifford F., Verndale.  
Nesse, Silas A., Mabel.  
Nordland, Martin, Minneapolis.

Nuessle, Walter G., Springfield.  
Nugent, Earl, Glenwood.  
Quinnell, Earle D., Neche, N. D.  
Robilliard, Charles M., Faribault.  
Roddis, Louis H., Osakis.  
Rydell, Charles B., North Branch.  
Senescall, Cleve R., Ortonville.  
Sjolas, Amy S., Hoffman.  
Smiley, Mervale, Minneapolis.  
Smith, Orrin Kenneth, Minneapolis.  
Steffen, Theodor H., New Ulm.  
Stratte, Joseph J., Dawson.  
Sunwall, J. Oscar, Minneapolis.  
Tisdale, Mahlon, Slayton.  
Uisaker, Oscar M., Wahpeton, N. D.  
Warwick, Margaret M., Goodhue.  
Webb, Roscoe C., Tracy.  
Weibeler, Peter H., Minneapolis.  
Wohlrabe, Arthur A., Truman.  
Woltmann, Henry W., Minneapolis.



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1908-1909

Volume XI

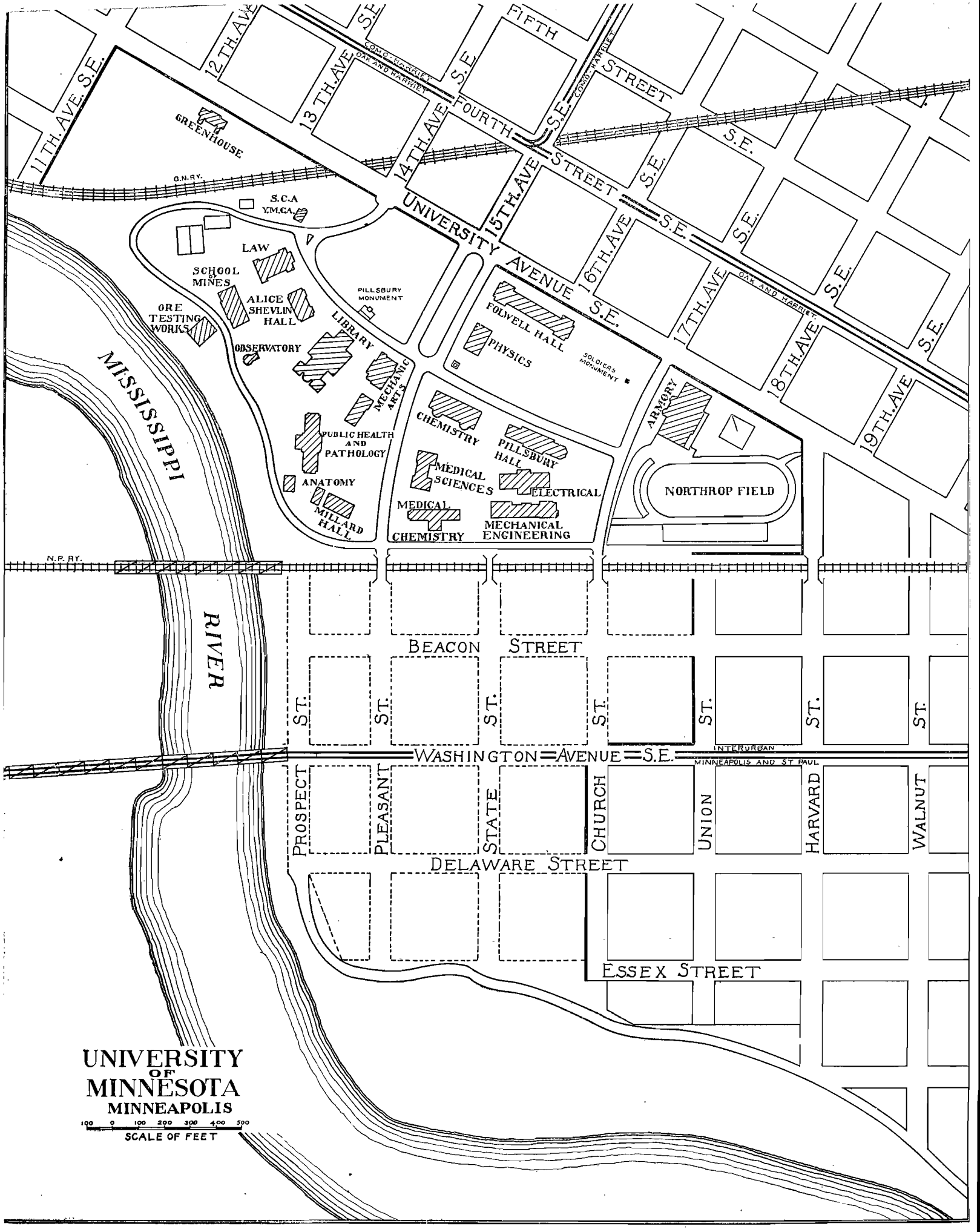
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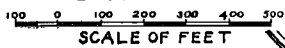
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**UNIVERSITY  
OF  
MINNESOTA  
MINNEAPOLIS**



# CALENDAR FOR 1908-1909

1908

1909

## MAY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	<b>30</b>
31	..	..	..	..	..	..

## JUNE

..	1	2	3	4	5	6
<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
..	..	..	..	..	..	..

## SEPTEMBER

..	..	1	2	3	4	5
6	<b>7</b>	8	9	10	11	12
13	14	<b>15</b>	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..
..	..	..	..	..	..	..

## OCTOBER

..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
..	..	..	..	..	..	..

## NOVEMBER

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	<b>26</b>	<b>27</b>	<b>28</b>
29	30	..	..	..	..	..
..	..	..	..	..	..	..

## DECEMBER

..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	<b>19</b>
20	21	22	23	24	25	26
27	28	29	30	31	..	..

## JANUARY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	4	<b>5</b>	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

## FEBRUARY

..	1	<b>2</b>	3	4	5	6
7	8	9	10	11	<b>12</b>	13
14	15	16	17	18	19	20
21	<b>22</b>	23	24	25	26	27
28	..	..	..	..	..	..
..	..	..	..	..	..	..

## MARCH

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
..	..	..	..	..	..	..

## APRIL

..	..	..	..	1	2	3
4	5	6	7	8	<b>9</b>	<b>10</b>
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	..
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## MAY

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	<b>31</b>	..	..	..	..	..

## JUNE

..	..	1	2	3	4	5
<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..

# University Calendar

1907-1908

## THE UNIVERSITY YEAR

The University year covers a period of thirty-eight weeks beginning on the second Tuesday in September. Commencement day is always the second Thursday in June.

<b>FEBRUARY</b>	4 T	Second semester begins—classes called for regular work
	12 W	Lincoln's birthday—legal holiday
	22 S	Washington's birthday—legal holiday
<b>APRIL</b>	17 F	Good Friday. Recess two days
<b>MAY</b>	2 Th	Regular meeting Board of Regents
	25 M	Senior examinations begin
	30 S	Decoration Day—legal holiday
<b>JUNE</b>	1 M	Semester examinations begin
	6 S	Semester examinations close

### COMMENCEMENT WEEK, 1908

<b>SUNDAY</b>	June 7	Baccalaureate service
<b>MONDAY</b>	June 8	Senior class exercises
<b>TUESDAY</b>	June 9	Phi Beta Kappa address. Senior promenade
<b>WEDNESDAY</b>	June 10	Alumni Day. Regular meeting Board of Regents
<b>THURSDAY</b>	June 11	Commencement Day. The thirty-sixth annual commencement
<b>FRIDAY</b>	June 12	Summer vacation begins

## 1908-1909

<b>SEPTEMBER</b>	7-14	Entrance examinations, condition examinations and registration
	15 T	Classes called for regular work. Seventeenth annual session
<b>OCTOBER</b>	1 Th	Regular meeting Board of Regents
	5 M	Regular meeting University Council. Opening day, School of Agriculture
<b>NOVEMBER</b>	26 Th	Thanksgiving Day. Recess three days
<b>DECEMBER</b>	7 M	Regular meeting University Council
	8 T	Annual meeting Board of Regents
	19 S	Holiday recess begins (no classes)
<b>JANUARY</b>	5 T	Work resumed in all departments
	23 S	Semester examinations begin
	30 S	Semester examinations close
<b>FEBRUARY</b>	2 T	Second semester begins—classes called for regular work
	12 F	Lincoln's birthday—legal holiday
	22 M	Washington's birthday—legal holiday
<b>APRIL</b>	5 M	Regular meeting University Council
	9 F	Good Friday. Recess two days

*General Information.*

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<b>MAY</b>	6 Th	Regular meeting Board of Regents
	24 M	Senior examinations begin
	31 M	Decoration Day—legal holiday
<b>JUNE</b>	1 T	Semester examinations begin
	5 S	Semester examinations close
	7 M	Regular meeting University Council

**COMMENCEMENT WEEK, 1909**

<b>SUNDAY</b>	June 6	Baccalaureate service
<b>MONDAY</b>	June 7	Senior class exercises
<b>TUESDAY</b>	June 8	Sigma Xi address. Senior promenade
<b>WEDNESDAY</b>	June 9	Alumni Day. Regular meeting Board of Regents
<b>THURSDAY</b>	June 10	Commencement Day. The thirty-seventh annual commencement
<b>FRIDAY</b>	June 11	Summer vacation begins

**PROGRAM—ENTRANCE EXAMINATIONS**

<b>MONDAY,</b>	September 7, 9	A. M.	3 Botany
			3 Zoology
			1 Astronomy
			3 Geology
		2 P. M.	2 American Government
			2 Political Economy
<b>TUESDAY,</b>	September 8, 9	A. M.	2 History
			5 Physics
		2 P. M.	4 Chemistry
			3 Physiography
<b>WEDNESDAY,</b>	September 9, 9	A. M.	1 English
		2 P. M.	1 German
			1 French
			1 Latin
			1 Scandinavian
<b>THURSDAY,</b>	September 10, 9	A. M.	1 Elementary Algebra
			2 Commercial Geography
		2 P. M.	1 Higher Algebra
<b>FRIDAY,</b>	September 11, 9	A. M.	1 Plane Geometry
		2 P. M.	1 Solid Geometry

1 Folwell Hall, 2 Library Building, 3 Pillsbury Hall, 4 Chemical Laboratory, 5 Physics Building, 6 Mechanic Arts Building.

**PROGRAM OF CONDITION EXAMINATIONS**

<b>TUESDAY,</b>	September 8, 9	A. M.	English, Rhetoric, Sociology
		2 P. M.	Mathematics, Philosophy, Psychology
<b>WEDNESDAY,</b>	September 9, 9	A. M.	Animal Biology, Botany, Geology, Physics
		2 P. M.	Astronomy, Chemistry, Economics, Drawing
<b>THURSDAY,</b>	September 10, 9	A. M.	French, German, Greek, Scandinavian
		2 P. M.	History, Latin, Education, Politics

For notice of the class-rooms in which these examinations will be given, see bulletin in library building.  
The school year for 1909-10 will begin Tuesday, Sept. 14.



## PROGRAM—SUPPLEMENTARY EXAMINATIONS

## College of Engineering and Mechanic Arts, School of Mines

TUESDAY,	Sept. 8,	9:00-12:00	Mathematics and Mechanics
		2:00-5:00	Mining Engineering Subjects
WEDNESDAY,	Sept. 9,	9:00-12:00	Chemistry
		2:00-5:00	Drawing and Descriptive Geometry
THURSDAY,	Sept. 10,	9:00-12:00	Mechanical Engineering subjects
		2:00-5:00	Metallurgical subjects
FRIDAY,	Sept. 11,	9:00-12:00	Physics
		2:00-5:00	Electrical Engineering subjects
			Geology and Mineralogy

## SCHEDULE OF EXAMINATIONS FOR ADVANCED STANDING AND TO REMOVE CONDITIONS

## Medical Department

September 7-12, 1908.

Monday, Sept. 7,	9:00 a. m.	2:00 p. m.
I. Year.	I. Year Histology and Embryology, practical.	
II. Year Histology and Embryology, practical.	II. Year General Pathology and Bacteriology, practical.	
III. Year Special Pathology and Bacteriology, practical.	III. Year Practical Pharmacy.	
IV. Year by arrangement.	IV. Year by arrangement.	
Tuesday, Sept. 8,	9:00 a. m.	2:00 p. m.
I. Year Physiology.	I. Year Histology and Embryology, written.	
II. Year Chemistry.	II. Year Histology and Embryology, written.	
III. Year Principles of Surgery.	III. Year Surgery.	
Wednesday, Sept. 9,	9:00 a. m.	2:00 p. m.
I. Year Chemistry.	I. Year.	
II. Year Physiology.	II. Year General Pathology and Bacteriology, written.	
III. Year Practice of Medicine.	III. Year Special Pathology and Bacteriology, written.	
Thursday, Sept. 10,	9:00 a. m.	2:00 p. m.
I. Year Anatomy.	I. Year.	
II. Year Anatomy.	II. Year Materia Medica and Pharmacology.	
III. Year Surgical Anatomy.	III. Year Therapeutics.	

Examination for advanced standing and to remove conditions in the following third- and all fourth-year subjects will be held by *appointment* during September 7-12: Diseases of Children Physical Diagnosis, all elective subjects, and all subjects not listed above. In all subjects not specifically scheduled, condition examinations must be arranged for not later than Sept. 7.

Students must register for examinations in dean's office at least twenty-four hour prior to any examination they may wish to take. See also under Rules, page 41, for regulations concerning unremoved conditions, etc.

Conditioned students will not be admitted to any examination without presenting receipt from the cashier for the examination fee, to the dean and obtaining entrance ticket.

# The University

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THE UNIVERSITY OF MINNESOTA comprises the following named schools, colleges and departments:

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

THE DEPARTMENT OF AGRICULTURE, including—

*The College of Agriculture*

*The School of Agriculture*

*Short Course for Farmers*

*The Dairy School*

*The Crookston School of Agriculture*

THE COLLEGE OF LAW

THE COLLEGE OF MEDICINE AND SURGERY

THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE SCHOOL OF MINES

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

The Regents of the University have entrusted to their charge:

THE EXPERIMENT STATIONS, including—

*The Main Station at St. Anthony Park*

*The Sub-Station at Crookston*

*The Sub-Station at Grand Rapids*

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

---

Bulletins of these schools, colleges and departments may be obtained upon application to the University Registrar.

In the COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS, there is a four-year course of study leading to the degree, Bachelor of Arts. The work of the first year is elective within certain limitations as to the range of subjects from which the electives may be chosen. The remaining work of the course is entirely elective, with the provision that a certain number of long courses be selected. The course is so elastic that it permits the student to make the general scope of his course elastic, scientific or literary, to suit his individual purpose.

The COLLEGE OF ENGINEERING AND THE MECHANIC ARTS was founded in accordance with the Laws of the State of Minnesota and of the Federal Government, its object being "to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." It offers courses of study, of five years each, in civil, mechanical, electrical and municipal engineering, leading to the degrees of civil, mechanical or electrical engineer, the degree of Bachelor of Science being conferred at the end of the fourth year. This college also offers work in the Graduate School leading to the degree of Master of Science.

THE COLLEGE OF AGRICULTURE offers a four-year course in agriculture. The degree of Bachelor of Science, in Agriculture, is conferred upon completion of the course. Students in this College may specialize along the line of forestry or of home economics and secure the degree, Bachelor of Science (in Forestry, or in Home Economics).

THE SCHOOL OF AGRICULTURE offers a three-year course of study and is a training school for practical farm life and in domestic economy. The College of Agriculture is open to graduates of this School who have completed the fourth year of work required for admission to the College.

THE DAIRY SCHOOL offers practical instruction in dairying, specially designed for those who are actually engaged in the manufacture of butter and cheese.

THE SHORT COURSE FOR FARMERS is designed to be of the greatest help possible to those actually engaged in farming.

THE CROOKSTON SCHOOL OF AGRICULTURE offers a course of study quite similar to that given in the School of Agriculture.

It is the object of the COLLEGE OF LAW of the University of Minnesota to educate its students by means of the study of jurisprudence, and at the same time so familiarize them with the fundamental principles of positive law that they will be able, at the end of their course, to safely enter upon the duties of the legal profession. Education, and not simply information, is the prime object. The power to think clearly, to reason cogently, to perceive distinctions quickly, to investigate thoroughly, to generalize carefully and to express his thoughts accurately are the basal

qualifications of the safe counsellor. To secure for the student these habits of thought and expression should be the aim of both the student himself and his instructor.

The art of practice is taught so far as that is possible in a law school. A system of courts embracing the court of a justice of the peace and the district and supreme courts of the state is organized and maintained. Students begin their practice work in the lowest court, and continue it, under the guidance of an able practitioner, throughout the system. The rules of practice adopted by the District and Supreme Courts of Minnesota are printed and a copy is placed in the hands of each student; the codes of practice in the state are studied with special care, and instruction, covering the work of brief-making, is given the students by a successful member of the bar in daily practice. Jury trials are conducted throughout the senior year, and the usual appeals, motions for new trial, and re-argument and all the other points of practice in the courts of the state are considered as each student proceeds from the justice court up through the district and supreme courts of the system.

The degree Bachelor of Laws is granted upon the completion of the three-year day course, or the four-year evening course, entitling the graduate to admission to the bar without examination.

Two graduate courses are offered, the first leading to the degree Master of Laws, the second to the degree Doctor of Civil Law.

THE COLLEGE OF MEDICINE AND SURGERY, and THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY offer four-year courses of study, of nine months each, requiring two years of collegiate work for admission. Upon completion of either of the prescribed courses the degree, Doctor of Medicine, is conferred.

In the Colleges of Science, Literature, and the Arts, of Medicine and Surgery, and of Homeopathic Medicine and Surgery, there has been established a combined course of six years, leading to the degrees, Bachelor of Science, and Doctor of Medicine.

THE COLLEGE OF DENTISTRY offers a three-year course of study, of nine months each. Upon completion of the prescribed course the degree of Doctor of Dental Surgery is conferred.

THE COLLEGE OF PHARMACY was organized in 1891 upon request of the Minnesota State Pharmaceutical Association. In the organization and conduct of the college, the Board of Regents and the faculty have had the co-operation of the pharmacists of the Northwest. The college is of the University grade and maintains a high standard of entrance and graduation requirements. Every effort is made to comply with the demands of the pharmaceutical profession in the Northwest. The college

offers a regular course extending over two or three years leading to the degree, Bachelor of Pharmacy, and two post-graduate courses, the first requiring at least one additional year of resident work and leading to the degree, Master of Pharmacy, and the second requiring one or two additional years of work and leading to the degree, Doctor of Pharmacy. It is now contemplated to add a four-year course to include somewhat more than is now included in the regular two-year course and about two years of academic work. This course will lead to the degree Bachelor of Science in Pharmacy, and will in all respects be at least the equal of similar courses given in other University colleges of Pharmacy. The course will be inaugurated in 1909 or 1910. The Board of Regents have also authorized the introduction of a course somewhat lower than the regular course now given, to comply however with the requirements of the American Conference of Pharmaceutical Faculties. This course probably will not begin until 1909 and will probably not lead to any degree or to the degree Pharmaceutical Graduate.

THE SCHOOL OF MINES was established in 1889. Its buildings and laboratories are located on the grounds of the University of Minnesota. Students of the School of Mines have, therefore, all the opportunities afforded by a large university. Two regular courses of study are offered, namely, mining engineering and metallurgy, leading to the degrees of Engineer of Mines (E. M.) and Metallurgical Engineer (Met. E.), respectively. The courses in the school are designed with a view of preparing men to enter their profession with a thorough grounding in mathematics, in the sciences, and in the fundamental principles of mining engineering and metallurgy. The technical courses consist of lecture work in mining, metallurgy and allied subjects supplemented by laboratory work in assaying, chemistry, ore dressing and metallurgy; field work in plan and underground surveying; actual practical mining and metallurgical work in Minnesota and western mining centers. A system of apprenticeship during summer vacations has been inaugurated. This work has become part of the curriculum and is required of all students who are candidates for degrees.

Minnesota's enormous iron ore production continually brings before the public the necessity for trained men to aid in the development of the country's mineral resources. The state has developed its School of Mines with this end in view.

THE COLLEGE OF EDUCATION offers a practical and a theoretical training for prospective high school teachers and principals, for principals of elementary schools, for supervisors of special studies, and for superintendents of school systems.

Students are admitted to the college only after the completion of at least two full years of college work, during which time they should have pursued at least one course in general psychology, and prospective high school teachers should have given especial attention to one or more of the subjects which they expect to teach. The two years' course of study, beginning with the junior year, leads to the degree of Bachelor of Arts in Education. Preparation for teaching is planned to include a thorough grounding in the correct use of English, an adequate training in general and in educational psychology, in the history and organization of schools, in educational theory, and in the practice of teaching; and also, quite aside from the liberal training of the regular college course, specific preparation in both the subject matter and the methods of those subjects in the secondary curriculum which each candidate proposes to teach. A third year leads to the degree of master of arts, including advanced studies in education and philosophy, and in one or more of the subjects of the secondary curriculum, at the option of the candidate.

In addition to the ordinary academic and professional studies connected with the training of the teacher, the college offers an opportunity for observation and practice teaching under supervision, as well as special facilities in voice culture, public school music, and physical culture, together with elementary and advanced courses in drawing, domestic art and domestic science, manual training and business education—those specialized forms of the secondary curriculum which are being introduced so rapidly into the public high schools of Minnesota.

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY, leading to the degrees, Bachelor of Science in Chemistry, and Bachelor of Science in Chemical Engineering, offers two courses of study of four years each in analytical and applied chemistry.

THE GRADUATE SCHOOL gathers into a single organization and unites for the purposes of administration all the activities of the University in all its schools and colleges in so far as they relate to advanced instruction offered for the second or higher degrees, viz.: Master of Arts and Doctor of Philosophy conferred for advanced, non-technical study; Master of Science and Doctor of Science for technical study; Master of Laws and Doctor of Civil Law for advanced legal studies. The privileges of this school are in general open to all Bachelors of Arts, of Science, pure and applied, and of Laws, from reputable colleges and universities having courses substantially equivalent to those at this University.

THE UNIVERSITY SUMMER SCHOOL is organized for a six weeks' session in June and July under the direction of the State Department of Public Instruction. In the elementary section courses are given for teach-

ers in all the common school branches and in preparation for the state teacher's certificates. In the college section courses are given for high school teachers and in preparation for the state professional certificate. Students who desire University entrance credits and credits toward the Bachelor's degree may secure these by pursuing not more than two full courses at each session.

**SPECIAL COURSES.** In each of the Colleges, students of mature age and adequate preparation are permitted to pursue, under the direction of the faculty, one or two distinct lines of study.

**EXTENSION LECTURES.** Professors in the University are prepared to give a limited number of extension lectures from time to time. For subjects, speakers, terms and dates, application should be made to the Chairman of the Committee on University Extension.

## The Board of Regents

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ADA L. COMSTOCK, M. A., *Dean of Women*

# The University Council

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At the regular meeting of the Board of Regents of the University, May 31st, 1905, a University Council was established according to the following plan:

I. The name of the body shall be The University Council. It shall consist of the President of the University, the deans of the various colleges and schools, one elected representative from each college or school for each 400 students or major fraction thereof, and one representative of the general alumni association.

II. The elected members shall serve for a period of one year. They shall be chosen from the various faculties at the time of the selection of standing committees. The representative of the general alumni association shall be chosen by that body at its annual meeting from among the alumni who are not members of the University.

III. The Council shall be authorized to—

a) Appoint the following committees or the faculty representation thereon:

The University auditing committee

The University press committee

The committee on athletics

The committee on University relations to other institutions of higher learning

The committee on health and sanitation

The committee on commencement and other University functions

The committee on catalogue, programs and courses of study

The committee on student entertainments and social affairs

And such other committees as the general University interests may require

b) Receive reports from such committees and to make such recommendations as may be required.

c) Consider and act upon any matter of general University interest beyond the province of a single faculty which may be referred to it by the President of the University or any faculty.

IV. The Council shall hold stated meetings upon the first Monday of October, December, April and June, and such other meetings as the President of the University may call

# Representatives to the Council

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PROFESSOR J. C. HUTCHINSON

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PROFESSOR GEORGE D. SHEPARDSON

## **The College and School of Agriculture**

DEAN EUGENE W. RANDALL

PROFESSOR HARRY SNYDER

PROFESSOR SAMUEL B. GREEN

## **The College of Law**

DEAN WILLIAM S. PATTEE

PROFESSOR HENRY J. FLETCHER

## **The College of Medicine and Surgery**

DEAN F. F. WESBROOK

PROFESSOR THOMAS G. LEE

## **The College of Homeopathic Medicine and Surgery**

DEAN EUGENE L. MANN

## **The College of Dentistry**

DEAN ALFRED OWRE

## **The College of Pharmacy**

DEAN FREDERICK JOHN WULLING

## **The School of Mines**

DEAN WILLIAM R. APPLEBY

## **The School of Chemistry**

DEAN GEORGE B. FRANKFORTER

## **The College of Education**

DEAN GEORGE F. JAMES

## **The Graduate School**

DEAN HENRY T. EDDY

## **General Alumni Association**

DAVID P. JONES

## **The Dean of Women**

ADA L. COMSTOCK

# University Council Committees

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## **The University Auditing Committee**

PROFESSORS ANDERSON, FLETCHER, OWRE, SIGERFOOS, SPRINGER

## **The Committee on Athletics**

PROFESSORS PAIGE, BROOKE, HARDING, D. P. JONES, LITZENBERG

## **The Committee on Grounds and Sanitation**

PROFESSORS FLATHER, BASS, BRACKEN, HICKMAN, RANDALL, SIDENER,  
WESBROOK

## **The Committee on Catalogue, Programs and Course of Study**

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WULLING; PROFESSORS FLETCHER, JOHNSTON, SCHLENKER, SNYDER,  
E. B. PIERCE

## **The Press Committee**

PROFESSORS SCHAPER, BAUER, CONSTANT, ERDMANN, JAMES

## **The Committee on Commencement and other University Functions**

PROFESSORS NACHTRIEB, JENKS, OWRE, PATTEE, RANDALL, SCHLENKER,  
WASHBURN

## **The Committee on Student Entertainments and Social Affairs**

PROFESSORS FRANKFORTER, BASS, COMSTOCK, COOKE, MULLEN, PIKE

## **The Committee on University Relations to other Institutions of Higher Learning**

PROFESSORS DOWNEY, BOTHNE, EDDY, GRAY, GREEN, JAMES, LEE

## **The Committee on University Extension and University Lectures**

PROFESSORS WEST, HAECKER, RANKIN, SCHLENKER, SHEPARDSON

## **The Committee on the Library**

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# FACULTY

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AMOS W. ABBOTT, M.D. Clinical Professor of Diseases of Women.	21 Tenth St. S.
EVERTON J. ABBOTT, A.B., M.D. Clinical Professor of Medicine and Chief of Medical Clinic.	Endicott Arcade, St. Paul 900 Sixth St. S. E.
HOWARD S. ABBOTT, B.L. Professor of Corporation Law.	Medical Block
H. C. ALDRICH, M.D. Professor of Gynecology.	1629 University Ave. S. E.
FRANK MALOY ANDERSON, M.A. Professor of History.	706 Delaware St. S. E.
CHARLES M. ANDRIST, M.L. Assistant Professor of French.	911 Fifth St. S. E.
WILLIAM R. APPELEY, M.A. Dean of the School of Mines and Professor of Metallurgy.	Andrus Building, Minneapolis
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JOHN W. BELL, M.D. Emeritus Professor of Medicine and Physical Diagnosis.	516 Ninth Ave. S. E.
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WILLIAM BOSS Professor of Farm Structures and Farm Mechanics.	934 15th Ave. S. E.
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A. B. CATES, A.M., M.D. Professor of Obstetrics.	

General Information.

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- WILLIAM F. LANCASTER New York Life Building  
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 Dean of the College of Homeopathic Medicine and Surgery, and  
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## Historical Sketch

When Minnesota was organized as a territory March 3, 1849, it was understood that a grant of public lands would be made by Congress for the endowment and support of a university as in the case of all other states carved out of this old northwest territory.

On December 10, 1850, delegate Sibley gave notice of a bill to grant two townships (46,080 acres) which became law on February 19, 1851. Meantime the Minnesota legislature had by Act, Feb. 13., created the University of Minnesota and made over to that corporation the proceeds of all lands which Congress might grant.

The location of the institution was fixed by this law "at or near the Falls of St. Anthony," by virtue of an understanding relating to the distribution of public buildings. A board of twelve regents elected in classes by the legislature had charge till 1860. In the fall of 1851, a preparatory school was opened. In 1856, intoxicated by the boom which was then raging, the regents began the erection of the rear part of the "old main" building. Before it was finished the panic of 1857 came on. The board could not pay the contractors nor meet the interest on the bonds they had been authorized to sell.

In the winter of 1860 the legislature replaced the old board of twelve regents by one of five appointed by the Governor. At the end of four years this board had not been able to put the finances of the university on a sound footing. Senator John S. Pillsbury laid before the legislature of 1864 a plan to pay off the accumulated debt by the sale of less than one-third of the land grant. A special board of three regents, headed by Mr. Pillsbury, was created to make the experiment. At the close of 1866 this board reported the debt substantially liquidated. A debt of gratitude is due to the creditors and bondholders for scaling down their just claims and accepting sums far below their dues. By means of a small appropriation the special board renovated the building, purchased furniture and appliances, and in November, 1867, opened the preparatory department, to which girls as well as boys were admitted.

This board having accomplished its purpose prepared for the legislature the bill which enacted into law February 13, 1858, became the actual charter of the university. By far the most important element was that which united with the university endowment proper the expected income



from the congressional land grant of 1862 for the support of colleges of Agricultural and Mechanic Arts.

At the close of the college year of 1869 a small company of preparatory students were found ready for college instruction. A faculty of nine professors and instructors was elected and began their work in September. In this year William Watts Folwell was appointed president.

In 1873 two students were graduated at the first commencement. Some twenty years now passed in quiet work and growth, mostly in the academic department. A good beginning was made in that of engineering and mechanic arts, but in spite of most earnest endeavors by the regents the college of agriculture developed slowly. There was little demand for proper agricultural instruction and the pedagogy of that branch had not been developed.

In the year 1870 Congress confirmed to the state a second grant of public land for a state university ingeniously embodied in the enabling act of Feb. 26, 1857, which the departmental authorities at Washington had persistently refused to recognize.

In September, 1884, Cyrus Northrop succeeded to the presidency and not long after began that great development familiar to all.

The Colleges of Law and Medicine were organized on a self-paying basis. New buildings sprang up, nobly equipped, and the faculties were reinforced as means accumulated. The growth of the College of Agriculture has been remarkable. The congressional appropriations for experiment stations and additional endowment have greatly increased its efficiency and prosperity. The College of Engineering has also enjoyed a rapid and cumulative development. The Colleges of Pharmacy, Dentistry, the Schools of Mines, Chemistry, Education and the Graduate School have been added in recent years, the result of public demands for special technical training and research.

# Equipment

## GROUNDS AND BUILDINGS

The twenty-three buildings of the University used by all departments of instruction save that of agriculture, are located upon the University campus, a tract of about fifty-five acres lying between University avenue and the river and between Eleventh and Nineteenth avenues southeast. The campus is well wooded with a fine grove of native oaks and commands a beautiful view of St. Anthony Falls and the city, but is sufficiently removed from the business center to insure desirable quiet and retirement. At the last session of the legislature provision was made for the expenditure of four hundred fifty thousand dollars in campus enlargement during the course of the years 1907-1909. Private benefactors have added fifty thousand dollars to that amount. Condemnation proceedings are now in progress for the purpose of obtaining the land desired. About thirty additional acres situated to the south of the present campus will probably be secured. The Department of Agriculture, including the college and school of agriculture, has a separate campus at St. Anthony Park, where are located the twenty-five buildings provided for this department and the state experiment station. Adjoining this campus is the University farm of about four hundred twenty acres.

## ASTRONOMICAL OBSERVATORY

The students' astronomical observatory contains a ten and one-half inch refracting telescope furnished with a third lens for converting it into a photographic telescope; a filar micrometer; a spectroscope by Brashear; a students' meridian circle and zenith telescope; a Repsold photographic measuring machine, a chronograph, and astronomical clocks.

## GYMNASIUM

The gymnasium is located in the Armory, and is well equipped with a variety of gymnastic appliances. The object of the gymnasium is to provide all of the students of the University opportunity for exercise to build up their general health. It also provides special training to correct physical defects and functional derangements. The gymnasium is in charge of a professional medical director and assistant, and the

training is under their direct supervision. A thorough physical examination is offered each student immediately before and after the gymnasium course, and a record is made of the same. The examination of these records shows a marked improvement in the standard of health of the average student during his college course. The gymnasium is open at all times to all young men in the University who are free to use the apparatus and to pursue a course of physical training under the direct supervision of the director and his assistant. In some of the colleges of the University, this work is required of all men.

### MILITARY DRILL

The Act of Congress of 1862, providing for the establishment of "Land Grant Colleges," requires that instruction be given in military science and tactics at all institutions that are its beneficiaries. The armory is located on the University campus and has all the facilities usually provided in a modern armory. The United States government supplies the University with the necessary arms, equipment and ammunition for instruction in infantry and artillery drill, and details a commissioned officer of the regular army to take charge of the department.

### THE ONE-MILE LIQUOR LAW

A state law provides that "it shall be unlawful for any person to sell or dispose of any spirituous, vinous, or malt liquors within the distance of one mile of the Main Building of the University of Minnesota, as now located in the city of Minneapolis; provided that the provisions of this section shall not apply to that part of the city of Minneapolis lying on the west side of the Mississippi River."

### ATHLETIC ORGANIZATIONS

The ATHLETIC ASSOCIATION is an organization having for its object the general physical well-being of the students and the encouragement of a proper spirit in favor of hearty, manly sports.

*Board of Control for Athletics.* The athletic sports of the University are under the supervision of a board of control made up of eleven members; two are members of the faculty, two are alumni, and seven are students. This board arranges the schedule of games, manages the finances, and exercises a general supervision over all matters connected with athletic contests. It has charge of the whole of the athletic grounds of the University, Northrop Field. This field, containing about six acres, lies immediately adjoining the armory. It contains a modern cinder track, baseball diamond, and football gridiron. The grand stands have a seating capacity of about fifteen thousand. A large portion of this field was a

gift to the University from the heirs of the late John S. Pillsbury, and the brick wall surrounding it is the gift of his son, Mr. A. F. Pillsbury. It is generally conceded to be one of the finest fields in the West.

### MUSEUMS AND COLLECTIONS

The museums of the University contain material obtained from various sources, arranged with special reference to its use for illustration. Among the more notable collections are the following:

(a) *In Geology and Mineralogy.* The Kunz collection of minerals, purchased of George F. Kunz; several suits of crystalline rocks secured from various sources; the Ward collection of casts contributed in part by citizens of Minneapolis; collection of rocks, fossils, minerals and economic products of Minnesota; upwards of 9,000 entries gathered by the geological survey of the State; the Sardeson collection of paleozoic fossils of Minnesota, Wisconsin, Iowa, and neighboring states, comprising 30,000 specimens; a series of 3,000 thin sections of typical rocks and minerals largely representing Minnesota localities; purchased material comprising a fine collection of crystals; 5,000 minerals and 3,000 specimens of economic minerals and crystalline rocks, and a collection of over 4,000 photographs and lantern slides.

Mr. Arus S. Williams, of Minneapolis, has given to the University his extensive collection of negatives and photographs. During many years of active work as a photographer, he has collected a series of several thousand plates representing geologic and geographic subjects, commercial views and historic scenes. These will prove of great value in illustrating the physical, commercial and political history of the State. They are to be recognized as the A. S. Williams collection of Photographs and Photographic Negatives.

(b) *In Zoology.* All the material collected by the State Zoologist; a collection of mounted Minnesota birds representing about one-third of the species found in the state; a number of the mammals of the state and a few from the more western states; a collection of fishes, molluscan shells, corals and other foreign material.

The ornithological room contains the excellent Thomas S. Roberts and Franklin Benner collection of skins, nests and eggs of Minnesota birds. Other groups of animals are more or less numerously represented, and are receiving annual additions from the Zoological Survey.

(c) *In Botany.* The general herbarium numbering about 400,000 specimens and comprising the series of plants collected by the state botanist; an alcoholic collection of material for dissection; a collection of woods of Minnesota; a limited series of carboniferous and cretaceous fossil plants, including the Lesquereaux collection from the Minnesota River localities.

(d) *In Technology.* A cabinet of specimens illustrating the products and processes of applied chemistry is being collected by the professor of chemistry, as opportunity offers. The collection embraces fuel, ores, furnace products, textile materials, both raw and manufactured, dye-woods and other materials used in dyeing; specimens illustrating the bleaching and printing of cotton, linen and woolen goods, earthenware, pottery, etc.

(e) *In Classics.* Some material illustrating classical geography, topography, chronology, mythology, archaeology, and art has been collected, consisting mainly of plans and charts, casts, pictorial illustrations, fac-similes of manuscripts and inscriptions.

(f) *In English.* A few fac-similes of manuscripts, plates that may serve the purpose of archaeological instruction, publication of texts, reprints of blackletter books and of original editions, photographs and portraits have been gathered.

(g) *In Civil Engineering.* The department is collecting samples of road material typical of the various localities of the State, and leading materials used in street paving, such as granite, trap rock, brick and asphaltum. A set of standard sections of steel and wrought iron is provided for illustration in the study of structural design.

(h) *In Mechanical Engineering.* The collection consists of models of mechanical motions especially relating to the work in kinematics; sectioned apparatus, such as injectors, water meters and steam separators; various collections of drop forging in iron, steel and copper; miscellaneous samples of commercial work representing the product of special machines; groups of standard nuts, bolts and screws; samples of belting, ropes, steel and iron cables, rawhide gears, and other material especially useful for illustrative purposes.

(i) *In Electrical Engineering.* This museum contains a growing collection of samples furnished by various manufacturers and dealers for demonstrating the merits of different products and for illustrating modern practice; an excellent collection showing the development of electrical instruments, lightning arresters, switches, primary and secondary batteries, early forms of dynamos and motors, lighting apparatus and various industrial applications of electricity; also a collection of samples from repair shops and elsewhere, illustrating the effects of wear, accidents and abuse.

(j) *In Engineering Mathematics.* This department has recently added to its apparatus used for illustration in teaching, several types of slide-rules, including those of Thatcher, Faber, Keuffel and Esser, Schureman's Computer, Boucher's Calculator; also Amsler's Polar Planimeter.

(k) *In Mathematics.* The Schroeder wooden and the Schilling gypsum, string and paper models for Solid Analytical Geometry, many of the Schilling models for illustrating the Theory of Surfaces, several of

the Schilling mechanical devices for describing various loci, the Keufel and Esser models for Solid Geometry, and large slated globes, suitably mounted, for use in Spherical Geometry and Spherical Trigonometry.

### LIBRARIES.

*The University Library consists of:*

1. The general library.
2. The college libraries, including those of law, medicine, engineering, agriculture, and mines.
3. The departmental libraries, including those of arts, astronomy, animal biology, botany, chemistry, French, geology, German, Greek, Latin, mathematics, military science, physics, rhetoric, Scandinavian.

The whole number of bound volumes owned by the University is about one hundred and twenty thousand, unbound books and pamphlets about twenty thousand. About seven hundred and thirty current periodicals are received.

The general library is open to students and the public from eight A. M. to ten P. M. except Sundays and legal holidays.

The departmental libraries are designed especially for the work of their respective departments and consist mainly of books of reference and current periodicals relating to technical subjects. The private collections of the professors are usually available upon application when necessary for research.

Besides the University library the following libraries are easily accessible: the Minneapolis public library, containing over one hundred and sixty thousand bound volumes and over fourteen hundred of the leading newspapers, magazines and periodicals of the world; the St. Paul public library with about ninety-five thousand volumes; the Minnesota Historical Society library of about eighty-five thousand volumes and the state library of about fifty-nine thousand volumes in the capitol in St. Paul; the Minnesota Academy of Natural Sciences library of twelve thousand titles.

### ASSISTANTS, SCHOLARSHIPS, LOANS AND PRIZES

#### ASSISTANTS

It is the policy of the University to encourage graduate study and to provide for assistance in laboratories, reading of test and examination papers, supervision of note books, and similar services by the appointment of assistants in departments where such services are required. The general principles which now control the making of such appointments are: (1) the appointments are made by the board of regents, upon the nomination of the head of the department concerned and its ratification

by the dean of the college; (2) appointments are for one year only, but may be renewed; (3) the appointees must be graduate students, who are taking work along the lines of the assistantships to which they are appointed; (4) assistants are not regularly placed in charge of classes, and when exceptions are made to meet emergencies, the arrangement is regarded as a temporary one, and in no case to extend beyond the current year.

#### SCHOLARSHIPS

##### *The Moses Marston Scholarship in English*

Friends and pupils of the late Professor Moses Marston have given one thousand dollars as a memorial fund. The annual income of the fund is to be used to help some student in the English course. The award of the income is made on the basis of pecuniary need and of deserving scholarship.

##### *The Albert Howard Scholarship Fund*

Under the last will and testament of Mr. James T. Howard, of the town of St. Johnsbury, Vermont, \$4,166.81 was left to the University to establish a scholarship to be known as the Albert Howard Scholarship. This scholarship is assigned by the executive committee of the board of regents upon the recommendation of the faculty.

##### *The College Women's Club Scholarship*

The College Women's Club of Minneapolis has established a scholarship for the benefit of women students in this University. For the year 1908-9 this scholarship amounts to \$150. In awarding it the preference will be given to students in the junior and senior classes and to graduate students. Application for this scholarship may be made to Miss Comstock, Dean of Women.

#### STUDENT LOAN FUNDS

##### *The Gilfillan Trust Fund*

The Hon John B. Gilfillan has given to the University the sum of fifty thousand dollars, yielding an annual income of two thousand dollars, to be used by the board of regents to assist worthy students, needing such aid, to secure an education. The regents are empowered to give this aid in the way of loans or gifts, according to the circumstances of the case. As a rule the fund is used as a loan fund, and a small rate of interest is charged. The details of the regulations which have been adopted by the regents for the administration of the fund may be learned by addressing the President of the University.

*The Elliot Scholarship Loan Fund*

To fulfill the wish of the late Dr. A. F. Elliot to aid young men who find their efforts to obtain a practical education embarrassed through lack of means, the sum of \$5,000 was placed in the hands of the Board of Regents as a scholarship fund. The income from this fund is loaned students in the School of Mines on the following conditions:

The financial needs of the applicant, his scholarship, moral character, enthusiasm shown in his work and promise of usefulness in his profession. When money is available it may be loaned to pay expenses of worthy students during sickness. The loans are to be repaid, without interest, at the earliest convenience of the recipients.

*The Puritan Colony Scholarship Loan*

The Puritan Colony of the National Society of New England Women has established a loan fund for women students in the University. For the year 1908-9 this scholarship loan amounts to one hundred dollars. It is available for women students of New England birth or ancestry. In awarding it the preference will be given to young women in the junior and senior classes. Application for it may be made to Miss Comstock, Dean of Women.

*Armour Scholarships*

Through the exhibits of live stock at the International Exposition in 1907, the College of Agriculture has been awarded two of the J. Ogden Armour scholarships. Each scholarship amounts to \$250.00 and is to be awarded to a worthy student in the Agricultural College. These scholarships will be available during the next college year.

## PRIZES

*The John S. Pillsbury Prize.*

Three prizes of one hundred, fifty, and twenty-five dollars each, offered by the heirs of the late John S. Pillsbury, are awarded for the best work in the department of rhetoric, as evidenced finally by an oration in public.

*The '89 Memorial Prize in History*

The class of 1889, at graduation, established a prize of twenty-five dollars each year, to be known as the '89 Memorial Prize, and to be given for the best thesis in history by a member of the graduating class. The award is made by a professor in history in some other institution.

*The William H. Dunwoody Prize*

Mr. William H. Dunwoody has provided a cash prize of seventy-five dollars for the members of the team winning the inter sophomore debate, and another prize of twenty-five dollars for the student in the sophomore class writing and delivering the best oration.

*The Frank H. Peavey Prize*

Mrs. Frank T. Heffelfinger continues the prize of one hundred dollars



established by her father, the late Frank H. Peavey. This prize consists of seventy-five dollars for the members of the team winning the freshman-sophomore debate, and another prize of twenty-five dollars to the student in the freshman or sophomore class writing and delivering the best oration.

*The James T. Wyman Prize*

A prize of twenty-five dollars is offered by the Hon. James T. Wyman, of Minneapolis, through the department of economics and political science, for the best essay of three to five thousand words by an undergraduate student, on the subject of "The Influence of Immigration upon the Development of the Northwest."

*The William Jennings Bryan Prize*

The Hon. William Jennings Bryan has given the University the sum of two hundred dollars for the encouragement of studies in political science. The annual income will be given as a prize to the writer of the best essay upon a topic to be announced each year. The competition is open to all students of the College of Science, Literature, and the Arts.

*The Frank O. Lowden Prize*

The Hon. Frank O. Lowden, of Chicago, offers as a prize to be competed for by the Northern Oratorical League, an endowment of three thousand dollars, which will yield an annual income of about one hundred and seventy-five dollars. A prize of one hundred dollars will be given to the orator winning first place, fifty dollars to the orator winning second place, and the remainder will be set aside each year for an interest fund to accumulate, and, in time, produce another endowment.

*The Rollin E. Cutts Prize in Surgery*

Dr. Mary E. Smith Cutts, '91 Medical, has given to the University, as a memorial of her husband, Rr. Rollin E. Cutts, '91 Medical, the sum of \$500.00, the income from which is to be awarded in the form of a gold medal to that member of the senior class of the College of Medicine and Surgery who presents the best thesis showing original work upon a surgical subject.

# Student Organizations and Publications

## RELIGIOUS ORGANIZATIONS

THE STUDENTS' CHRISTIAN ASSOCIATION was organized in 1869, its object being to promote growth in Christian character, and to engage in such religious work as may be deemed expedient and necessary. The association owns a commodious building, which serves as the headquarters for student religious activity. All persons in sympathy with the object of the association are eligible to membership.

THE YOUNG MEN'S CHRISTIAN ASSOCIATION has as its object the promotion of "growth in grace and Christian fellowship among its members and aggressive Christian work, by and for students." This association leases the Students' Christian Association building and keeps it constantly open, with a general secretary in charge. All men in sympathy with the object of the association are eligible to membership. This building is maintained as the social and religious headquarters of all young men in the University.

This association provides an employment bureau whose services are free to students in all departments of the institution, as well as a committee to help students to find comfortable rooms and boarding places. The association also maintains an educational department in which students may make up their entrance conditions at a nominal charge for instruction. The general secretary will be pleased to correspond with any young man intending to come to the University. Any inquiry about board, room, employment, or general information will gladly be answered, and a hand-book will be sent to anyone wishing it. Address the general secretary of the Young Men's Christian Association, University of Minnesota, Minneapolis, Minnesota.

THE YOUNG WOMEN'S CHRISTIAN ASSOCIATION is the center of Christian life among the young women of the University. Its object is "to deepen spiritual thought in the University woman, to environ her with a semblance of home, to bring to her friendship, assistance and sociability by stimulating student fellowship, to give her personal help when necessary; thus developing in her the Christ ideal of culture in womanhood."

To this end frequent socials and informal teas are given throughout the year; twice each week twenty-minute prayer meetings are held; a dozen circles meet one hour a week for devotional Bible study; and

from time to time missionary meetings are held. The general secretary devotes all of her time to the association and will be pleased to correspond with any young woman who wishes information regarding the University.

All young women are invited to visit the Young Women's Christian Association room before registering. Women from the upper classes will be there during the opening days to give advice and assistance.

THE UNIVERSITY CATHOLIC ASSOCIATION was organized by the Catholic students in the spring of 1900. The purpose of the association is the study of the Bible and of the doctrines and history of the Catholic Church. Membership is open to any one connected with the University. Regular meetings are held every Sunday afternoon in the rooms of either the Young Men's or Young Women's Christian Association, through the courtesy of these organizations. The association is planning to erect a building on or near the campus at an early date.

Aside from the religious objects, the association tends to promote good fellowship among its members. Early in each University year a reception is tendered to new students and during the year two or more socials are held. Further information may be obtained by addressing the secretary of the association at the University.

#### LITERARY, SCIENTIFIC, AND MUSICAL ORGANIZATIONS

PHI BETA KAPPA.—A chapter of the honorary society of *Phi Beta Kappa* was established at the University in 1892. A small proportion of the graduates of the College of Science, Literature, and the Arts are elected to membership each year. Election is based upon high scholarship and character.

SIGMA XI.—A chapter of the honorary scientific society of *Sigma Xi* was established at the University in 1896. A small proportion of the graduates of the scientific and technical departments are elected to membership each year. Election is based upon high scholarship and character.

THE GRADUATE CLUB is a club organized for the purpose of fostering a greater interest in graduate work, for mutual help, and for discussion of topics under investigation.

THE MINNESOTA LITERARY UNION is a federation of the members of the following societies: Shakopean, Forum, Castalian, Minerva, and Arena. Four meetings are held each year.

LITERARY SOCIETIES.—The above named literary societies are mainly debating clubs. Every student is welcome to attend the literary sessions, but the business sessions are usually held behind closed doors. Students desiring to join should make early application to some member of the society he prefers, as the membership is limited. Membership limit: *Shakopean*, 35, men; *Forum*, 30, men; *Minerva*, 30, women; *Law Literary*,

unlimited, law students; *Castalian*, 35, men; *Theta Epsilon*, 30, women; *Thalian*, 25, women; *Acanthus*, 30, women.

THE DEBATING BOARD has charge of home and inter-collegiate oratorical contests.

THE NORTHERN ORATORICAL LEAGUE is composed of the oratorical associations of the University of Michigan, Northwestern University, the University of Wisconsin, Oberlin College, the State University of Iowa, the University of Chicago, and the University of Minnesota. Its purpose is to foster an interest in public speaking and to elevate the standard of oratory by holding annual contests. The contests are open only to undergraduates.

THE DRAMATIC CLUB is organized for the study and practice of dramatic art.

THE GLEE AND MANOLIN CLUBS give a public concert each year at the University and make a tour of the state during the holidays.

THE UNIVERSITY BAND is organized as a part of the military system of the University and is composed of about sixty musicians. It is under the efficient leadership of an instructor in music, and furnishes music for military and many other University affairs.

THE SOCIETY OF ENGINEERS meets once in two weeks to listen to addresses by prominent engineers and for the discussion of various engineering topics. The Year Book of this society is published annually. It is devoted to the publication of articles upon engineering subjects by professors and students.

THE MINNESOTA SECTION OF THE AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS meets monthly in St. Paul and Minneapolis alternately. Students of the College of Engineering are welcome at these meetings.

THE GRANGE is comprised of the members of the faculty of the Department of Agriculture and others connected with the institution and interested in its welfare. Meetings are held on the first and third Monday evenings of each month. The order is intended to bring those connected with the College and Station in closer touch with one another and with the many lines of work carried on in the several divisions. Its further purpose is to keep in closer touch with the scientific world and the grange work of the state and nation.

PHILONETHIAN LITERARY SOCIETY is an organization of the students of the College of Agriculture, its object being to train its members in the art of public speaking, debating and parliamentary practice. The society meets once a week and presents a program including readings, recitations, debates, etc. The membership is limited to forty and is only for students in the College of Agriculture.

THE FORESTRY CLUB was organized by the Forestry students for the promotion of good fellowship and mutual interests. The specific object

of the club is to keep the members up to date on Forestry Literature and current affairs in the lumber world.

### PUBLICATIONS

THE MINNESOTA DAILY is published five times each week during the University year by an organization of University students.

THE JUNIOR ANNUAL, called *The Gopher*, is a book published annually by the junior class of the University.

THE MINNESOTA MAGAZINE is a monthly magazine devoted to the cultivation of literary taste and effort among the students of the University. It is managed by a board of editors chosen from the senior class.

THE MINNE-HA-HA is a humorous monthly magazine, published by the students of the University. It depicts life upon the campus in a satirical vein. The board of editors consists of ten members, chosen from the student body.

THE MINNESOTA ALUMNI WEEKLY is published every Monday during the University year. The Weekly is published entirely in the interest of the alumni and is devoted to alumni news and such University news as may be of special interest to the alumni.

THE YEAR-BOOK OF THE SOCIETY OF ENGINEERS is published annually. It is devoted to the publication of articles upon engineering subjects by professors and students.

FORESTRY PUBLICATION.—The "Minnesota Forester" is the official organ of the Minnesota State Forestry Association. It is edited by the Forestry Department of the University and is devoted to the advancement of the forestry movement with special emphasis on farm forestry.

FARM STUDENTS' REVIEW.—This is a paper published and managed by the Alumni Association of the School of Agriculture. It is the official organ of the Alumni Association and the Farmers' Club. The *Review* is intended to be a medium through which former students may keep in touch with the Agricultural School and with one another. It also endeavors to bring the farmers of the State into closer touch with the school, the college and the Experiment Station. To this end, the paper strives to present the latest progress in the experimental work of the various stations and to call attention to the most practical farm practices.

### WOMEN STUDENTS

After June first, 1903, the Registrar will supply a list of recommended boarding and rooming places to any women requesting such information. Young women who wish to earn a part of their expenses may generally learn of opportunities by communicating with Miss Ada Comstock, Dean of Women. During the college year Miss Comstock holds office hours every week day in the council room in Alice Shevlin Hall. At such

times she welcomes any woman student who cares to come to her whether for advice, information, or an informal talk.

During the summer Miss Comstock's address is Moorhead, Minnesota. She will be glad to correspond with young women who are planning to enter the University or with their parents.

**SHEVLIN HALL.** Through the generosity of Hon. Thomas H. Shevlin, the University now possesses in Alice Shevlin Hall a building admirably designed and equipped for the use of its women students. It is a two-story and basement structure, the material used being pressed brick with stone trimmings. It has a frontage of one hundred and fourteen feet on Pillsbury avenue and a depth of fifty-five feet. The purpose of this building is to furnish suitable rest and study rooms for the women attending the University. The building contains several society rooms, a large lunch room, and a general reception hall.

**THE STUDENT GOVERNMENT ASSOCIATION FOR WOMEN.** This organization was formed for the purpose of aiding in the care and conduct of Alice Shevlin Hall. Every woman student in the University is regarded as a member. There are no dues. The association makes rules for the guidance of those using Alice Shevlin Hall; it provides committees to enforce the rules; it gives permission for the holding of social functions in the building; and it controls the expenditure of any surplus in the receipts from the lunch room.

**THE WOMAN'S LEAGUE.** This organization is open to all women who are students in the University. It is governed by a council made up of student members from the four college classes. It makes its headquarters in the council room in Alice Shevlin Hall. The aim of the organization is to promote good fellowship and sociability among the women of the University. For this purpose it gives receptions and parties for girls at regular intervals throughout the year. It also endeavors to aid in any project which may be of benefit to the University, and particularly to the women students. At present it is interested in the attempt to secure dormitories.

# Admission

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Admission to the colleges or schools of the University is either by certificate or by examination. For exception see pages 40-41, Bulletin of the College of Science, Literature, and the Arts. The candidate must offer fifteen year credits of high school work so chosen as to include those required for the college or school which he wishes to enter. Of these fifteen year credits prescribed for admission the six in list A are required for admission to the freshman class in all the colleges and schools of the University except the College of Pharmacy, and no substitutions are accepted.

## LIST A

### REQUIRED BY ALL COLLEGES

English .....	four years
Elementary Algebra .....	one year
Plane Geometry .....	one year

Certain of the nine additional credits required for admission are prescribed by individual colleges, as indicated in the following list, and in no case is substitution allowed.

### REQUIRED BY INDIVIDUAL COLLEGES

College of Science, Literature, and the Arts

List A .....	6 credits
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See also page 31, Bulletin of the College of Science, Literature, and the Arts.

College of Engineering and the Mechanic Arts

List A .....	6 credits
Chemistry .....	1 credit
Higher Algebra .....	$\frac{1}{2}$ credit
Solid Geometry .....	$\frac{1}{2}$ credit
Language .....	2 credits

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10 credits

College of Agriculture

For high school graduates, see requirements for admission to the College of Science, Literature and the Arts.

For graduates of the School of Agriculture see bulletin of the College of Agriculture.

School of Agriculture

See bulletin of the School of Agriculture.

College of Law

List A ..... 6 credits

College of Medicine and Surgery

List A ..... 6 credits

Latin ..... 2 credits

Higher Algebra ..... ½ credit

Solid Geometry ..... ½ credit

Two years of college work, to include the satisfactory completion of one year of at least three credit\* hours per week, including laboratory, in each of the following named subjects:

- 1) Physics.
- 2) General Inorganic Chemistry.
- 3) Qualitative Analysis.
- 4) Biology, *i. e.* Zoology or Botany.
- 5) Language, *i. e.* German or French.

College of Homeopathic Medicine and Surgery.

See Table for Medicine and Surgery.

College of Dentistry

List A ..... 6 credits

Latin ..... 1 credit

Manual Training ..... 1 credit

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8 credits

College of Pharmacy

English ..... 2 credits

Elementary Algebra ..... 1 credit

Plane Geometry ..... 1 credit

Physics ..... 1 credit

Latin ..... 2 credits

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7 credits

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\*NOTE.—A credit hour is taken to be two or more hours of consecutive laboratory work.



## School of Mines

List A .....	6 credits
Higher Algebra .....	$\frac{1}{2}$ credit
Solid Geometry .....	$\frac{1}{2}$ credit

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 7 credits

## School of Analytical and Applied Chemistry

List A .....	6 credits
Higher Algebra .....	$\frac{1}{2}$ credit
Solid Geometry .....	$\frac{1}{2}$ credit

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 7 credits

## College of Education

Two years of collegiate work in any college or university of recognized standing.

## Graduate School

See bulletin of that school.

THE REMAINDER OF THE FIFTEEN CREDITS MUST BE MADE UP FROM THE SUBJECTS IN LIST B.

## LIST B

*Mathematics*

Higher algebra, one half year  
 Solid geometry, one half year

*Latin*

Grammar, one year  
 Caesar, four books, one year  
 Cicero, six orations, one year  
 Virgil, six books, one year

*Greek*

Grammar, one year  
 Anabasis, four books, one year

*German*

Grammar, one year  
 Literature, one year

*French*

Grammar, one year  
 Literature, one year

*Spanish*

Grammar, one year  
 Literature, one year

*Swedish, Danish-Norwegian, Icelandic*

Grammar, one year  
 Literature, one year

*History*

- Ancient to Charlemagne, one year
- Modern, from Charlemagne, one year
- England, one half year
- Senior American, one half year
- American Government*, one half year

*Business Subjects*

- History of commerce, one half year
- Commercial geography, one half year or one year
- Elementary economics, one half year
- Business law, one half year
- Business arithmetic, one half year
- Elementary bookkeeping, one half year
- Advanced bookkeeping and business practice, one year
- Stenography and typewriting, two years
- Business spelling and correspondence, one half year

*Physics*, one year

*Chemistry*, one year

*Botany*, one half or one year

*Zoology*, one half or one year

*Astronomy*, one half year

*Geology*, one half year

*Physiography*, one half year

*Manual Subjects*

- Freehand drawing, two credits<sup>1</sup>
- Mechanical drawing, two credits<sup>1</sup>
- Shop work, two credits<sup>1</sup>
- Modeling and wood carving, one credit<sup>1</sup>
- Domestic art and science, two credits<sup>1</sup>

ADMISSION BY CERTIFICATE

Graduates of the following courses, provided they present the credits required in List A, are admitted to the freshman class without conditions. For applicants under (a) or (b), all records shall be entered on the principal's certificate as "passed," "passed with credit," or "passed with honor." Each mark below "passed with credit" shall count as a condition unless a state high school board certificate shall be presented for the same subject. Beginning in September, 1909, this rule for admission shall be applied to all work completed after June, 1908. Until it goes into effect for the full four years' work, applicants will be admitted, provided

<sup>1</sup>For explanation of the term *credit*, as here used, see the syllabi for manual subjects given on page 54.

they have not, on the average, more than one semester mark below "passed with credit" for each year subject to the rule. Entrance examination in English is required for admission to the College of Science, Literature and the Arts, and in mathematics for admission to the College of Engineering and the Mechanic Arts, and the School of Mines.

For more detailed information see the bulletins of the separate colleges.

- (a) Any four year course of a Minnesota state high school
- (b) A four year course of other accredited schools in the state
- (c) A four year course of schools in any other state accredited to the state university of that state
- (d) The advanced Latin or English course of the Minnesota state normal schools.

A candidate wishing to enter the University from an accredited school should furnish the registrar an official statement of his preparatory work certified to by the principal of the school from which he comes. Blank certificates of admission for school year 1908-1909 may be secured from the registrar, and should be filled out and returned to him for approval before Aug. 25th, 1908. An applicant will be admitted conditionally who is deficient in not more than three half year credits (one year credit in the College of Engineering), and these entrance conditions must be removed before the beginning of the sophomore year.

#### ADMISSION BY EXAMINATION

Whenever admission is by examination, the candidate must pass examinations in the credits from list A, required for entrance to the college in question, and in addition sufficient credits from the list of electives in list B, to make a total of fifteen year credits; provided that, if the total of entrance conditions does not exceed three half year credits (in the College of Engineering one year credit), the applicant shall be admitted conditionally and be given one year in which to make up the entrance conditions.

#### PROGRAM OF ENTRANCE EXAMINATIONS

See Page 3.

LIST OF ACCREDITED SCHOOLS

The following High Schools are accredited :

Ada	Eveleth	Long Prairie	Royalton
Adrian	Excelsior	Luverne	Rush City
Aitkin	Fairfax	Lyle	Rushford
Albert Lea	Fairmont	McIntosh	St. Charles
Alden	Faribault	Mabel	St. Cloud
Alexandria	Farmington	Madelia	St. Louis Park
Amboy	Fergus Falls	Madison	St. James
Annandale	Fertile	Mankato	St. Paul—
Anoka	Fosston	Mantorville	Central
Appleton	Frazee	Mapleton	Cleveland
Argyle	Fulda	Marshall	Humboldt
Arlington	Gaylord	Mazeppa	Mechanic Arts
Atwater	Glencoe	Milaca	St. Peter
Austin	Glenwood	Minneapolis—	Sandstone
Barnesville	Graceville	Central	Sauk Centre
Belle Plaine	Grand Meadow	East	Shakopee
Bemidji	Grand Rapids	North	Sherburn
Benson	Granite Falls	South	Slayton
Bird Island	Hallock	West	Sleepy Eye
Blooming Prairie	Halstad	Minneota	South St. Paul
Blue Earth	Harmony	Montevideo	Springfield
Brainerd	Hastings	Montgomery	Spring Grove
Breckenridge	Hawley	Monticello	Spring Valley
Browns Valley	Hector	Moorhead	Staples
Buffalo	Henderson	Mora	Stephen
Caledonia	Herman	Morris	Stewartville
Cambridge	Heron Lake	Morton	Stillwater
Canby	Hibbing	Mountain Lake	Thief River Falls
Cannon Falls	Hinckley	New Prague	Tracy
Cass Lake	Hopkins	New Richland	Two Harbors
Chaska	Houston	New Ulm	Virginia
Chatfield	Howard Lake	Northfield	Wabasha
Chisholm	Hutchinson	North St. Paul	Wadena
Clarkfield	Jackson	Olivia	Warren
Cloquet	Janesville	Ortonville	Waseca
Cokato	Jordan	Osakis	Waterville
Cottonwood	Kasota	Owatonna	Welcome
Crookston	Kasson	Park Rapids	Wells
Dawson	Kenyon	Paynesville	West Concord
Delano	Kerkhoven	Pelican Rapids	Wheaton
Detroit	Lake Benton	Perham	White Bear
Dodge Center	Lake City	Pine City	Willmar
Duluth	Lake Crystal	Pine Island	Willow River
Central	Lakefield	Pipestone	Windom
Irving	Lake Park	Plainview	Winnebago
Eagle Bend	Lamberton	Preston	Winona
E. Grand Forks	Lanesboro	Princeton	Winthrop
Elbow Lake	Le Roy	Red Lake Falls	Worthington
Elgin	Le Sueur	Red Wing	Zumbrota
Elk River	Le Sueur Center	Redwood Falls	
Elmore	Litchfield	Renville	
Ely	Little Falls	Rochester	

The following private schools are also accredited to the University:

St. Mary's Hall, Faribault	St. Paul's College, St. Paul Park
St. Paul Academy	The Loomis School, St. Paul
Shattuck Military Academy,	The Backus School for Girls, St. Paul
Faribault	The College of St. Catherine, St. Paul
Stanley Hall, Minneapolis	St. Margaret's Academy, Minneapolis
Windom Institute, Montevideo	The Winona Seminary, Winona
Concordia College, Moorhead	St. John's College, Collegetown
Pillsbury Academy, Owatonna	Minnesota College, Minneapolis.
St. Joseph's Academy, St. Paul	

### ADMISSION AS UNCLASSIFIED STUDENTS

Whenever in the judgment of the enrollment committee an applicant presents satisfactory reasons for not taking the regular course, such applicant may be admitted as an unclassified student. He must take the same examinations or present the same credentials as are required of those who enter the freshman class. Exceptions can be made only upon vote of the faculty. A new application must be made each semester to the enrollment committee.

### ADMISSION TO STUDY MUSIC

Students who enter the University for the express purpose of studying music, must take the same examinations or present the same credits that are required of those who apply for admission to the freshman class. No student is admitted for the purpose of studying music, unless he presents a certificate from the department of music showing that he is qualified to pursue the courses offered.

### ADMISSION TO ADVANCED STANDING

#### I. FROM OTHER COLLEGES

This University accepts records from all reputable colleges for credit to advanced standing. Such records are accepted as far as they are equivalent to the work done in the college to which admission is sought. In bringing records from other institutions, the certificate must be upon the official blank of the institution granting the certificate, and should show:

- (a) The subject studied; if a language, the books read, etc.
- (b) The time spent upon each subject.
- (c) Ground covered in laboratory work in case of laboratory subjects.
- (d) The result. It is sufficient to state that the subject was completed creditably.

Records from institutions whose entrance requirements are not as

high as those of this University will not be accepted for equivalent rank. The credits to be allowed in such cases will be determined by the Enrollment Committee of the college in question.

## 2. FROM MINNESOTA NORMAL SCHOOLS

Graduates of the "advanced graduate course" of a Minnesota State Normal School are admitted to the College of Science, Literature, and the Arts (see p. 40, bulletin of College of Science, Literature, and the Arts) with advanced standing equivalent to one year's credit.

Individual graduates of the "advanced Latin course" (five year) or of the "advanced English course" (five year) of a Minnesota State Normal School, who on the basis of maturity and ability, present certificates of special fitness from the president of the Normal School, will be admitted with advanced standing under the same regulation and proviso.

### DESCRIPTION OF SUBJECTS ACCEPTED FOR ADMISSION

The following statements indicate in a general way the preparation which the University expects in the various subjects accepted for admission.

#### *English* (four years)

In order to secure a definite plan of study and unity of method on the part of preparatory schools, the entrance requirement in English is outlined below somewhat in detail. To satisfy this requirement a four-year course of not less than four hours per week must be pursued. The headings under which instruction will naturally fall are:

- (a) English classics
- (b) The principles of rhetoric
- (c) Practice in written expression
  - (a) English classics should include a critical reading, in class, of English masterpieces. The following are suggested as well adapted for such study: Shakespeare's *Macbeth*; Milton's *Paradise Lost*, books one and two; Burke's *Conciliation with America*; Carlyle's essay on *Burns*. In the study of these works the student should know the leading facts connected with the author and his time; he should become familiar with the subject matter of the work and thoroughly at home with the story, and should have a clear idea of the form and structure of the work as a whole.
  - A less critical knowledge of other standard or classic works, which may perhaps be read by the student at home, with written reports and brief oral discussions in class, is desirable. The following works are noted as indicative of the minimum amount of work expected: at least two of Shakespeare's plays, beside the one read in class, one of Irving's works, one of Hawthorne's novels, one of Stevenson's novels, one of Webster's orations.
  - (b) The work in the principles of composition should include the principles and technical terms of ordinary texts upon the subject, whether acquired by the direct study of such texts or mainly by the study of selected English masterpieces. It should not be forgotten that this is not an end in itself, but simply a means of teaching the student the correct use of English.
  - (c) Not less than one hour each week throughout the four years of the high school course should be devoted to practice in written expression. The instructor may choose such topics as local conditions may require or make most profitable; but whatever line of work is

pursued, the student should be taught to use language correctly and forcibly and learn to express himself clearly and logically in writing.

**ELEMENTARY ALGEBRA** (one year). Addition, subtraction, multiplication, division, factoring, highest common divisor, lowest common multiple, fractions, simple equations, with one, two, and several unknown quantities followed by problems, theory of exponents, involution (including the binomial theorem for positive integral exponents), evolution, radicals, inequalities, ratio, proportion, progression, and quadratic equations, with problems.

**HIGHER ALGEBRA, FIRST PART** (one-half year). While this subject does not include any topics not named under elementary algebra, a much fuller treatment of those topics is expected in this work. Principles as well as processes should be learned, theorems and rules should be

rigorously demonstrated, the exercises and problems should be more difficult, and students should be drilled in short methods and rapid work. Unless candidates have a good knowledge of the fundamental topics named below, they are not prepared to pursue successfully at the University the second part of higher algebra.

The topics are addition, subtraction, multiplication, division, factoring, highest common divisor, lowest common multiple, fractions, theory of exponents, involution, evolution, surds, imaginaries and simple equations with problems.

**PLANE GEOMETRY** (one year). Any of the standard texts on this subject will furnish the necessary preparation. Isoperimetry, symmetry and maxima and minima of figures are not required. The exercises requiring solutions and demonstrations should not be omitted.

**SOLID GEOMETRY** (one-half year). Any of the standard texts on this subject will furnish the necessary preparation. The exercises requiring solutions and demonstrations should not be omitted.

**LATIN GRAMMAR** (one year). This will include the subjects of orthography, etymology and syntax. Proficiency is particularly desired in the following subjects: the analysis of the verb forms, the rules of syntax, and the principal parts of the irregular verbs.

**CAESAR** (one year). First four books or selections from the seven books equivalent to four; or three books, with thirty pages of Cornelius Nepos, or two books with sixty pages of Cornelius Nepos. Special attention should be paid to the translation of passages of the text into correct and idiomatic English; grammatical questions connected with the text; more especially on the subjunctive mood, indirect discourse and the sequence of tenses. The student is expected to be familiar with the life of Caesar and an account of his wars.

**CICERO** (one year). Any six orations from the following list: *Against Catiline*, *Poet Archias*, *Ligarius*, *Marcellus*, *Manilian Law* (to count as two orations), the fourteenth *Phillipic*. The student should also be familiar with the life of Cicero.

**VIRGIL** (one year). Six books of the *Aeneid*, or five of the *Aeneid* and one of the *Metamorphoses* of Ovid, or the *Eclogues*. The student should be familiar with the life of Virgil and an account of his times and writings. A correct rythmical reading of the text is to be encouraged.

**GREEK GRAMMAR** (one year)

**XENOPHON'S ANABASIS** (one year)—Four books

**GERMAN** (two years)

First year the pupil should acquire:

- (1) A correct pronunciation, training of the ear, eye and organs of speech.
- (2) A vocabulary of a thousand words of every day use; facility in combining these words into simple sentences. As a means to this, 100 to 150 pages of easy narrative prose and poetry should be read, from which questions and answers may be formed. To test the student's memory and knowledge of the word-order he should relate or write out the story anew in his own words.

(3) From two to three hundred German idioms.

(4) The essentials of German grammar, to be taught by means of oral and written exercises based upon the reading lessons.

Second year:

(1) Read one hundred and fifty to two hundred pages of prose and poetry.

(2) Practice in reading smoothly and with expression.

(3) Carefully translate selected passages of the text into idiomatic English. To translate easy sentences which the student already understands is a waste of time.

(4) Translate sentences from English into German, using words and idioms of the text read.

(5) Study topically German grammar; chief rules of orthography, etymology and syntax; illustrate these by words, phrases and sentences selected or composed by the student.

**FRENCH** (two years). The principles of French grammar, including acquaintance with the verb, regular and irregular; an ability to translate easy English sentences into French and simple French prose into English.

**SPANISH** (two years). First year, grammar and reader; second year, grammar reviewed; reading of some modern writer; composition and conversation.

**ANCIENT HISTORY** (one year).

(a) This study should begin with from five to seven weeks upon the oriental peoples who have most influenced European development, noting the early civilizations in the valleys of the Nile and Euphrates, the spreading and meeting of these civilizations in the intermediate region, with notice of the more important states in that district, and the union of the East under Persia. This survey should aim to give an idea of the reach of recorded history, of the distinguishing features of the successive oriental nations, and of their more important influence upon later European development.

(b) In the Greek and Roman age emphasis should be put upon the evolution of institutions, and considerable attention should be paid to the later Hellenistic period, after the rise of Macedon, and to the Roman Empire, with its bearing upon subsequent history. Some of the work should be illustrated by the use of sources, and maps should be used constantly.

(c) The subject should be carried down to the establishment of Charlemagne's empire. This will bring together all the chief lines of influence which were afterwards to make our modern world, will show the meaning of the preceding eras as can not be done if the study stops at an early date, and will leave the subject at a period of comparative order and simplicity.

**MODERN HISTORY** (one year). From Charlemagne to the present. The topics to which special attention are called are the period of disorder after Charlemagne and the consequent rise of feudalism, the Holy Roman Empire and the papacy, the medieval church, the crusades, the free cities, the rise of national monarchies, the intellectual renaissance and the protestant reformation, the French revolution and the subsequent democratic movements in politics and industry.

It is desirable to give at least half of the year to this last period from 1789.

**ENGLISH HISTORY** (one-half year). The Saxon period should be passed over rapidly. In the remainder of the work, besides the narrative, constitutional points should receive attention, and easily accessible documents, like Magna Charta, should receive careful study.

**SENIOR AMERICAN HISTORY** (one-half year). No attempt should be made to cover the whole field in this time. Either the colonial history or the period from 1783 to 1832 offers quite enough material. In any case, considerable use should be made of collections of documents, and sources.

**AMERICAN GOVERNMENT** (one-half year). This should be a study of our government, national, state and local, as it is organized and actually operated today. Students should be made familiar with the purpose and salient features of important instruments of government and other public acts like the Declaration of Independence, Articles of Confederation, the constitution of the United States, the constitution of Minnesota, and a local city or village charter.



In no case, however, should the instruction consist wholly or largely of an analysis of documents. It should rather aim to impart information essential to intelligent, active citizenship, such as the division of the government into departments, their organization and function; the methods of nominating, electing, and appointing men to office; of framing and amending constitutions, city charters and statutes; of drawing grand and petit juries and the duty of the citizen to serve on them; the distinction between common law, state law, and constitutional law, between equity, civil, and criminal cases.

To make the government seem a real working organization to the student, he should be encouraged to observe public proceedings by attending school meetings, town meetings, sessions of the county commissioners, city council, state legislature, a trial in court, and party primaries and conventions. He should also be led to read about and observe public affairs for himself. To that end let him collect statistics and accounts of work done by particular offices and departments from published reports and by personal inquiry.

**BUSINESS SUBJECTS:** The following syllabi are offered by the University in order that the schools may be informed concerning the preparation expected in business subjects, in view of the fact that the graduates of business courses are now admitted to the University on the same footing as the graduates of other courses.

It is not intended or expected that many schools, or perhaps any one school, will offer all the subjects indicated. Not to exceed forty per cent of the units for admission should in any case be taken from the list of technical business subjects named below. The other sixty per cent should embrace the required English and mathematics, together with some work in history, science and the modern languages. The University is strongly of the opinion that no business course should be offered which does not include at least two years of some one modern language.

Under the head of business subjects are included two distinct lines of work: first, courses dealing with the history, description, theory and law of business, including the history of commerce, commercial geography, elementary economics and business law; second, courses dealing with the technique of business. The latter may be further subdivided into the mathematics of business, including business arithmetic, bookkeeping and business practice; and the language of business, including stenography, typewriting and business correspondence.

**HISTORY OF COMMERCE** (one-half or one year). The history of commerce forms the natural introduction to the study of present economic conditions. It would be well to give special attention to the economic history of England and the United States. The work should be based on a text book, supplemented by carefully directed map work and assigned readings. This should be preceded by a year course of medieval and modern European history.

**COMMERCIAL GEOGRAPHY** (one-half or one year). As the history of commerce is concerned with the past, so commercial geography describes and seeks to explain the commerce of today. The work should cover the ways in which commerce depends on nature and on man, the development of means of transportation and communication, and a detailed study of the several commercial nations of the world with reference to resources, industries, transportation facilities and commerce. It should be based on a text book supplemented by map work and assigned readings.

**ELEMENTARY ECONOMICS** (one-half year). In the study of economics it is desirable to avoid two extremes, abstract theory on the one hand, and controversial questions such as the tariff, trusts, and trade unions on the other hand. Emphasis should be placed on historical and descriptive matter, especially relating to the economic development of England and the United States. Some good elementary text book should be mastered and a reasonable amount of collateral reading required.

**BUSINESS LAW** (one-half year). The object of this study is not to make "every man his own lawyer" but rather to enable him to keep out of legal complications. Text book supplemented by study of a few

typical cases, and practice in drawing up ordinary legal papers such as bills, notes, checks, etc.

**BUSINESS ARITHMETIC** (one-half year). The object is first of all, absolute accuracy and secondly speed in ordinary business computations. The topics to be emphasized are, fundamental operations, common fractions having as denominator 2, 3, 4, 6 and 8, a few common weights and measures, percentage and its applications, and useful short methods, especially the use of interest and other calculation tables. The work should be based on a text book, supplemented by numerous live exercises from current sources.

**ELEMENTARY BOOKKEEPING** (one year). A text book should be employed with exercises so arranged that no two pupils will do exactly the same work, and no credit should be allowed unless the work is done neatly, accurately and at a satisfactory rate of speed. It is suggested that double periods be provided, and all work be done in class under the eye of the instructor. The set used should include the journal, cash book, sales book, ledger, check book, bank pass book and trial balance book.

**ADVANCED BOOKKEEPING AND BUSINESS PRACTICE** (one year). Thorough drill on standard business forms, such as bills, receipts, checks, notes, etc., also on the use and meaning of business symbols and abbreviations. The student should become acquainted with the bill book and invoice book, and loose leaf and voucher systems of bookkeeping. Each student should carry on a business of his own, first as an individual, then as a partnership, and finally as a corporation. Credit on this course should mean that the student lacks only age and actual business experience to become a competent bookkeeper.

**STENOGRAPHY AND TYPEWRITING** (two years). This work is expected to occupy not less than two periods daily for two years. No credit should be given for either shorthand or typewriting if taken alone. Nothing but the touch method should be used in typewriting. The essentials are first, accuracy and speed in taking dictation and transcribing notes; secondly, correct spelling, capitalization, punctuation and paragraphing. The minimum speed at the end of the first year should be 75 words per minute in dictation and 25 words per minute on the machine; and at the end of the second year, 100 words per minute in dictation and 35 words per minute in transcribing notes. Thorough training should also be given in care of the machine, in modern methods of manifolding and in filing papers.

**SPELLING AND BUSINESS CORRESPONDENCE** (one-half year). Preliminary review of five hundred common technical business words. Thorough training on business correspondence including (1) the proper form for business letters, (2) the proper choice of words and construction of sentences with reference to clearness and brevity, (3) capitalization, punctuation and paragraphing, (4) writing and answering telegrams and advertisements. The work should be based on a text book supplemented by letters relating to most prominent industries of the locality.

**PHYSICS** (one year). It is suggested that the year's work be confined to four of the seven subjects mentioned below.

- (1) Mechanics of solids, (2) liquids and gases, (3) sound, (4) heat, (5) light, (6) and (7) electricity and magnetism (to count as two subjects, but not to be divided).

**CHEMISTRY** (one year). The full year's work should include a study of both the non-metals and metals with laboratory experiments illustrating the common chemical laws and the commoner chemical reactions.

**BOTANY** (one or one-half year). Schools which give one-half year of botany should devote particular attention to plant relations, making the course largely ecologic in bearing. When a whole year is given to the subject, additional work upon plant structures should be offered, and together with fundamental conceptions of ecology, a general idea of morphology and taxonomy should be the aim of the course.

**ZOOLOGY** (one or one-half year). The course of zoology, whether a half year or a year course, should be a natural history rather than a modern morphological course. Collecting and classifying (as a means) should be encouraged as much as possible. Animals should be studied as living units, in their relation to one another and their environment.

The general and special structural feature in relation to the habits, the food and manner of obtaining it, the enemies and means of protection against them, hibernation, migration, the differences in habits, form and structure between the old or mature animal and the young, the relation of parents to their offspring, etc.—in short, all about the life of the animal under consideration should be made out by direct observation of the animal in its natural home and in confinement.

The course, on the whole, should aim to foster and develop a love for nature, train the power of observation toward accuracy and give a healthful stimulation to the imagination. The pupil should be guarded against the habit of confounding the facts of observation with his interpretation and his judgments.

The animals for direct observation should be selected from as many branches of the animal kingdom as possible, and the changes during the year in the character of the fauna of the locality in general as well as of some particular region should be noted. In some localities the work will of necessity be largely restricted to land and air animals, but no locality in Minnesota is so poor in animal life that very profitable work cannot be laid out along the line indicated above.

It will be noticed that such a course of necessity includes so-called laboratory work. The amount and extent of the laboratory work will depend upon conditions, but even under the best conditions it is hardly advisable to go into detailed dissections and embryology. Continued, repeated, and close observation, aided now and then, by a simple hand lens or a compound microscope, will reveal an abundance of material and opportunity for disciplining the mind.

**ASTRONOMY** (one-half year). An elementary course in general astronomy as presented in any good modern text-book.

**GEOLOGY** (one-half year). These subdivisions should receive special attention: physiographic geology, which treats of the building of the land and the evolution of its existing contours; geo-dynamics, the study of the forces, atmosphere, water, terrestrial heat, plants and animals modifying the earth; and a brief survey of historical geology.

**PHYSIOGRAPHY** (one-half year). The following topics should be emphasized: meteorology, the leading facts relating to the atmosphere and its phenomena, including some acquaintance with the work of the United States weather bureau; land sculpture, as it treats of the origin, development and decadence of land forms, and the influence of these processes on the physical environment of man.

**MANUAL SUBJECTS:** In view of the multiplication of manual training courses in the high schools, it seems well to define what the University expects in the line of manual training and drawing work. It is not implied that many schools, or perhaps any one school, should offer all of the subjects indicated. Not to exceed twenty-five per cent of the units for admission to the University should in any case be taken from the list given below. The major part of the course should consist of the required English, and of mathematics, history, science and foreign languages. Students taking a manual training course should be held to a full course in mathematics, and should be required to complete not less than two years of one foreign language. Owing to the fact that drawing and shop work do not require outside preparation, it is not fair that they should be credited by the schools on the same basis as the academic subjects. It is therefore suggested that half credits be allowed; that is to say, one full credit for two years of work one period daily, or for one year of work two periods daily, in each subject.

**FREEHAND DRAWING** (two credits)

**MECHANICAL DRAWING** (two credits)

**JOINERY** (one-half credit)

**WOOD TURNING AND CABINET MAKING** (one-half credit)

**PATTERN MAKING AND FORGE SHOP** (one-half credit)

**MACHINE SHOP, INCLUDING CHIPPING**

**FILING AND WORK ON THE IRON LATHE** (one-half credit)

**DRILL PRESS AND IRON PLANE**

**CLAY MODELLING** (one-half credit)

**WOOD CARVING** (one-half credit)

**DOMESTIC ART, INCLUDING CAREFULLY GRADED EXERCISES IN SEWING**  
(one credit)

**DOMESTIC SCIENCE, INCLUDING PRACTICAL COOKERY, AND HOUSEHOLD ECONOMY** (one credit)

## GRADUATION AND DEGREES

## GRADUATION

The candidate for a degree must complete the requirements for graduation in his course. Any person may undergo, at suitable times, examination in any subject, and if such person pass in all the studies and exercises of the course, he is entitled to the appropriate degree; *provided*, however, that at least one full year (the one immediately preceding the granting of the degree) must be spent at the University, before such degree shall be granted, and *provided* that examination, in every case, be held before a committee of the faculty appointed for that purpose.

For detailed information concerning requirements see the bulletins of the separate colleges and schools.

## DEGREES

The degrees Bachelor of Arts, Bachelor of Arts in Education, Bachelor of Science, Master of Science, Master of Arts, Doctor of Philosophy, Civil Engineer, Mechanical Engineer, Electrical Engineer, Engineer of Mines, Metallurgical Engineer, Bachelor of Science in Chemistry, Bachelor of Science in Chemical Engineering, Bachelor of Science in Agriculture, Bachelor of Science in Forestry, Bachelor of Science in Home Economics, Doctor of Civil Law, Master of Laws, Bachelor of Laws, Doctor of Medicine, Doctor of Dental Surgery, and Bachelor of Pharmacy, are conferred, after recommendation by the deans of the respective colleges, by vote of the Regents.

## THE UNIVERSITY STATE TEACHER'S CERTIFICATE

Graduates of the University may apply for and receive upon vote of the faculty the University State Teacher's Certificate under the following conditions:

First: They must have maintained a good average of scholarship throughout the four years of college study.

Second: They must have the recommendation of at least one department concerned with high school studies.

Third: They must have completed one semester of Psychology and three semesters of Education, including courses 1 and 2.

This certificate by state law authorizes students to teach in the public schools of Minnesota for two years from date. After that time, upon satisfactory evidence of success, the certificate may be made permanent by the endorsement of the State Superintendent of Public Instruction and the President of the University.

# Expenses

## FEES

### COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

	Per semester Resident
Incidental fee* .....	\$10.00
Animal Biology, 1 to 6, each .....	3.00
Animal Biology, 7 .....	1.00
Botany, 1, 2, 3, 5, 6, each .....	3.00
Chemistry 1 (a), 1 (b), 2, 3, each .....	5.00
Chemistry 4, 5, each .....	7.00
Chemistry, 6 .....	10.00
Geology, 9 and 10, each .....	1.00
Mineralogy, 1, 2, 3, and 4, each .....	3.00
Music, 1, 2, 3, 6 7, each .....	4.00
Music, 4 .....	\$25.50 to \$85.00
Music, 5 .....	2.00
Physics 2, 4, 5, 6, 8, 10, 13, 15, each .....	3.00
Physics, 7, 11, and 16, each .....	5.00
Drill suit, \$15.00.	
Gymnasium suit, \$2.00	
Locker fees, \$1.50.	
Deposit fee—military department, \$5.00.	
*Incidental fee, non-resident, \$20.00.	

### COLLEGE OF ENGINEERING

Incidental fee* .....	\$15.00
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#### FRESHMAN YEAR

##### First Semester

Shop work .....	\$ 4.50
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##### Second Semester

Shop work .....	\$ 4.50
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#### FOR CLASSES GRADUATING IN 1909-1910-1911

#### SOPHOMORE YEAR

##### First Semester

Shop work .....	\$ 7.00
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Physics .....	3.00
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Chemistry .....	3.00
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*Second Semester*

Shop work .....	7.00
Physics .....	3.00

JUNIOR YEAR

*First Semester*

Shop work .....	\$ 4.50
Materials Testing Laboratory .....	6.00
Electrical Laboratory .....	1.50
Physics .....	3.00

*Second Semester*

Shop work .....	\$ 4.50
Steam Laboratory .....	3.00
Hydraulic Laboratory .....	3.00
Fuel and Gas analysis .....	5.00
Electrical Laboratory .....	6.00

SENIOR YEAR

*First Semester*

Electrical Laboratory .....	\$3.00
Electric Power .....	3.00
Experimental Laboratory .....	6.00

*Second Semester*

Electrical Laboratory .....	\$ 4.50
Electric Power .....	3.00
Gas Engine Laboratory .....	4.50
Deposit fee—military department, freshman and sophomore years ...	\$ 5.00
Drill suit .....	15.00

\*Incidental fee, non-resident, \$30.00.

COLLEGE OF AGRICULTURE

See statement for College of Science, Literature and the Arts

COLLEGE OF LAW

Matriculation fee .....	\$10.00
Incidental fee (three terms) per term .....	20.00

COLLEGE OF MEDICINE AND SURGERY

	Per semester
Incidental fee .....	\$50.00
Microscope fee, 1st year .....	4.00
2nd year, 1st sem., \$3.00, 2nd sem .....	4.00
3rd year, 1st semester .....	4.00
4th year, Clinical Microscopy .....	2.00
For elective courses .....	2.00

	Per year
Caution fee (see p. 39, Bulletin of College of Medicine and Surgery)	\$5.00
Hospital fee (Jr. and Sr. year)	3.00

## COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY

See College of Medicine and Surgery

## COLLEGE OF DENTISTRY

	Per semester
Incidental fee	\$75.00
	Per year
Breakage deposit (see p. 19, Bulletin of College of Dentistry)	5.00

## COLLEGE OF PHARMACY

	Per year
TWO YEAR COURSE	
First year	\$75.00
Second year	90.00
	<hr/>
	\$165.00

## THREE YEAR COURSE

First year	\$45.00
Second year	55.00
Third year	65.00
	<hr/>
	\$165.00

## SCHOOL OF MINES

## FRESHMAN YEAR

	Resident
Incidental fee*	\$30.00
Chemical laboratory fee	10.00
Mineralogical laboratory fee	6.00
Assaying laboratory fee	15.00
Books	13.00
Draughting instruments	15.00
Note book and supplies	6.00
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	\$95.00

## SOPHOMORE YEAR

Incidental fee*	\$30.00
Chemical laboratory fee	14.00
Books	8.00
Note books and supplies	2.00
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	\$54.00

JUNIOR YEAR

Incidental fee*	\$30.00
Steam laboratory	2.00
Trip to the mines	\$100.00 to 175.00
Books	20.00
Note books and supplies	2.00
	<hr/>
	\$152 to \$227.00

SENIOR YEAR

Incidental fee*	\$30.00
Chemical laboratory fee	10.00
Electrical laboratory fee	5.00
Ore testing laboratory fee	10.00
Experimental laboratory fee	6.00
Books	30.00
Note books and supplies	2.00
	<hr/>
	\$93.00
Deposit fee	3.00

\*Incidental fee, non-resident, \$60.00.

THE SCHOOL OF CHEMISTRY

Incidental fee*	\$15.00
Shop	7.00
Assaying	15.00
Courses 1, 2, 3, 10, 14, 18, 19, 23	5.00
Courses 4, 5	7.00
Course 6	10.00
Courses 9, 11, 12, 13, 15, 16, 17, 20, 24	3.00
Incidental fee, non-resident,	\$30.00.

THE COLLEGE OF EDUCATION

See statement under College of Science, Literature, and the Arts.

THE GRADUATE SCHOOL

Incidental fee	\$10.00
Proportionate fees for less than full work.	

A fee of 25 cents per day is charged for each day of delayed registration in each of the colleges except the graduate school.

EXPENSES

The expense of living at the University varies greatly according to individual habits and tastes. In general the scale of expense is below rather than above that of similar institutions in the middle west and is



considerably lower than that of most institutions situated in the eastern states.

Several years ago a number of young men and women, at the request of University officials, kept careful account of their expenses for the University year. The result was that the expenses of the young men ranged from two hundred and seventeen to three hundred and ninety-seven dollars for the University year. The same students earned sums varying from two hundred and thirty-seven to two hundred and seventy-two dollars. The young women reported expenses varying from one hundred and fifty to three hundred and fifty-five dollars. These figures do not include fees, and, as the cost of living has increased decidedly, probably twenty-five per cent should be added to these figures to make them safe.

The students upon whose statements these figures are based were representative students; they were not extravagant nor did they deny themselves unduly to get along. While students can live within the figures given above, they would not, owing to the increased cost of living, be able to live as comfortably nor to have as many privileges as these students had.

Meals can be had at prices ranging from two dollars and a quarter per week to as high as the student can afford to pay. In private families board ranges from three to five dollars.

Furnished rooms vary in price from eight to twenty dollars per month. Two students rooming together would of course reduce this expense. It is sometimes possible for a student, rooming alone, to secure a good room at an expense but little higher than when two room together; but such chances are the exception and not the rule. New students will find that they will be more likely to secure comfortable rooms and suitable board if they will consult the general secretary of either the Young Men's or Young Women's Christian Association immediately upon arrival at the University, or if they will correspond with these officers before coming to the University.

The student who learns some trade before coming to the University has a great advantage over the student who has to earn his money by ordinary manual labor. Students have earned their whole expenses while attending the University, and have made good records at the same time. Other students have done so much work that they have not been able to keep up their studies, and have thus missed the one thing for which they were attending the University.

If it is possible for the student to have a part of his expenses paid, he should not attempt to earn his way entirely by his own exertions. It is a comparatively easy thing for a young man to earn half his living while attending the University and yet do good work in his classes. Students who want work seldom fail to find it. In coming to the Univer-

sity, the student should bring enough money with him so that he can live comfortably for a few weeks until he can find something to do.

Students who desire advice and assistance in securing a position to help pay their expenses should confer with the Secretary of the Y. M. C. A. at the University.

A pamphlet has been published containing five papers (one by a young woman) relating actual experiences of students who have made their way through the University. Students who contemplate making their own way through college will find here stated some very interesting and encouraging facts. A copy will be sent free to any address upon application.

# Degrees Granted in 1907

Total, 507.

## THE COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

### FOR THE DEGREE OF BACHELOR OF ARTS—194.

Ella M. Anderson, Hibbing.	Althea Diether, St. Paul.
Inez A. Applebee, Anoka.	Katharine Donovan, Clontarf.
Florence Fay Atwater, Minneapolis.	Mary Irene Dunn, St. Cloud.
Donald Campbell Babcock,	Ralph Emerson Dyar, Winona.
Grand Forks, N. D.	Dana Magoon Easton, Warren.
Lora D. Bacon, Minneapolis.	Michael Higgins Ebert, Glencoe.
Walter Lucius Badger, Minneapolis.	George Rupert Eichholzer,
Edith Margaret Barrett, Stillwater.	Owatonna.
Clara Hughes Barnes, Minneapolis.	Elven Tinus Ellefson, Dawson.
Edla Gustavia Berger, St. Paul.	Culver Ellison, Minneapolis.
Blanche Leonora Bicknell,	Edna Elmer, Minneapolis.
Minneapolis..	Mary Celestine Enright, St. Paul.
Nathan Bishop Blackburn,	Gertrude Sophia Evans, Miles City,
Minneapolis.	Mont.
Carl Wm. Blegen, Minneapolis.	Elizabeth Pillsbury Fairfield,
Margaret Sidle Bliss, Minneapolis.	Minneapolis.
Edna Beatrice Bowler, Minneapolis.	Mary Harriet Ferraby, Willmar.
Ethel Seraphia Brooberg, Minneapolis.	Bernice Vivian Frey, Minneapolis.
Pearl M. Brooks, Minneapolis.	Lucius Arnold Frye, St. Paul.
Montreville J. Brown, Minneapolis.	Helen Tolman Gallup, St. Cloud.
Essie May Burgan, Minneapolis.	Mildred Belle Gaus, Minneapolis.
Beulah Isabel Burton, Minneapolis.	Gertrude Lucile Gee, Monticello.
Anna Butler, Minneapolis.	Mabel Hastings Gibbs, Waterville.
Marietta Butler, Minneapolis.	Mary Fidele Gleason, Minneapolis.
Frederic David Calhoun, Minneapolis.	Arnold Gloor, Minneapolis.
Alma Beatrice Campbell, Minneapolis.	Edna Hall Gould, Minneapolis.
Anna Jean Campbell, Hopkins.	Mary Gould, Winona.
Carl G. Campbell, Burkeville, Va.	Grace Elberta Green, Minneapolis.
Ezra Eugene Chadwick, Minneapolis.	Richard Leslie Griggs, Virginia.
Frances De Larsh Chamberlain,	C. Clarice Grindeland, Warren.
Minneapolis.	Florence Catherine Guthrie,
Emily K. Chapman, Sioux Falls, S. D.	Blooming Prairie.
Frances Mildred Clark, Minneapolis.	Mildreth Janet Haggard, Minneapolis.
Wall G. Coapman, Columbus, Wis.	Orrin Ives Hall, Zumbrota.
Edna Gertrude Cockburn, Minneapolis.	Lola Hammond, Minneapolis.
Pausy B. Cogrove, Minneapolis.	Mabel J. Hansen, Alden.
Florence Cooper, Minneapolis.	Howard Hurlbut Hare, Minneapolis.
Mary Elizabeth Copley, St. Paul.	Constance Margaret Hartgering,
Ella G. Cox, Cloquet.	Rapid City, S. D.
Earl H. Cressy, Minneapolis.	Irma Hathorn, Minneapolis.
Rose A. Crosman, Minneapolis.	Corinne Heffner, Minneapolis.
Agnes Ray Crouse, Minneapolis.	Gussie Beatrice Heffron, Bemidji.
Anna C. Dorothy Dahl, Minneapolis.	Mary Clymo Helson, St. Paul.
Effie Harriet Dahlberg, Minneapolis.	Frances Hicks, St. Paul.
Izella Mabel Dart, Litchfield.	Marie Alice Higbee, Minneapolis.
Raymond H. Dart, Litchfield.	Adele Lucile Higgins, Minneapolis.
Katharine Lee DeVeau, Minneapolis.	Fannie Higgins, Minneapolis.
Richard Herbert Dewart, Portland,	Helen Hill, St. Cloud.
Oregon.	Ruth Harriet Hill, Minneapolis.
Grace Dickinson, Buffalo.	Clara Elizabeth Hille, Fergus Falls.

Minnie Louise Hills, St. Paul.  
 Frank Corrin Hodgson, Minneapolis.  
 Florence Louise Hoffin, Hopkins.  
 John Guy Honnold, LeMars, Ia.  
 Dorothy Bluebell Hubbard,  
 Lake Elmo.  
 Earl Webster Huntley, Spring Valley.  
 Seimin Inaoka, Tokyo, Japan.  
 Agnes Jaquess, Minneapolis.  
 Alexander Ivan Jedlicka, Clarissa.  
 Charlotte Clara Jefferson,  
 Bingham Lake.

Mary Myrtle Jones, Minneapolis.  
 Chester A. Josephson, Red Wing.  
 Esther Bernardine Kelly, St. Paul.  
 Elizabeth Ellen Knappen, Minneapolis.  
 Louise Knoblauch, Minneapolis.  
 Walter Knox Kutnewsky,  
 Redfield, S. D.

Eva LaDue, Fertile.  
 Albert Lagerstedt, Gibbon.  
 Homer Baker Latimer, Minneapolis.  
 Oliver Justin Lee, Minneapolis.  
 George Rudd Little, Kasson.  
 Mary Frances Loftus, Minneapolis.  
 Floyd Sterling Loomis, Owatonna.  
 Helen S. Lovell, Minneapolis.  
 Eva Alice Lydiard, Long Lake.  
 Frank Shiland Lyon, Minneapolis.  
 Ethel Noyes McCauley,  
 McCauleyville.

Edith May McGregor, Minneapolis.  
 Natalie McKay, Brownton.  
 Jessie Gillespie McKenzie,  
 Wild Rice, N. D.  
 Winnifred G. McLennan, Crookston.  
 Ellen E. McPartlin, Glencoe.  
 Lura Ethel Marchant, Minneapolis.  
 Elizabeth Greeley Marsh, Stillwater.  
 Pearl Maynard, Long Prairie.  
 Carroll K. Michener, Spring Valley.  
 Harry Herbert Miller, Grove City.  
 Margaret C. Miller, Sheldon, Ia.  
 Alice Margaret Misz, St. Paul.  
 Sadie Veronica Moran, Graceville.  
 Dora Honora Moulton, Boyd.  
 Roy Jasper Moulton, Boyd.  
 Willis I. Norton, Minneapolis.  
 Amy S. Oliver, Eau Claire, Wis.  
 Edward Joseph O'Neill, Graceville.  
 Rilla Wood Palmer, St. Paul.  
 I. Alice Pedersen, Rothsay.  
 Georgiana Pennington, Minneapolis.  
 Claude C. Perkins, Pine Island.  
 Anna Mathilde Peterson, Minneapolis.

Edith May Phelps, Minneapolis.  
 Clara P. Pitts, Alton, Ia.  
 Edward John Pohlmann, Minneapolis.  
 Mary Naomi Powers, Granite Falls.  
 Sara Morrow Preston, Minneapolis.  
 Harry C. Quackenbush, West Concord.  
 Claude David Randall, St. Paul.  
 Elizabeth Rich, Minneapolis.  
 Alvin J. M. Robertson, Sleepy Eye.  
 Ethel Rockwood, Minneapolis.  
 Clara Elizabeth Ross, New Ulm.  
 Arthur Gale Rossman, St. Paul.  
 Margaretta E. Roth, Robbinsdale.  
 Anna Cecilia Ryan, St. Paul.  
 Margaret Anne Ryan, Duluth.  
 Rasmus S. Saby, Radcliffe, Ia.  
 Eureka A. Sahibom, Worthington.  
 Charlotte Sanborn, Minneapolis.  
 Rose Marie Schaller, Hastings.  
 Lillian Christine Schmitt, Mankato.  
 William Arthur Schummers,  
 Caledonia.

Frances Eleanor Skinner, Minneapolis.  
 Carrie Hemming Smith, Minneapolis.  
 Grace I. Smith, Minneapolis.  
 Myrtle Irene Smith, Miles City, Mont.  
 Simon Solie, Delavan.  
 Hannah D. Sparks, Minneapolis.  
 Ethel B. Spooner, Minneapolis.  
 Frieda Louise Stamm, St. Paul.  
 Charlotte Isabel Stevens, Minneapolis.  
 Minnie Stinchfield, Rochester.  
 Edward Francis Swenson, Luverne.  
 Freda E. Swenson, St. Paul.  
 Sabra S. Swenson, Minneapolis.  
 Sweyn W. Swenson, Ellsworth, Ia.  
 Harriet Switzer, Minneapolis.  
 Mabel E. Switzer, Minneapolis.  
 Wilber R. Taft, Monticello.  
 Elnora B. Theisen, Minneapolis.  
 Edna Elizabeth Towler, Minneapolis.  
 Alma Julia Triefoff, Carver.  
 Florence Maud Tubbs, Minneapolis.  
 Marjorie E. Vance, Decorah, Ia.  
 Alma D. Wagen, Mankato.  
 Adele Florence Walker, Williston, N. D.  
 Jennie E. Wallace, Humboldt, Iowa.  
 Grace Beatrice Weitzel, Minneapolis.  
 Camilla A. Wennerlund, Minneapolis.  
 Margaret Christie West, Minneapolis.  
 Grant A. White, Luverne.  
 Jacob Wilk, Minneapolis.  
 Anne Elizabeth Williams, St. Paul.  
 Clara E. Woodward, St. Paul Park.  
 Mary Yager, Minneapolis.

FOR BACHELOR OF ARTS (In Education)—4.

Edgar C. Higbie, Minneapolis.  
 Fred Barnum Reed, Decorah, Ia.

Conrad G. Selvig, Rushford.  
 Charles Phillip Stanley, Waupaca, Wis.

FOR BACHELOR OF SCIENCE—14.

Clifton A. Booren, Stillwater.  
 Archie E. Brimmer, St. Paul.  
 Lyman R. Critchfield, Hunter, N. D.  
 John Leo Delmore, Marshfield, Wis.  
 William Hardy Frazier,  
 St. Anthony Park.  
 Michael F. Hayes, Lanesboro.  
 Martin Larson, Atwater.

Henry William Meyerding, St. Paul.  
 Ignatius J. Murphy, Lakefield.  
 Edward L. Paulson, Linden.  
 Clarence George Perry, St. Paul.  
 Henry Albert Schmidt, Westbrook.  
 Herbert Henry Thompson, St. Paul.  
 E. Franklin Zoerb, Minneapolis.

## FOR MASTER OF ARTS—20.

- Levi Harrison Beeler, Stillwater.  
B. A. '06, Macalester.  
Major, Education; Minors, History, Political Economy.  
Thesis: Suggestions for the Elementary Course of Study.
- Thomas P. Beyer, St. Paul.  
B. S. '03, Wesleyan University.  
Major, Shakspeare; Minors, Tennyson, Beowulf.  
Thesis: An Inference as to the Personality of Shakspeare, drawn from his Works.
- Theodore A. Buenger, St. Paul.  
B. A. '06, Minnesota.  
Major, Latin; Minors, Greek, Botany.  
Thesis: Cicero's *Pro Caelio*.
- Frederick William Gates, Minneapolis.  
Ph. B. '99, Wisconsin.  
Major, Mathematics; Minors, Mathematics, Astronomy.  
Thesis: Abridged Notation.
- Harriet Jane Hutchinson, Minneapolis.  
B. A. '03, Minnesota.  
Major, History; Minors, English, Education.  
Thesis: The Monroe Doctrine and its Application to the Venezuela-Guiana Boundary Dispute.
- Charles Eugene Johnson, Minneapolis.  
B. A. '06, Minnesota.  
Major, Embryology; Minors, Entomology, Botany.  
Thesis: The Thymus Gland and its Development in the Pied-billed Grebe.
- Edward Carl Johnson, Minneapolis.  
B. A. '06, Minnesota.  
Major, Botany; Minors, Entomology, German.  
Thesis: The Wintering Over of Various Cereal and Grass Rusts.
- Ida Amanda Johnson, Rochester.  
B. A. '06, Minnesota.  
Major, History; Minors, Economics, German.  
Thesis: The True Magna Carta Concept.
- Alois F. Kovarik, Minneapolis.  
B. A. '04, Minnesota.  
Major, Radioactivity; Minors, Heat, Mechanics.  
Thesis: Radioactive Emanations.
- Linda H. Maley, Minneapolis.  
B. A. '01, Minnesota.  
Major, English; Minors, Rhetoric, Italian.  
Thesis: The Technique of the Modern Drama.
- Frederick C. Miller, St. Paul.  
B. A. '03, Minnesota.  
Major, Politics; Minors, History, Geology.  
Thesis: History and Organization of the Police.
- George Norton Northrop, Madison, Wis.  
B. L., '01, Minnesota.  
Major, English; Minors, Economics, French.  
Thesis: A Study of Florio.
- Louis W. Rapeer, Minneapolis.  
B. S. '04, University of Chicago.  
Major, Education; Minor, Sociology.  
Thesis: The Problem of Grammar in the Elementary Curriculum.
- Amy Irene Robbins, Robbinsdale.  
B. S. '01, Minnesota.  
Major, English; Minors, Archeology, Historic Design.  
Thesis: The Dramaturgy of Ibsen.
- William C. L. Schaefer, St. Paul.  
B. A. '06, Minnesota.  
Major, Education; Minors, Psychology, German.  
Thesis: The Need of Men as Educators.
- Homer W. Stevens, Minneapolis.  
LL.M. '06, Minnesota.  
Major, Politics; Minors, Economics, Law.  
Thesis: Corporation Taxation in the State of Minnesota.
- Alice M. Stewart, Mankato.  
B. A. '06, Minnesota.  
Major, Latin; Minors, German, Mathematics.  
Thesis: A Comparison of Nature Treatment in the Georgics of Vergil and the *De Rerum Natura* of Lucretius.
- Anna Sophia Swanson, Minneapolis.  
B. L. '96, Carleton College.  
Major, English; Minors, Sociology, Scandinavian.  
Thesis: The Problem Drama.
- Kenneth Taylor, St. Paul.  
B. A. '06, Minnesota.  
Major, Biology; Minors, Botany, Geology.  
Thesis: The General Morphology of the Aphididae.
- Roy Albion Vickery, Minneapolis.  
B. A. '06, Minnesota.  
Major, Entomology; Minors, Botany, Paleontology.  
Thesis: A Comparative Study of the External Morphology of the Aphididae.

## FOR MASTER OF SCIENCE—4.

- Adolph P. Andrews, Minneapolis.  
B. S. '99, Minnesota.  
Major, Physics; Minors, Elect. Eng. Subjects, Mech. Eng. Subjects.  
Thesis: The Capacities of Paper Condensers and Telephone Cables.
- Elting Houghtaling Comstock, Minneapolis.  
B. S. '97, Wisconsin.  
Major, Mathematics; Minors, Applied Mechanics, Mineralogy.  
Thesis: Infinite Series.

Vincent Fulkerson, St. Anthony Park.  
 B. S. '05, S. D. Agr. College.  
 Major, Horticulture; Minors, Agr.  
 Chemistry, Thremmatology.  
 Thesis: Plant Breeding.  
 Roy S. King, Columbus, O.

M. E. '04, Ohio State University.  
 Major, Experimental Laboratory; Minors,  
 Thermodynamics, Gas Engine  
 Design.  
 Thesis: An Air Compressor Test.

FOR DOCTOR OF PHILOSOPHY—2.

William Macdonald, Pretoria,  
 South Africa.  
 B. S. '98, Minnesota.  
 Major, Agriculture; Minors, Horti-  
 culture, Botany.  
 Thesis: The Reclamation and Settle-  
 ment of Arid Lands.

Anthony Zeleny, Minneapolis.  
 B. A. '92, M. S. '93, Minnesota.  
 Major, Physics; Minors, Mathematics,  
 Chemistry.  
 Thesis: The Capacity of the Mica Con-  
 denser and its Application as a  
 Standard for the Comparison of  
 Electrical Quantities.

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

FOR CIVIL ENGINEER—18.

Lewis E. Ashbaugh,  
 Colorado Springs, Colo.  
 Charles Drewery Batson, St. Paul.  
 Hjalmar Frederick Blomquist,  
 Stockholm, Wis.  
 Clyde M. Cram, Zumbrota.  
 Joe Dougherty, Litchfield.  
 John A. Dunham, Mason City, Ia.  
 James Allen Grant, Windom.  
 Fred H. Green, Minneapolis.  
 Henry David Haverson, Minneapolis.

Harry Garfield Hawley, Minneapolis.  
 Walter Beal Hobart, Minneapolis.  
 David Bartholomew Huston,  
 Minneapolis.  
 Lewis Allen Jones, Mitchell, S. D.  
 Earl Wallace Kelly, Duluth.  
 Charles August Swenson, Winthrop.  
 Mandel George Tondel, Minneapolis.  
 Horatio Phillips VanCleve,  
 Minneapolis.  
 Louis Yager, Minneapolis.

FOR MECHANICAL ENGINEER—17.

Maurice Dwight Bell, Minneapolis.  
 Oscar B. Bjorge, Underwood.  
 Oliver Lindley Brown, Minneapolis.  
 Paul S. Buhl, Graceville.  
 Loring Dunham Burwell, Minnetonka.  
 E. Franklin Fee, Duluth.  
 George Richard Gessert, St. Paul.  
 Nicholas A. Gilman, St. Cloud.  
 Walter C. Krag, Hampton, Ia.

James M. Meany, Lake City.  
 John W. Nekola, LaCrosse.  
 Ralph Harvey Rawson, Faribault.  
 Willis W. Spring, Minneapolis.  
 Elmer Neill Stacy, Eden Prairie.  
 Oliver H. Stephenson,  
 St. Anthony Park.  
 Oliver George Tubby, St. Paul.  
 Otto H. Wagner, New Richland.

FOR ELECTRICAL ENGINEER—16.

Herbert Dennett Alton, Ceylon.  
 Raymond Joel Andrus, Minneapolis.  
 Louis Edward Baer, Kenyon.  
 Peter Frederick Countryman,  
 Appleton.  
 Lynne Walter Eddy, St. Paul.  
 Albert Royal Fairchild,  
 Grand Forks, N. D.  
 Ralph W. Kerns, Minneapolis.  
 Arthur Floyd Norcross, Minneapolis.

John Henry Pearce, St. Paul.  
 John Joseph Rezab, Winona.  
 William P. Schow, Stillwater.  
 Byron Elton Smith, Worthington.  
 John Edward Smithson, New London.  
 Carl Sternberg, Minneapolis.  
 George Walter Uzzell,  
 Morgan Park, Ill.  
 William L. Woehler, Arlington.

THE SCHOOL OF MINES

FOR ENGINEER OF MINES—18

Robert H. Bassett, Minneapolis.  
 James Cowin, Minneapolis.  
 Silas Lee Gillan, Milwaukee, Wis.  
 Charles Freeman Jackson,  
 Minneapolis.

Arthur Sturgis McCreery, Northfield.  
 Randolph J. McRae, Glencoe, Ontario.  
 George Edmund Malcolmson,  
 Minneapolis.  
 Bartley F. Noehl, Kasson.

Anton Curtiss Oberg, Watertown.  
 Henning E. Olund, St. Paul.  
 Walter Huntington Parker, Stillwater.  
 Elmer A. Probst, Minneapolis.  
 Olaf A. Reed, Minneapolis.

Edgar Wilson Smith, Minneapolis.  
 Charles Whyte Steele, Minneapolis.  
 Karl Phillmore Swenson, Minneapolis.  
 Michael A. Wiest, Henderson.  
 Harry M. Ziesemer, Fergus Falls.

### THE SCHOOL OF CHEMISTRY

#### FOR BACHELOR OF SCIENCE (In Chemistry)—5

James Maurice Doran, Winona.  
 John O. Halvorson, Madelia.  
 William Walker Kennedy, Rochester.

Earle V. Manuel, Minneapolis.  
 Edith I. Von Kuster, Minneapolis.

#### FOR BACHELOR OF SCIENCE (In Chemical Engineering)—1.

Edwin Thomas Davies, Minneapolis.

### THE COLLEGE OF AGRICULTURE

#### FOR BACHELOR OF SCIENCE (In Agriculture)—9.

Phillip T. Allen, Wolverton, N. D.  
 Donald S. Blair, St. Anthony Park.  
 Le Roy Cady, St. Anthony Park.  
 Carl Gaumnitz, St. Cloud.  
 Edward Heringa, Fort Collins, Colo.

Herbert Hager Mowry,  
 Washington, D. C.  
 Max Pfaender, New Ulm.  
 John DeCew Rose, Detroit.  
 William Henry Tomhave, Fergus Falls.

#### FOR BACHELOR OF SCIENCE (In Home Economics)—1

May C. McDonald, Minneapolis.

### THE COLLEGE OF LAW

#### FOR MASTER OF LAWS—4.

Gustavus W. Allen, Minneapolis.  
 LL.B. '06, Minnesota.  
 Thesis: Philosophy of Jurisprudence.  
 Josiah H. Chase, Minneapolis.  
 B. A. '01, LL. B. '05, Minnesota.  
 Thesis: Great and Small States.

Seth Lundquist, Minneapolis.  
 LL.B. '06, Minnesota.  
 Thesis: Limits of the Right of Self-  
 Defense.  
 David R. Thomas, Minneapolis.  
 LL.B. '06, Minnesota.  
 Thesis: The Consent of the Governed.

#### FOR BACHELOR OF LAWS—88.

Edmund Pratt Allen, Minneapolis.  
 Walter Gilmore Amundson, St. Peter.  
 Allen P. Asher, Granite Falls.  
 John Sumner Barry, Phillips, Wis.  
 Otto Baudler, Austin.  
 Lewis Williams Bicknell, Minneapolis.  
 Henry C. Bingham, New Ulm.  
 Elmer Francis Ehu, Milford, Ill.  
 Edward A. Brekke, Spillville, Ia.  
 Percy P. Brush, Minneapolis.  
 William Clark Brooks, Minneapolis.  
 Harold Delaney Branham,  
 Minneapolis.  
 Elof Julius Carlson, Meriden, Ia.  
 Edward L. Casey, Minneapolis.  
 Henri Hubert Cloutier, Minneapolis.  
 Edward St. John Condon,  
 Minneapolis.  
 Clayton C. Cooper, Adrian.  
 John P. Coleman, Anoka.  
 William Page Costello, Graceville.  
 M. E. Culhane, Brookings, S. D.  
 David Davis, Duluth.  
 John P. Devaney, Minneapolis.

Ira Chapman Doane, Minneapolis.  
 William C. Doane, St. Cloud.  
 John H. Eckhardt, Mankato.  
 Helmer M. Feroe, Granite Falls.  
 Francis Earl Flynn, Minneapolis.  
 Arthur Russell Folsom, Lake Crystal.  
 Lorenzo J. Gault, Minneapolis.  
 Charles Edwin Gilmore, Lake Crystal.  
 Raymond Milton Gould, Minneapolis.  
 Allen J. Greer, Memphis, Tenn.  
 Rex W. Harris, Webster, S. D.  
 Harry Roland Hewitt, Minneapolis.  
 Frank A. Jackson, Abbotsford, Wis.  
 Arthur J. Johnson, Hawley.  
 Joseph T. Johnson, Minneapolis.  
 John L. Johnston, Little Falls.  
 Cleon T. Knapp, St. Paul.  
 George E. Kremer, Minneapolis.  
 George Sloan Langland, Marshall.  
 Napoleon Alexander L'Herault,  
 Minneapolis.  
 Elias Johnson Lien, St. Vincent.  
 Erle D. Luce, Minneapolis.  
 Edward Everett McHugh, Zumbrota.

Kenneth George McManigal, St. Paul.  
 George F. Meader, Minneapolis.  
 Walter Henry Murrin, Minneapolis.  
 Charles Thomas Murphy, Moorhead.  
 Oscar H. Nelson, Minneapolis.  
 Clifford N. Nilson, Morris.  
 Bernard Anthony Ober, Minneapolis.  
 Herbert Thomas Park, Minneapolis.  
 Victor Muller Petersen,  
     Black River Falls, Wis.  
 John O. Peterson, Minneapolis.  
 John William Peterson, Montevideo.  
 Forest Robert Poppe, St. Paul.  
 John E. Ranson, Albert Lea.  
 I. Merton Reiff, Minneapolis.  
 Howard Gray Richardson,  
     Madison, Ind.  
 Hugh A. Robertson, Sleepy Eye.  
 Howard E. Robinson, Minneapolis.  
 Oscar C. Ronken, Ostrander.  
 August Savela, Franklin.  
 Jacob A. Schaezel, Minneapolis.  
 Josephine Schain, Browns Valley.  
 Charles P. Schouten, Lisbon, N. D.

Rollin H. Schutz, Marshall.  
 William A. Schultz, Sleepy Eye.  
 Louis L. Schwartz, Minneapolis.  
 John A. Sinclair, Duluth.  
 Fred Alton Snyder, Austin.  
 Charles Murray Stockton, Faribault.  
 Ralph Archibald Stone, Morris.  
 Gothfred Swante Swanson,  
     Minneapolis.  
 Melvin J. VanVorst, Paynesville.  
 Fernando S. Waddington, Minneapolis.  
 Hans Walchli, Kalispell, Mont.  
 Cecil E. Warner, Ashville, O.  
 Richard S. Wiggin, Minneapolis.  
 Wadsworth A. Williams, Minneapolis.  
 William Raymond Wells,  
     Aberdeen, S. D.  
 Harry E. Wheeler, Minneapolis.  
 Earl C. Wilmot, Farmington.  
 Ray L. Wilson, Minneapolis.  
 Herbert Starr Woodard,  
     Minneapolis.  
 Rees Paul Woodworth, Winona.  
 Frank Edward Wright, Minneapolis.

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