

# The University of Minnesota

## THE SUMMER SESSION

1912



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MINNESOTA  
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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 and one for the Summer Session 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, the college or school of the University concerning which information is desired should be stated. Address,

THE REGISTRAR,

The University of Minnesota,

Minneapolis, Minnesota.

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# THE UNIVERSITY

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 COLLEGE OF FORESTRY

THE SCHOOL OF AGRICULTURE

THE DAIRY SCHOOL

THE SHORT COURSE FOR FARMERS

THE SHORT COURSE FOR TEACHERS

THE SCHOOL OF TRACTION ENGINEERING

THE SCHOOL OF AGRICULTURE, CROOKSTON

THE SCHOOL OF AGRICULTURE, MORRIS

THE EXPERIMENT STATIONS, including—

THE MAIN STATION AT ST. ANTHONY PARK

THE SUB-STATION AT CROOKSTON

THE SUB-STATION AT GRAND RAPIDS

THE SUB-STATION AT DULUTH

THE SUB-STATION AT WASECA

THE SUB-STATION AT ZUMBRO HEIGHTS

THE COLLEGE OF LAW

THE COLLEGE OF MEDICINE AND SURGERY, including—

THE TRAINING SCHOOL FOR NURSES

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE SCHOOL OF MINES, including—

MINNESOTA SCHOOL OF MINES EXPERIMENT STATION

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

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# THE SUMMER SESSION

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## THE SUMMER SESSION

The University of Minnesota offers this year a considerable list of courses for summer work. They are planned for college students, for experienced teachers, and for other men and women who seek the advantage of advanced study.

### LOCATION

These summer courses are given on the main campus in Minneapolis, and the full equipment of the University in buildings, libraries, laboratories, observatory, and museums is at the service of students, who may in addition, under certain restrictions, use other large public and semi-public libraries both in St. Paul and in Minneapolis.

The climate of the city is especially favorable for summer residence, and in addition the vicinity offers much that is worthy the attention of visitors and students. The neighborhood of the Twin Cities is rich in natural beauty, while the cities themselves, with their parks, lakes, public buildings, libraries, and art galleries, afford students ample opportunities for the profitable use of leisure hours and for excursions on the free Saturdays.

### ORGANIZATION

The summer courses are arranged not merely for college students but also for the benefit of experienced teachers, particularly those who are seeking a State Professional Certificate or are looking forward to more specialized work. Courses have been organized, therefore, in nearly all of the required and optional subjects of the State Professional Certificate, while high school teachers will find an opportunity to pursue advanced courses in the subjects of the secondary curriculum.

All of the courses offered carry university credit, and they amount to much more than the total number of hours required for the bachelor's degree. By taking advantage of these opportunities, teachers and others who have not finished their university work may be enabled to meet a considerable part of the requirements for graduation. Earnest and capable college students, by combining summer study with the courses of the academic year, may, with no great difficulty, gain in three years the necessary credits for the bachelor's degree.

## SUMMER SESSION

### GENERAL OFFICES

The office of the Director of the Summer Session is with the College of Education, Room 125 Folwell Hall. The offices of the Registrar and the Accountant are on the first floor of the Library Building.

### ADMISSION

The courses of the Summer Session are open to all men and women who are reckoned by the respective instructors as qualified to pursue the chosen work to advantage, but those who desire to secure university credit are required to show credentials entitling them to college admission under the existing rules of the University.

### REGISTRATION

Registration will begin at nine o'clock on Friday morning, June 14th and continue until five o'clock Saturday afternoon, June 15th. Class work will open on Monday morning, June 17th. After Wednesday, June 19th, no students will be received except by special permission. Those who desire to enroll will make application to the committee in the entrance lobby of the Library Building. Students are expected to bring with them their credentials showing from what schools they have been graduated, including particularly their diplomas from high schools, normal schools, or colleges, or their certificates of admission to, and work done in, each of those grades of schools.

When the applications are approved by the committee, the students will report to the Registrar. Those who desire credit toward the State Professional Teacher's Certificate will be careful to indicate their wish on the registration blank.

### CREDITS

Each course represents normally two periods daily for five days each week throughout the six weeks of the session, and carries three university credits. Except in Physics, where Courses 1 and 2, pursued six days each week, will give eight credits, no student may secure more than six credits in the session.

Students who do not enroll for credit will be given, on application, certificates of attendance showing the character of the work done.

### HOURS

During the Summer Session each day is divided into periods as follows: A.M., first hour, 8:00—8:50; second, 9:00—9:50; third, 10:00—10:50; fourth, 11:00—11:50; P.M., fifth hour, 2:00—2:50, sixth, 3:00—3:50. As indicated elsewhere, each course takes usually two periods in succession, with merely a ten-minute rest between.



## STATE PROFESSIONAL TEACHER'S CERTIFICATE

The State Professional Certificate of the first grade is issued to applicants who have secured a state first grade teacher's certificate, who have taught successfully not less than nine months in a public school in the State, and who have passed successfully examinations in the following studies: Psychology, General Pedagogy, History of Education, School Organization and Law; in at least two of the following: Higher Algebra, Solid Geometry, and Trigonometry; in at least two of the following: American Literature, English Literature, Rhetoric; in at least three of the following: Ancient History, Modern History, English History, United States History; in at least three of the following: Astronomy, Botany, Chemistry, Geology and Physiography, Physics, Political Science, Zoology.

Candidates for the above certificate may secure credit accepted by the State Department in Psychology, History of Education, General Pedagogy, School Organization, and in the laboratory sciences: Physics, Chemistry, Botany, and Animal Biology (Zoology). In no other subjects will credit be given directly, but the courses in the other studies required for this certificate will be planned with the idea of directly preparing students for the examinations conducted by the State Department.

## EXAMINATIONS

At the close of the Summer Session examinations for the State Professional Certificate will be conducted at the University by the State Examining Board.

## EXERCISE AND RECREATION

A special feature of the Summer Session is the use by men students of Northrop Athletic Field and the entire equipment of the University gymnasium, including the swimming pool, tennis courts, baseball field, outdoor and indoor running tracks, and basketball and handball courts. A competent instructor offers courses in correctional training, physical culture, indoor and out-of-door games, including basketball, baseball, and direction of track athletics. Teachers are thus enabled to get the most scientific preparation for the physical training of their pupils. No charge is made for students who wish to take advantage of these opportunities aside from the regular class work. Locker and bathing facilities are provided without additional charge for those enrolled in the classes, and for other students on deposit of one dollar with the Cashier, half of which is returnable at the close of the session.

## FEES

Each student pays a registration fee of five dollars and a tuition fee of five dollars for each course, with an extra charge of three dollars for each

laboratory and shop course, except where otherwise indicated. Fees are not returnable after the opening of the session.

### EXPENSES

The living expenses for students at the University are never very high, and this is true especially of the Summer Session. Good accommodations for room and board may be had at from five to seven dollars per week. A list of boarding places, stating location and prices, will be sent to any address on application to the Registrar. It will usually be found more satisfactory to engage accommodations after arrival than to reserve them in advance. Several good restaurants are to be found in the immediate vicinity of the University.

### UNIVERSITY POSTOFFICE

The University Postoffice, through which mail addressed to the University is distributed, is in the Mechanic Arts Building. Students may reserve boxes on payment of twenty-five cents, and should leave forwarding addresses with the postmaster at the close of the session.

### PUBLIC LECTURES

In the University Chapel at 4 o'clock on Tuesdays and Thursdays throughout the session, Professor Dana C. Munro, of the University of Wisconsin, will lecture on the Crusades.

On Mondays and Wednesdays at the same hour and place, a series of addresses on Scandinavian history, literature, and politics will be given by prominent University representatives of these northern races.

### INFORMATION

Correspondence with reference to the Summer Session and requests for circulars and additional information may be addressed to The Registrar, University of Minnesota, Minneapolis, Minnesota.

### STATE TEACHERS' TRAINING SCHOOL

The work formerly conducted for graded and rural school teachers in the elementary section of the University Summer School is given now as a special state teachers' training school at the University Farm. For bulletin, address The Registrar, University Farm, St. Paul, Minnesota.

## COURSES OF INSTRUCTION

### ANIMAL BIOLOGY

Mr. NACHTRIEB

#### 1. General Zoology

Pillsbury Hall 204 and 201, 8:00—9:50 a.m. Laboratory hours arranged with the instructor. Three credits.

A general survey of the animal kingdom aiming at an appreciation of the principles of organization, physiology, and development of animals. Representatives of the chief branches of the animal kingdom are studied in the laboratory.

The course constitutes the first half of the year course which meets the requirements for Zoology toward the State Professional Certificate.

#### 2. Advanced Zoology

Pillsbury Hall 204 and 201, 10:00—11:50 a.m. Laboratory hours arranged with the instructor. Three credits.

The first half of a year course in general histology and embryology of animals, including technique.

This course carries credit for the first semester of Animal Biology 2.

### ASTRONOMY

Mr. LEAVENWORTH

#### General Astronomy

Folwell 124, 10:00—11:50 a.m. Observatory work in the afternoon and evening, as arranged. Three credits.

A course of lectures and recitations on the general principles of astronomy, illustrated by lantern slides and by the use of the telescope. Text-book: Moulton's Introduction to Astronomy.

### BOTANY

Mr. HUFF

#### 1. General Botany

Pillsbury 209, 8:00—9:50 a.m. Laboratory and field work in the afternoon. Three credits.

Structure and relationships of flowering plants. A study of the form and structure of flowering plants, with especial reference to causes and uses; field work in the identification of cultivated and native plants, and the classification and relationship of the most important orders and families of flowering plants.

This course combined with the following course will meet the requirements for Botany toward the State Professional Certificate.

## 2. General Botany (Continued)

Pillsbury 209, 10:00—11:50 a.m. Laboratory and field work in the afternoon. Three credits.

Evolution and relationships of the plant kingdom. A study of the origin and development of plants from the simple one-celled forms through representative important forms of algae, fungi, liverworts, mosses, and ferns to the flowering plants, with especial reference to their economic value and their occurrence in nature and cultivation. A brief study of the life-history of a flowering plant and its most important functions will conclude the course.

This course represents the second half year in the introductory work in Botany. Together with the preceding, it carries six credits.

This course combined with the preceding course will meet the requirements for Botany toward the State Professional Certificate.

## CHEMISTRY

Mr. FRANKFORTER, Mr. BROWN, and Mr. POPPE

## 1. General Chemistry MESSRS. FRANKFORTER, BROWN, and POPPE

Chemistry Building, 8:00—9:50 a.m. and other hours as arranged with the instructor. Three credits.

This course is equivalent to the first semester of the freshman inorganic chemistry. The work covered includes all the non-metallic elements, with an introduction to physical chemistry. The course consists of lectures, recitations, and laboratory work. The lectures are largely experimental, and are especially arranged with regard to work which can not be done in the laboratory, but which is of importance to the teacher. The recitations include, besides a quiz in general theoretical chemistry, discussions of the ionic theory, chemical equations, and stoichiometrical calculations. The laboratory work will give the student an opportunity of verifying the common chemical laws by experiment. Special attention will be given to laboratory work and laboratory methods.

This course combined with the following course will meet the requirements for Chemistry toward the State Professional Certificate.

## 2. General Chemistry (Continued)

MESSRS. FRANKFORTER, BROWN, and POPPE

Chemistry Building, 10:00—11:50 a.m. and other hours as arranged with the instructor. Three credits.

This course is an equivalent to the second semester of freshman inorganic chemistry, and is a continuation of the preceding. The nature of the work is, however, somewhat changed. Less attention will be paid to theory and more to the technical, industrial, and metallurgical side. In addition to a study of the common metals, special attention will be given to their compounds and their uses.

This course combined with the preceding course will meet the requirements for Chemistry toward the State Professional Certificate.

3. Qualitative Analysis      Messrs. FRANKFORTER, BROWN, and POPPE  
Chemistry Building, 8:00—9:50 a.m. and other hours as arranged  
with the instructor. Three credits.

This course is equivalent to the first semester of sophomore chemistry, and is offered to those who have a thorough knowledge of general inorganic chemistry. The work will include an introduction to the subject of qualitative analysis, with a discussion of the chemical laws involved and the qualitative separation of the metals. The aim of the course will be to give the teacher a thorough training in the qualitative separation of the metals, in order that he may more fully grasp the subject of practical chemistry.

4. Qualitative Analysis (Continued)      Messrs. FRANKFORTER, BROWN, and POPPE  
Chemistry Building, 10:00—11:50 a.m. and other hours as arranged  
with the instructor. Three credits.

This course is equivalent to the second semester of sophomore chemistry, and is a continuation of the preceding. The course includes a study of the qualitative separation of the non-metallic or acid-forming elements with their characteristic qualitative tests. This course must have as a prerequisite Course 3.

5. Quantitative Analysis      Messrs. FRANKFORTER, BROWN, and POPPE  
Chemistry Building, 8:00—9:50 a.m. and other hours as arranged with  
the instructor. Three credits.

This course is especially arranged for teachers who are desirous of studying analytical chemistry proper. The course requires as a prerequisite a thorough knowledge of qualitative analysis. The work covered will be an introduction to gravimetric analysis with special reference to the chemical balance. The substances used in these analyses will be chosen with special reference to their practical and industrial uses, so that in addition to a wide experience and training in exact chemical work, valuable knowledge may also be acquired.

## ECONOMICS

Mr. VIRTUE

1. Elements of Economics  
Library 217, 8:00—9:50 a.m. Three credits.

A study of the principles governing the production of wealth, with some applications of these principles to present-day problems. Text, written and oral reports.

This course carries university credit for Economics 1, and in combination with the first course in Political Science gives direct preparation to candidates for the examination in Political Science toward the State Professional Certificate.

## 2. Financial History of the United States

Library 217, 10:00—11:50 a.m. Three credits.

The whole of the National period is covered, but special attention is given to the financial operations of the Civil War period, and to problems of currency, banking, and debt management since that time. Text, written and oral reports.

## EDUCATION

Mr. RANKIN and Mr. QUIGLEY

## 1. Theory of Teaching

Mr. QUIGLEY

Folwell 202, 8:00—9:50 a.m. Three credits.

A course in the theory and practice of teaching, including a discussion of the nature, aims, and elements of education, with problems in applied psychology. An attempt is made to give the student a broader viewpoint for the judgment of educational aims, values, and methods.

This course gives credit on General Pedagogy for the State Professional Certificate and also university credit for Course 7 in Education.

## 2. History of Education

Mr. QUIGLEY

Folwell 202, 10:00—11:50 a.m. Three credits.

A brief course in the History of Education. Some attention will be given to educational theory and practice among Oriental nations. Greek education will be considered in its various stages and a study will be made of the Roman schools in Imperial times. The schools in Western Christendom will be traced down through the medieval universities. These introductory studies will be followed by a consideration of the theory and practice of modern education from the Renaissance and Reformation to the present. The course aims to arouse an interest in education and to give students some intimate knowledge of the foremost modern educators with a view to a better understanding of the educational systems, theories, and practices of the present.

This course carries credit for the History of Education toward the State Professional Certificate and also university credit for Course 3 in Education.

## 3. School Administration

Mr. RANKIN

Folwell 201, 8:00—9:50 a.m. Three credits.

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; school architecture and hygiene; the school laws of Minnesota.

Credit will be given for School Organization and Law on the State Professional Certificate, and also university credit for Course 8 in Education.

## 4. Industrial Training

Mr. RANKIN

Folwell 201, 10:00—11:50 a.m. Three credits.

This course will treat of the principles fundamental to vocational

training in the public school system in so far as these affect the arrangement of school years, the course of study, and the methods of teaching. The pressing problems of educational readjustment which arise from the current stress on industrial training will be the basis of lectures, assigned readings, and oral and written reports.

This course carries university credit for Course 23 in Education.

## ENGINEERING AND MECHANICAL DRAWING

Mr. ROWLEY

### 1. Mechanical Drawing

Mech. Arts, morning or afternoon. Two credits.

A course designed for those teaching mechanical drawing in manual training and industrial work. It will cover the use and care of instruments, general execution and technique of drawings, lettering, geometric constructions; elementary projections, intersections, and developments; working drawings of details of machines, structures, and buildings; number and arrangement of views, dimensions, sections, and conventions.

### 2. Engineering Freehand Drawing

Mech. Arts, morning. Two credits.

This course includes sketching and lettering, exercises in reading and making drawings from objects, drawings, dictation, and memory.

This course requires three or four hours of work each day, and carries credit for Drawing 1, the first semester of the freshman year in the Engineering course.

### 3. Engineering Drawing

Mech. Arts, morning and afternoon. Three credits.

This course includes graphics, machine drafting, structural drafting and topography; instructions in drafting room methods.

This course requires five or six hours of work each day, and covers three credits of the required work of the sophomore year of the Engineering course. Students may elect the work of either semester.

## ENGINEERING MATHEMATICS

Mr. BROOKE and Mr. KIRCHNER

### 1. Trigonometry and Geometry

Mr. BROOKE

Folwell 102, 8:00—9:50 a.m. Five credits.

Plane and spherical trigonometry and analytical geometry to conic sections, properties of plane triangles and their solution by logarithmic tables and the slide rule, general properties and solution of spherical triangles; introduction to analytical geometry, transformation of co-ordinates, the right line, and the circle.

This course is the equivalent of the second semester of freshman mathematics in the College of Engineering.

2. Descriptive Geometry Mr. KIRCHNER  
 Mech. Arts, 10:00—10:50 a.m. Two credits.  
 An introductory course, covering systems of representation, methods, loci, and constructive geometry. Recitations and drawing room exercises.  
 This course carries credit for the first semester of the required work of the freshman year in the Engineering course.
3. Descriptive Geometry (Continued) Mr. KIRCHNER  
 Mech. Arts 24, 11:00—11:50 a.m. Two credits.  
 This course includes central projections and special cases; principles and applications; representations of lines, planes, and solids and of their relations; tangencies, intersections, and developments. Recitations, lectures, and the solution of problems.  
 This course carries credit for the second semester of the required work of the freshman year in the Engineering course.

### ENGINEERING SHOP WORK

Mr. RICHARDS and Mr. SHIPLEY

1. Woodwork Mr. RICHARDS  
 Mech. Eng., morning and afternoon. Four credits.  
 Carpentry and pattern making, wood working, use of tools, lathe and bench work, patterns for molding, core boxes, flasks.  
 This course is not complete for engineering students without the accompanying lectures, which are not given in the Summer Session but must be taken during the academic year.
2. Metal Work Mr. SHIPLEY  
 Mech. Eng., morning and afternoon.  
 Machine and bench work with tool and machine construction. Engineering sophomores and juniors may select from this course what they need in shop work up to a maximum of six credits.  
 This course is not complete for engineering students without the accompanying lectures, which are not given in the Summer Session but must be taken during the academic year.
3. Teachers' Course in Woodwork Mr. RICHARDS  
 Mech. Eng., morning and afternoon. Four credits.  
 Carpentry, joinery, and wood carving are included in a course designed with special reference to the needs of teachers of manual training.  
 This course will carry four credits for students in the Colleges of Education and Engineering, and it may be supplemented by all or part of the first course mentioned above.



## ENGLISH

Mr. BELLOWS, Mr. HOLT, and Mr. RICHARDS

1. Survey of English Literature Mr. RICHARDS

Folwell 321, 8:00—9:50 a.m. Three credits.

Lectures, recitations, and assigned readings designed to cover in historical outline the whole subject down to the time of Robert Burns and to prepare for a more minute study of special periods.

In combination with the following, this course gives a direct preparation to candidates for the examinations on English and American Literature toward the State Professional Certificate.

2. Survey of Literature (Continued) Mr. RICHARDS

Folwell 321, 10:00—11:50 a.m. Three credits.

This course is a continuation of the preceding, and is conducted in the same manner. Attention will be centered on English and American Literature in the 19th century.

In combination with the preceding, this course gives a direct preparation to candidates for the examinations on English and American Literature toward the State Professional Certificate.

3. Shakespeare Mr. HOLT

Folwell 303, 8:00—9:50 a.m. Three credits.

An introductory study of Shakespeare's development as a poet and dramatist. Special attention will be given to intelligent interpretation through readings of representative plays, and teachers of English will be given practical training in methods of securing good expression from students.

4. The Shakespearean Drama Mr. BELLOWS

Folwell 226, 10:00—11:50 a.m. Three credits.

An analysis of certain plays of Marlowe, Shakespeare, Jonson, Webster, Beaumont and Fletcher, and other dramatists.

5. Nineteenth Century Poetry Mr. BELLOWS

Folwell 226, 8:00—9:50 a.m. Three credits.

A discussion of the poetry of the Victorian era in England and the United States with special reference to Wordsworth, Shelley, Keats, Browning, and Tennyson, and with some attention to tendencies in contemporary verse.

## FRENCH

Mr. ANDRIST

1. Beginning Course

Folwell 227, 8:00—9:50 a.m. Five credits.

Special attention will be given to pronunciation and conversation. The work in the course will be based on the first thirty-six lessons in Thieme and Effinger's French Grammar, with selected readings.

Credit for the first half-year of the introductory course in French may be secured by those students who either have some knowledge of the language or do extra work under the direction of the instructor.

## 2. Advanced Course

Folwell 227, 10:00—11:50 a.m. Three credits.

This course is designed for students who have a knowledge of French equivalent to one year of college study. The French language will be used almost exclusively, and the reading will be in modern fiction.

## GEOLOGY AND GEOGRAPHY

Mr. LEHNERTS and Mr. EVERLY

### 1. General Geology

Mr. EVERLY

Pillsbury 110, 8:00—9:50 a.m., with field work. Three credits.

An introductory course covering the whole field of geology; intended for students who wish to acquire a general knowledge of the science as well as for those who intend to specialize in one or another branch of the subject. Text: Scott's Elements of Geology or Chamberlain and Salisbury's College Geology.

This course carries university credit for Geology 1, and in combination with the following course will directly prepare candidates for the examinations in Geology and Physiography toward the State Professional Certificate.

### 2. Problems in Geography

Mr. EVERLY

Pillsbury 110, 10:00—11:50 a.m. Three credits.

Important problems in geography are studied from the double standpoint of student and teacher. The origin and effects of the physiographic features of the continents. The principles of meteorology and the world's climatic problems. The development of waterways and waterpowers, the drainage of swamps, irrigation, the prevention of soil waste, the utilization of ground waters, and the conservation of natural resources.

This course carries university credit for Geology 34, and in combination with the preceding will directly prepare candidates for the examinations in Geology and Physiography toward the State Professional Certificate.

### 3. Field Work in Geology

Mr. LEHNERTS

For students who desire to study geology in the field, Mr. Lehnerts will conduct a party leaving Minneapolis June 18th and traveling through to the Pacific Coast, studying the geology and physiography of selected areas, including two or more of the following: Glacier National Park, Montana; Lake Chelan and Puget Sound, Washington; Crater Lake, Oregon; Yosemite, California; and the Grand Canyon of the Colorado River.

During the trip lectures will be given on general geology and physiography, with field studies, by which students may gain six university

credits. Advanced students may secure six university credits for the completion of the equivalent of Geology 38.

The tuition fee for this work is fifteen dollars. The expenses of the trip for each student need not exceed one hundred and fifty dollars. The party will be limited to twenty. Applications will be recorded in the order of their reception, and should be sent by June 1st to Mr. E. M. Lehnerts, The University of Minnesota, Minneapolis.

## GERMAN

Mr. SCHLENKER and Mr. BURKHARD

### 1. Elementary Course Mr. SCHLENKER

Folwell 212, 8:00—9:50 a.m. Three credits.

Some previous knowledge of German is desirable in this course. Drill in pronunciation, declension, and conjugation; elementary composition; oral work; reading of prose.

University credit for the first semester of German 1 is given for this course or credit for the second semester of German 2, if coupled with additional reading, grammar, and composition to be assigned. Without extra assignment, a year credit in German 1 may be secured by completing this course together with the following.

### 2. Second Year Course Mr. BURKHARD

Folwell 213, 10:00—11:50 a.m. Three credits.

A course in reading of prose and poetry with composition and conversation. Texts: Edelstein; German Poems for Memorizing; Glück Auf.

University credit for the first semester of German 2 is given for this course or credit for the second semester of German 2, if coupled with additional reading, grammar, and composition to be assigned. Without extra assignment, a year credit in German 2 may be secured by completing this course together with the following.

### 3. Advanced Course Mr. BURKHARD

Folwell 213, 8:00—9:50 a.m. Three credits.

A reading course supplemented by exercises in composition and conversation on topics relating to Germany and the Germans; open to students who have had two years of German in secondary schools. Texts: Seidel's *Leberecht Huhnchen*; German Poems for Memorizing; Herein.

University credit for the first semester of German 4 is given for this course or credit for the second semester of German 4, if coupled with additional reading, grammar, and composition to be assigned. Without extra assignment, a year credit in German 4 may be secured by completing this course together with the following.

### 4. Advanced Course for Teachers Mr. SCHLENKER

Folwell 212, 10:00—11:50 a.m. Three credits.

Review of the more difficult points in grammar and syntax; conver-

sation, essay writing in German on assigned subjects; readings in prose and poetry. The course will be conducted mainly in German.

University credit for either semester of German 8. University credit for Course 5 will be given for certain periods out of the second and third courses mentioned.

## HISTORY

Mr. MUNRO, Mr. ROBINSON, and Mr. WHITE

1. Medieval History, 800 to 1300 Mr. MUNRO  
Library 218, 10:00—10:50 a.m. Credits below.

A general survey describing medieval conditions, the agencies by which they were transformed, and, in general, the advance of the Third Estate. The work of the Church, the importance of the Crusades, and the life of the times will be emphasized. Text book, lectures, topics, required reading.

This course in connection with the following carries three university credits for either semester of History 1.

2. Medieval Civilization Mr. MUNRO  
Library 218, 11:00—11:50 a.m. Credits below.

An intensive study of some phases of life in the twelfth and thirteenth centuries; the educational conditions; the great intellectual leaders; the literature of the age; heretics and friars; etc. Lectures and topics.

This course calls for class sessions on Monday, Wednesday, and Friday at 11:00 a.m. and in connection with the preceding carries university credit for either semester of History 1.

3. The Crusades Mr. MUNRO  
The Chapel, 4:00 p.m., T. and Th. No credit.

Twelve lectures on the conditions which brought about the Crusades, the story of the more important expeditions, the contact of the Westerners with the Byzantine and Moslem civilizations, and the results of this contact upon the peoples of Western Europe.

This is a public course to which all are invited without special registration.

4. Foundations of England, 449 to 1399 Mr. WHITE  
Library 112, 8:00—8:50 a.m. Credits below.

During this period the English constitution was evolved, and, while the general narrative will not be neglected, the emphasis will be upon institutions. It will be the purpose to gain some understanding of the genesis of the central law courts, the jury system, parliament, and the principle of limited monarchy. Text: Andrews' History of England; source book: Cheyney's Readings in English History. In this and the two following courses a reasonable amount of collateral reading will be required.

5. England from 1399 to 1688 Mr. WHITE  
Library 112, 9:00—9:50 a.m. Credits below.

The accession of the House of Lancaster, when the broad outlines of the present forms of government in England, both central and local, had taken shape. In the period covered, especially in the Tudor and Stuart reigns, this newly-formed constitution was developed and tested, and the result of the Renaissance and the Protestant Revolution became prominent in politics and society. The course closes with the great revolution which brought William and Mary to the throne and resulted in the Bill of Rights.

6. The Renaissance and Reformation Mr. WHITE  
Library 112, 10:00—10:50 a.m. Credits below.

The Renaissance and Reformation will be studied in general European movements, with emphasis upon individual men and upon ideas rather than upon politics and institutions. The course does not touch upon English history. Students will buy Seebohm's *Era of the Protestant Revolution*, Whitcomb's *Source Book of the Renaissance*, and the "Reformation Number" of the *Pennsylvania Translations and Reprints*.

The successful completion of Courses 4 and 5 entitles the student to three university credits (equivalent to either semester of Course 2 in History). The successful completion of Courses 5 and 6 entitles the student to three university credits (equivalent to Course 3 in History). Should a student wish to earn six university credits, special arrangement may be made with the instructor for doing extra work equivalent to a half course in connection with one or more of the courses taken.

7. American History, 1760 to 1830 Mr. ROBINSON  
Library 218, 2:00—3:50 p.m. Three credits.

A study of national development with particular reference to the making of the constitution and the growth of political parties.

8. The History of the West Mr. ROBINSON  
Library 218, 8:00—9:50 a.m. Three credits.

A survey of the incidents of the westward advance of the American frontier. An advanced study in some of the social and political and economic problems of national expansion.

From the above courses teachers may easily select the work which will most directly prepare them for the examinations in American, English and Modern History toward the State Professional Certificate.

## LATIN

Mr. PIKE

1. A Beginning Course  
Folwell 110, 8:00—8:50 a.m. No credit.

Either for those who have never pursued the subject or for those who desire to review the elements of the language.

## 2. Caesar

Folwell 110, 9:00—9:50 a.m. Credit below.

Selections from two books of the Gallic War will be studied. For those who intend to teach, the subject of indirect discourse will be explained in detail, and oral drill based upon the text will be given.

Credit for entrance Caesar will be given to students who complete this course in combination with the fourth course here announced.

Three university credits for Latin 6 will be given to students who have completed freshman and sophomore Latin and who complete this course in combination with the fourth course here announced.

## 3. Virgil

Folwell 110, 10:00—10:50 a.m. Credit below.

Two books of the Aeneid will be read. Study of prosody and practice in the quantitative reading of Latin hexameter.

Three university credits for Latin B first semester will be given to students who complete this course in combination with the following.

Three university credits for Latin 7 will be given to students who have completed freshman and sophomore Latin and who complete this course in combination with the following.

## 4. Latin Composition

Folwell 110, 11:00—11:50 a.m. Credit below.

A course in elementary Latin composition with special reference to the needs of teachers; especially valuable if taken in connection with either of the preceding courses in Caesar and Virgil.

University credit for this course is given only in combination with one of the two preceding courses as indicated above.

## MANUAL TRAINING

Teachers of manual training are provided with special facilities in their subject at the Summer Session, and these are adapted, as far as possible, to individual needs. A general statement of the work will be found under the title Engineering Shop Work.

## MATHEMATICS

Mr. DOWNEY, Mr. KIRCHNER, and Mr. SLOBIN

## 1. Solid Geometry

Mr. KIRCHNER

Mech. Arts 24, 8:00—9:50 a.m.

This course includes the subject as presented in the high schools and in the ordinary college course, with the required problems and constructions. Text: Wells' Essentials of Geometry.

This course is intended for those who need Solid Geometry to meet the entrance requirements of the University and for candidates who are preparing for the examination in Solid Geometry toward the State Professional Certificate.

2. Higher Algebra Part I Mr. DOWNEY  
 • Folwell 105, 8:00—9:50 a.m. Five credits.

The fundamental rules, factoring, highest common divisor, lowest common multiple, fractions, involution, evolution, surds, simple equations with one, two, and several unknown quantities, inequalities, ratio and proportion, arithmetical and geometrical progressions, quadratic equations, and numerous problems requiring both simple and quadratic equations.

This course will be credited either for university entrance or for Mathematics 1, the first semester of the freshman year.

3. Higher Algebra Part II Mr. DOWNEY  
 Folwell 105, 10:00—11:50 a.m. Three credits.

Variation, quadratic equations reviewed, irrational equations, special higher equations, simultaneous quadratic equations, differentiation of algebraic functions, development of functions (by the method of indeterminate coefficients, Taylor's formula, and the binomial theorem), theory of equations, and solution of numerical higher equations, permutations, and combinations.

This course is the equivalent of Mathematics 3, usually taken in the first semester of the freshman year, and in combination with the preceding offers a direct preparation to candidates for the examination in Higher Algebra toward the State Professional Certificate.

4. Trigonometry Mr. SLOBIN  
 Folwell 104, 8:00—9:50 a.m. Three credits.

This course covers the ordinary work in logarithms and trigonometry, and is the equivalent of Mathematics 4, ordinarily taken in the second semester of the freshman year.

5. Analytical Geometry Mr. SLOBIN  
 Folwell 104, 10:00—11:50 a.m. Three credits.

Rectilinear and polar co-ordinates, producing equations of loci whose law of development is known, constructing and discussing such equations, transformation of co-ordinates, properties of the straight line, the conic sections, and the higher plane curves by means of their equations.

## PHILOSOPHY AND PSYCHOLOGY

Mr. SWENSON

1. Introductory Psychology  
 Folwell 322, 8:00—9:50 a.m. Three credits.

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. Text-book, experiments, and discussions.

This course carries university credit for Philosophy 3, and meets the requirement for Psychology toward the State Professional Certificate and toward the University Teacher's Certificate.

## 2. Ethics

Folwell 322, 10:00—11:50 a.m. Three credits.

An introductory study of the principles of morals. Sketch of the historical development of morality followed by an analysis of its meaning, showing the elements in human nature upon which it is based and the ground of its authority; the nature of goodness, the authority of conscience, moral knowledge, duty and responsibility; the application of moral principles to certain unsettled problems of moral life.

## PHYSICAL TRAINING

Mr. FOSTER

The Summer Session offers unusual advantages to men in physical training, with facilities for many lines of class and competitive work, including the swimming pool, tennis courts, indoor and outdoor running tracks, baseball field, basketball and handball courts, and the regular gymnasium for floor and apparatus work, with locker and bathing facilities. In the courses special emphasis is laid on those exercises and games which are designed to correct common physical defects and to secure all round development. The work is planned more particularly for teachers, but will be valuable to all students.

## 1. Physical Training for Men

Armory, 4:30—6:00 p.m. No credit.

The course begins with a series of lectures on physical education, with special emphasis on exercise, diet, and personal hygiene, followed by practice in various lines of gymnasium drill and apparatus work, competitive games, swimming, track and field athletics, with instruction in the management of classes and in the methods of conducting athletic contests.

This course carries no credit, but meets the university requirement of one year of physical culture for men.

## PHYSICS

Mr. ERIKSON, Mr. KOVARIK, Mr. MCKEEHAN

## 1. General Physics

Messrs. ERIKSON and MCKEEHAN

Physics 16, recitations 8:00—9:50 a.m., laboratory 10:00—11:50 a.m., lectures 3:00—3:50 p.m. This course is completed during the first three weeks of the session. Four credits.

Some previous knowledge of algebra and trigonometry is required. The course is experimental rather than mathematical, and is designed to give a general knowledge of fundamental principles, including the mechanics of solids and fluids, heat, and sound, with laboratory practice in physical measurements and experimental methods.

This combined lecture and laboratory course carries university credit for Physics 1 and 2, and in combination with the following meets the requirements for Physics toward the State Professional Certificate.



2. General Physics (Continued)                      Messrs. ERIKSON and MCKEEHAN

Physics 16, recitations 8:00—9:50 a.m., laboratory 10:00—11:50 a.m., lectures 3:00—3:50 p.m. This course is completed during the last three weeks of the session. Four credits.

A continuation of the preceding, with a study of the fundamental principles of light, electricity, and magnetism, including some of the most recent discoveries, and laboratory work along these lines.

This combined lecture and laboratory course carries university credit for Physics 3 and 4, and in combination with the preceding meets the requirements for Physics toward the State Professional Certificate.

3. Heat, Magnetism, and Electrostatics

Messrs. KOVARIK and MCKEEHAN

Physics 17, laboratory 8:00—9:50 a.m., lectures 10:00—10:50 a.m., recitations 11:00—11:50 a.m. Four credits.

The fundamental principles of the subjects are studied, chiefly from the experimental side, with laboratory practice in measurements of the most important quantities.

This course carries university credit for Physics 6, the second semester of the sophomore year for Engineers.

All classes in Physics may be required to meet six days each week.

## POLITICAL SCIENCE

Mr. LIEN

1. Elements of American Government

Library 111, 8:00—9:50 a.m. Three credits.

A course dealing with the origin, present organization, and administration of the national government and the government of Minnesota, with some attention to the latest improvements in the civil service, the new naturalization law, and other recent legislation. Texts: Beard's American Government and Politics, and Readings by the same author; lectures, assigned readings, and reports.

This course carries university credit for Political Science 1, and in combination with the first course in Economics will directly prepare candidates for the examination in Political Science toward the State Professional Certificate.

2. Municipal Administration

Library 111, 10:00—11:50 a.m. Three credits.

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.

## RHETORIC

ANNA HELMHOLTZ-PHELAN

## 1. Rhetoric and Composition

Folwell 311, 8:00—9:50 a.m. Three credits.

The aim of this course is to give practical training in the art of writing. In connection with the written work the student will be required to study the principles of structure and to analyze specimens of good prose.

This course carries university credit for the first semester of Rhetoric 1, and gives material assistance to candidates for the examination in Composition and Rhetoric toward the State Professional Certificate.

## 2. Advanced Composition and Rhetoric

Folwell 311, 10:00—11:50 a.m. Three credits.

Open to those who have completed Course 1 or an equivalent.

Practical training will be given in both long and short exercises. Lectures on theory and the analysis of models form part of the work.

This course carries university credit for the first semester of Rhetoric 2, and gives direct preparation to candidates for the examination in Composition and Rhetoric toward the State Professional Certificate.

## SCANDINAVIAN

Mr. BOTHNE and Mr. STOMBERG

## 1. Advanced Norwegian

Mr. BOTHNE

Folwell 206, 8:00—9:50 a.m. Three credits.

This course is intended to be especially helpful to those who desire to teach Norwegian, and it will emphasize a correct pronunciation and correct grammar. Conversation will be based on readings from prominent authors and there will be exercises in writing the language.

University credit for either semester of Scandinavian 2.

## 2. Advanced Swedish

Mr. STOMBERG

Folwell 204, 8:00—9:50 a.m. Three credits.

This course is open to those who are familiar with the language and is intended especially for those who desire to teach Swedish. Emphasis will be placed upon grammar, composition, and conversation, and prose texts will be read.

University credit for either semester of Scandinavian 4.

## SOCIOLOGY AND ANTHROPOLOGY

Mr. JENKS

## 1. Elements of Sociology

Folwell 9, 9:00—9:50 a.m. Three credits.

This course aims to give a general knowledge of the field of modern sociology and to enable the student to see broadly the entire field of asso-

ciational interests, activities, and institutions. This knowledge is indispensable to one living in this time of rapidly developing and changing knowledge of society whether in city or country life.

This course carries university credit for Sociology 2.

## 2. American People

Folwell 10, 10:00—11:50 a.m. Three credits.

This course presents briefly the different physiographical areas of the United States, especially as they modify peoples and cultures. The distribution in the United States of the different peoples of the world found here is presented, together with the natural genius of the home development of these different peoples and the modification of this development in America. The dominant physical, mental, moral, and cultural characteristics of each of these peoples, and their relative importance to America, are carefully worked out. The facts and forces of the blending and assimilation of these divers peoples in America and the resulting "American" with his unique historical characteristics, are analyzed and presented. This course should be of value to those who must deal with men or who expect to teach others how to meet successfully every-day life.

## VOCAL EXPRESSION: READING

Mr. Holt

### Vocal Expression: Reading

This course is given in two sections, which may be taken together or separately.

Folwell 303, 10:00—10:50 a.m.

(a) A general course in vocal expression for the average student who wants to improve his effectiveness as a speaker or teacher. Some time will be given to drill in correct breathing, elementary sounds, and a good standing position, but for the most part the work consists of daily practice in reading short selections from standard literature, prose, and poetry before the class, to improve the articulation, strengthen the voice, and give variety and power to the student's expression. The course aims at simplicity, naturalness, and earnestness in expression, with great emphasis on correct and sympathetic interpretation.

Folwell 303, 11:00—11:50 a.m.

(b) An advance course, open only to those who are taking section (a) or who have completed its equivalent, designed especially for high school teachers of English and Rhetoric and for other teachers of vocal expression. The work consists in reading some of the classics used in high schools, including at least one Shakespearean play, the presentation of complete platform readings before the class, methods for coaching recitations and orations for high school and college contests, and methods for the selection and presentation of plays for high schools and colleges.

Three university credits for Education 19 will be given to students who complete both of the above sections.

## LIBRARY TRAINING SCHOOL

Miss BALDWIN and Miss CAREY

## Library 206.

This school is under the direction of the Minnesota Library Commission, and the course is planned to meet the needs of the smaller public libraries which can not afford trained librarians. It includes instruction and practice work in classification, cataloguing, and the technical details of library work, with lectures on the general organization and administration of a library.

The course is open only to those holding library positions, or under definite appointment to such positions, and to teachers in charge of school libraries. The lectures on children's books and reading will be open to any teachers who are interested in this work, and arrangements will be made to give individual attention to the special problems of school libraries.

For further information regarding the outline of work, program, fees, etc., address Miss Clara F. Baldwin, Secretary, Public Library Commission, St. Paul.

# The University of Minnesota

## THE LAW SCHOOL

1912-1913



BULLETIN OF THE UNIVERSITY OF MINNESOTA  
VOL. XV, NO. 2. MAY 1912

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in Minneapolis as second-class matter  
MINNEAPOLIS, MINN.

1912							1913													
<b>JULY</b>							<b>JANUARY</b>							<b>JULY</b>						
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<b>DECEMBER</b>							<b>JUNE</b>							<b>DECEMBER</b>						
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# UNIVERSITY CALENDAR

1912-1913

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.

1912			
September	3	Tuesday	Registration closes except for new students
September	3-10	Week	Fees payable except for new students
September	10-16	Week	Examinations for removal of conditions, registration of new students, and payment of fees
September	11-17	Week	Military encampment of cadets
September	18	Wednesday	First semester begins
November	27	Wednesday	Thanksgiving recess begins 6:00 p. m.
December	2	Monday	Thanksgiving recess ends 8:00 a. m.
December	20	Friday	Christmas vacation begins 6:00 p. m.
1913			
January	7	Tuesday	Christmas vacation ends 8:00 a. m.
January	21	Tuesday	Registration for second semester closes
January	27	Monday	Final examinations begin
January	28	Tuesday	Payment of fees for second semester closes
February	5	Wednesday	Second semester begins
February	12	Wednesday	Lincoln's Birthday: a holiday
February	13	Thursday	First semester class reports due
February	22	Saturday	Washington's Birthday: a holiday
March	19	Wednesday	Easter recess begins 6:00 p. m.
March	27	Thursday	Easter recess ends 8:00 a. m.
May	30	Friday	Decoration Day: a holiday
June	2	Monday	Final examinations begin
June	7	Saturday	Second semester closes
June	8	Sunday	Baccalaureate service
June	9	Monday	Senior class day exercises
June	11	Wednesday	Alumni Day
June	12	Thursday	Forty-first Annual Commencement
June	13	Friday	Summer vacation begins

The University year for 1913-14 will begin Tuesday, September 9.

## THE UNIVERSITY

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 COLLEGE OF FORESTRY, including—

FOREST EXPERIMENT STATIONS AT ITASCA AND CLOQUET

THE SCHOOL OF AGRICULTURE including—

THE DAIRY SCHOOL

THE SHORT COURSE FOR FARMERS

TEACHERS' SUMMER TRAINING SCHOOL

THE SCHOOL OF TRACTION ENGINEERING

THE SCHOOL OF AGRICULTURE, CROOKSTON

THE SCHOOL OF AGRICULTURE, MORRIS

THE EXPERIMENT STATIONS, including—

THE MAIN STATION AT ST. ANTHONY PARK

THE SUB-STATION AT CROOKSTON

THE SUB-STATION AT GRAND RAPIDS

THE SUB-STATION AT DULUTH

THE SUB-STATION AT WASECA

THE SUB-STATION AT ZUMBRA HEIGHTS

AGRICULTURAL EXTENSION

BUREAU OF RESEARCH IN AGRICULTURAL ECONOMICS

THE LAW SCHOOL

THE COLLEGE OF MEDICINE AND SURGERY, including—

THE SCHOOL FOR NURSES

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE SCHOOL OF MINES, including—

MINNESOTA SCHOOL OF MINES EXPERIMENT STATION

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

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THE GEOLOGICAL AND NATURAL HISTORY SURVEY



## THE BOARD OF REGENTS

The Hon. JOHN LIND, Minneapolis, President of the Board	-	-	-	-	1914
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# THE LAW SCHOOL

## FACULTY

GEORGE EDGAR VINCENT, Ph.D., LL.D., President 1005 5th St. S. E.  
CYRUS NORTHROP, LL.D., President Emeritus 519 10th Ave. S. E.  
\*WILLIAM REYNOLDS VANCE, Ph.D., LL.B., Dean and Professor of Law  
‡ADAM C. HICKMAN, LL.D., Professor of Law 1229 7th St. S. E.  
†JAMES PAIGE, M.A., LL.M., Professor of Law 420 Oak Grove St.  
HENRY J. FLETCHER, LL.M., Professor of Law 317 17th Ave. S. E.  
ROBERT S. KOLLINER, LL.B., Professor of Law 3340 2d Ave. S.  
EDWARD SAMPSON THURSTON, M.A., LL.B., Professor of Law  
1212 5th St. S. E.  
HUGH EVANDER WILLIS, M.A., LL.M., Assistant Professor of Law  
1016 17th Ave. S. E.  
WILLIAM G. GRAVES, B.A., LL.B., Instructor of Law  
779 Summit Ave., St. Paul

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## LECTURERS 1911-12

HOWARD S. ABBOTT, B.L., Minneapolis  
HUGH V. MERCER, LL.M., D.C.L., Minneapolis  
CHARLES W. BUNN, B.S., St. Paul  
CHRISTOPHER D. O'BRIEN, St. Paul  
CASSIUS M. FERGUSON, Minneapolis  
ARTHUR L. HELLIWELL, LL.M., Minneapolis  
Hon. THOMAS D. O'BRIEN, St. Paul, Ex-Justice Supreme Court of Minnesota  
Hon. JOHN W. WILLIS, M.A., St. Paul, Ex-Judge of the District Court,  
Ramsey County  
ROME G. BROWN, B.A., Minneapolis  
Hon. EDMUND S. DURMENT, LL.B., St. Paul  
WALDRON M. JEROME, B.S., LL.B., Minneapolis  
CHARLES J. TRAXLER, LL.B., Minneapolis

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HOMER W. STEVENS, B.A., LL.M., Librarian

\*To assume office August 1, 1912.

†Acting Dean, Session of 1911-12.

‡Acting Professor, Session of 1911-12.

## OBJECT

The Law School of the University of Minnesota was established in 1888.

The object of the Law School is to provide a thorough and scientific legal education, and to prepare students for the actual practice of law in any jurisdiction where the English and American legal system prevails. Particular emphasis is laid upon the Minnesota Statutes, the special doctrines of law, and the rules of practice that obtain in this State.

In teaching the various branches of the substantive law, and, whenever practicable, the adjective law as well, the so-called "case system" is employed. This method of teaching law, which has been approved by experience and which is now employed in the leading law schools of the country, has the two-fold merit of enabling the student to acquire a thorough and practical knowledge of legal principles, and to become familiar with those processes of legal reasoning which have determined the form and character of our jurisprudence, and will govern its future development.

The Faculty is composed primarily of resident professional law teachers who devote their entire time and energy to teaching. The courses in practice are, however, taught by men who are in active practice at the Minnesota bar.

## ADMISSION

### REGULAR STUDENTS

Candidates for admission to the Law School must have completed at least two years of work in the College of Science, Literature, and the Arts of the University of Minnesota, or some other college or university of equal grade.\* Such candidates may be admitted upon presenting their diplomas or other credentials showing the completion of such college work, to the Registrar of the University.

### SPECIAL STUDENTS

Applicants who are twenty-one years of age and graduates of a high school, or other school of equal grade, with a course of study extending over a period of four years, and who furnish satisfactory evidence of their ability to pursue the law course with profit to themselves and without hindrance to the regular students, may by special action of the Faculty be admitted to the Law School as special students. Such special students are not candidates for a degree.

### PARTIAL STUDENTS

Properly qualified students may, by special action of the Faculty, be permitted to take a partial course in law. Such partial students are not candidates for a degree.

### ADVANCED STANDING

No credit is given for time spent in private reading. The candidate for graduation must spend all three years in residence, either at this Law School or some other accredited law school. A student coming from such other law school must possess the preliminary education required for admission to this school and must spend at least one year in attendance at this Law School before he can qualify for a degree. Attorneys-at-law, however, who have been admitted to practice in the State of Minnesota and who have had two years of Academic work in college, may enter the third-year law class without examination upon presentation to the Registrar of their certificates of admission to the bar, and shall be entitled to

\*The College of Science, Literature, and the Arts, of the University of Minnesota, offers a pre-legal course of two years, containing those subjects which are particularly desirable as a preliminary to the study of law. This pre-legal course is fully described on pages 11 and 12 following.

the degree of Bachelor of Laws upon satisfactorily completing such courses, aggregating 24 credits (one year's work), as the Law Faculty may designate.

### REGISTRATION

Students should register on or before the opening of the first semester.\* Lectures in all subjects scheduled for the first semester begin promptly on the opening day of the semester, and those who join their classes later will necessarily be seriously handicapped in their work. No student will be admitted to the Law School unless he registers within one week after the opening of the first semester, except by special action of the Faculty and for good cause shown.

No new student will be admitted to the work of the second semester unless he brings from another law school a certificate of advanced standing, showing his qualifications to continue the second semester's work, and unless he registers before the opening of the semester. This is because the more important first-year subjects begin in the fall and are continued throughout the year, and the whole first-year work should be taken as a unit.

### COMBINED SIX-YEAR COURSE LEADING TO DEGREES OF BACHELOR OF ARTS AND BACHELOR OF LAWS

Academic students who have by the end of their junior year completed one major and two minors and have completed courses aggregating 94 credits,† with a mark of *good* in half their work, may take during their senior year, the first-year law course, and upon completion of the same with an average of *good* in half of such work, will be given the B. A. degree. Upon completion of the work of the second and third-year classes in Law, such students will receive the degree of Bachelor of Laws, thus obtaining both degrees in six years.

### PRE-LEGAL COURSES

Students who contemplate studying law are strongly urged to devote at least three years to collegiate work before entering the Law School. In the opinion of the Law Faculty, it is desirable that a prospective law student, devoting three or more years to collegiate work before undertaking the study of law, should take in his undergraduate years, courses aggregating at least two years of work in each of the following subjects: English Composition (Rhetoric), Latin, a modern language, History, (particularly English and American Constitutional History), Mathematics,

\*See page 19 for the provisions as to penalty for late registration.

†The number of Academic credits required will be reduced to 90 for students entering the College of Science, Literature, and the Arts in 1911-12 and thereafter.

Economics and Political Science, and courses aggregating at least one year's work in Science, Sociology, Psychology and Logic, and Public Speaking.

TWO-YEAR PRE-LEGAL COURSE

For those who cannot devote more than two years to collegiate work before entering the Law School, the College of Science, Literature, and the Arts offers a special pre-legal course in which the following subjects are prescribed:

FRESHMAN YEAR

	Credits
Rhetoric 1 . . . . .	6
Mathematics or Science* . . . . .	6 (or 10)
(1) The student without entrance credits in Higher Algebra, Mathematics 1 and 2.	
(2) The student with entrance credits in Higher Algebra, but not in Solid Geometry, Mathematics 3 and 4.	
(3) The student with entrance credits in Higher Algebra and Solid Geometry, Mathematics 3 and 4, or 6 credits in freshman science.	
Language . . . . .	6 (or 10)
(1) The student with two or more units of entrance credits in Latin, must take Latin (6 credits).	
(2) The student not qualified to take Latin, must take a modern language.	
History . . . . .	6
(1) The student with two units of entrance credits in History, must take History 2.	
(2) The student without two units of entrance credits in History, must take History 8.	
Economics 1 . . . . .	} 6
Political Science 1 . . . . .	
Military Drill and Gymnasium, for men	

\*Students who offer less than two units of natural science for entrance must take one year of natural science in either the freshman or sophomore year.

†Students taking 10 hours each in Mathematics and Language, must omit either History, or Economics 1 and Political Science 1 this year.

## SOPHOMORE YEAR

Rhetoric 2b or English 1 or Public Speaking or Psychology and Logic or Ethics or Mathematics or Science*.....	6
Language.....	6
A continuation of the same language taken in freshman year.	
History 5.....	6
History 2.....	6
For those who did not take this course in their freshman year.	
Economics.....	} 6—18
Not less than one nor more than four of the following courses: 1 (if not previously taken), 4, 5, 6, 11, 15, 16, 25.	
Political Science.....	
Not less than one nor more than four of the following courses: 1 (if not previously taken), 2, 7, 12, 15, 18.	
Military Drill	

30—36

While students who have completed two years of the regular Academic course offered by the College of Science, Literature, and the Arts in accordance with the regulations of that College†, are eligible to enter the Law School, the Law Faculty strongly recommends those who enter the College of Science, Literature, and the Arts with the purpose of qualifying for admission to the Law School, to take the special pre-legal course described above.

\*Students who offer less than two units of natural science for entrance must take one year of natural science in either the freshman or sophomore year.

†These regulations call for the completion of sixty credits with a mark of good in half of such work, but students entering the Law School in 1912-13 will be admitted on the completion of fifty-eight credits. (See Bulletin of the College of Science, Literature, and the Arts, 1912-13.)

## COURSES OF STUDY

The curriculum leading to the degree of Bachelor of Laws covers a period of three academic years. The entire work of the first and second years and a portion of the work of the third year is prescribed. Second-year students are allowed to elect a limited number of additional courses, and third-year students are allowed a somewhat more liberal election.

The course consists of fourteen hours of classroom work a week during the first year and twelve hours a week during each of the two succeeding years.

Each regular student, unless excused by special action of the Faculty, will be required to take courses aggregating not less than twelve nor more than fifteen hours' work a week during each semester of his first two years, and courses aggregating not less than ten nor more than fifteen hours during each semester of the third year.

Beginning with the academic year 1912-13, all the courses offered by the Law School, will, with the exceptions noted on page 16, be given in the day time between the hours of 9 a. m. and 5 p. m.

## COURSES OF INSTRUCTION

### FIRST YEAR

#### Contracts

Williston's *Cases on Contracts*; first semester, four hours; second semester, three hours.

#### Torts

Ames & Smith's *Cases on Torts*, edition of 1910; first semester, three hours; second semester, three hours.

#### Criminal Law

(Case-book to be announced later); first semester, three hours.

#### Personal Property

Gray's *Cases on Property*, second edition, Vol. I; first semester, two hours.

#### Bailments and Carriers

(Case-book to be announced later); first semester, two hours.

#### Real Property

Gray's *Cases on Property*, second edition, Vols. I and II; second semester, three hours.

#### Agency

Wambaugh's *Cases on Agency*; second semester, three hours.

#### Domestic Relations

(Case-book to be announced later); second semester, two hours.



## SECOND YEAR

## Common Law Pleading

(Case-book to be announced later); first semester, two hours.

## Equity

Ames' *Cases on Equity*, Vols. I and II; first semester, three hours;  
second semester, three hours.

## Evidence

(Case-book to be announced later); first semester, two hours; second  
semester, two hours.

## Property

Gray's *Cases on Property*, 2nd edition, Vols. II and III; first semester,  
two hours; second semester, two hours.

## Sales

(Case-book to be announced later); first semester, three hours.

## Code Pleading

Text-book and assigned cases; second semester, three hours.

## Wills and Administrations.\*

Costigan's *Cases on Wills*; second semester, two hours.

*Electives*

## Damages

Beale's *Cases on Damages*; first semester, two hours.

## Insurance

(Case-book to be announced later); first semester, two hours.

## Quasi Contracts.\*

(Case-book to be announced later); second semester, three hours.

## Future Interests in Real Property.\*

Gray's *Cases on Property*, Vol. V; second semester, three hours.

## THIRD YEAR†

## Moot Court

First semester, one hour; second semester, one hour.

## Negotiable Instruments and Sales (Review Course)

(Case-books to be announced later); first semester, three hours.

## Equity

Ames' *Cases on Equity*, Vols. I and II; second semester, three hours.

\*Second-year students desiring to take Quasi Contracts or Future Interests may postpone Wills and Administrations until their third year.

†After 1912-13, the curriculum of the third year will be somewhat different from that here printed.

**Conflict of Laws**

Lorenzen's *Cases on Conflict of Laws*; second semester, three hours.

**Constitutional Law**

McClain's *Cases on Constitutional Law*, second edition; first semester, two hours; second semester, two hours.

**Partnership**

(Case-book to be announced later); first semester, two hours.

**Suretyship**

(Case-book to be announced later); first semester, two hours.

**Trusts**

(Case-book to be announced later); second semester, three hours.

**Property**

(Case-book to be announced later); first semester, two hours.

*Electives\****Bankruptcy**

First semester, two hours.

**International Law**

Scott's *Cases on International Law*; second semester, two hours.

**Taxation**

First semester, two hours.

**MOOT COURT**

The Moot Court is a regular part of the required work of the third year.

The Moot Court is divided into divisions corresponding to the Justice Court, the District Court, and the Supreme Court, of the State of Minnesota; and each court is presided over by members of the Faculty who have practiced before those courts in this State. The conduct of the various divisions of the Moot Court is modeled upon the practice of the several State courts. Each student is assigned a number of cases to be tried in each division of the Moot Court and is required to draw all necessary pleadings and other papers, to conduct the trial of his case, to prepare appeal papers, bonds, paper books, and to furnish the court with his points and authorities according to the requirements of law applicable to the various courts of the State.

It is the aim of the Law School to acquaint the student with the practice as well as the theory of law; and to this end the subjects of Pleading and Evidence, and the rules of practice adopted by our State courts, appeals from one court to another, the methods of securing provisional remedies, the writs of habeas corpus, certiorari and others of frequent use, practice in conveyancing, the drawing of contracts, and other matters which comprise the daily work of the general practitioner receive special and careful attention, not only in connection with the Moot Court, but during the entire course.

\*Also, the electives offered to second-year students and not already taken.

## NIGHT COURSE IN LAW DISCONTINUED

The Night Course heretofore offered by the College of Law will not be offered hereafter, except that students who have completed two or more years of work in the Night Course at the close of the academic year 1911-12, will be given an opportunity to complete the work at night under the auspices of the University and to qualify for the degree of Bachelor of Laws.

## UNIVERSITY EXTENSION COURSES IN LAW AT NIGHT

Beginning with the academic year 1912-13, University Extension courses in substantive law not leading to a degree will be offered at night by the University of Minnesota, under the immediate direction of the Law Faculty for the benefit of such properly qualified persons as may desire legal instruction at night, primarily for business purposes.

Any student who has completed with marked success any subject as given in the Extension Course will be admitted to the regular Law School examination given in such subject, and, if successful in passing that examination, will be given full credit for such subject. After thus securing credit for all the subjects taught in the Extension Course in law, and thereupon completing at the Law School of the University of Minnesota the various courses in adjective law required for a degree, such student will be entitled to graduation, provided that previous to taking such examinations he could have qualified as a regular student in the Law School by having completed two years of Academic work in an institution of collegiate rank.

## EXAMINATIONS, GRADES, AND PROMOTION

Examinations are held at the end of each semester.

Students are graded in all subjects as follows: *Excellent, good, passed, conditioned, and failed.*

A student who fails in a subject must repeat the subject in the course.

A student who receives a condition in a subject is entitled to one examination only to remove such condition. On failure successfully to pass such examination, the student must repeat the subject in the course.

Examinations for the removal of conditions are held during registration week in September each year. Special examinations at any other time will be allowed only upon permission of the Faculty and for good cause shown.

A student who is deficient in subjects aggregating eight or more credits (semester hours), will not be promoted to the next higher class. If, in the opinion of the Faculty, such student is not qualified either (1) to continue as a student of law, or (2) to take any more advanced work, he may, by vote of the Faculty, either (1) be denied the privilege of continuing in the Law School, or (2) be required to repeat the entire work of such year.

A student who, at the end of any semester, fails in two or more subjects taken in that semester may by vote of the Faculty be denied the privilege of continuing in the Law School.

A student who is deficient in subjects aggregating more than four credits (semester hours) at the opening of the second semester of his third year, will not be admitted as a candidate for a degree at the close of that semester.

#### ELECTIVES IN OTHER DEPARTMENTS OF THE UNIVERSITY

Students in the Law School may be permitted, after completion of the work of the first year, and under proper regulations, to elect, without extra charge, courses offered in other departments of the University, provided that such election does not interfere with their law studies; but such election of courses in other departments may be made only with permission of the Law Faculty. Among the subjects which may be profitably selected are English Composition, English and American Constitutional History, Public Speaking and Debating, Political Science, Economics, and Sociology. Students who elect such work must complete it in a satisfactory manner or withdraw in good standing before they can obtain the law degree.

## GENERAL INFORMATION

### THE LAW BUILDING

The Law School occupies a commodious building well adapted to the uses for which it was constructed. The first floor contains a large auditorium and smaller lecture rooms. On the second floor are the Library and Reading Room, for the Moot Court, and the offices of the Dean and other members of the Faculty.

In the basement are several rooms for the use of the legal, literary, and debating societies of the Law School.

### LIBRARIES

The library of the Law School contains upwards of sixteen thousand volumes, including all the American Reports, State and Federal (excepting a few reports of inferior state courts), nearly all the English and Canadian Reports, the English, Federal, and State Statutes (with a few exceptions), the standard digests, encyclopedias, legal periodicals and text-books. To this collection substantial additions are constantly being made.

Further library facilities are afforded 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. This library contains a complete set of the English and American Reports, and an excellent collection of text-books, encyclopedias, etc.

Besides the University and Bar Association libraries, the State Library, containing all books which a student would ever have occasion to consult, is located at the Capitol in St. Paul, and is thus within easy reach of the students.

The general library of 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.

There are also in the University, 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 agriculture.

### STATE AND UNITED STATES COURTS

The University 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, sitting at St. Paul, 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 the student abundant opportunity for witnessing the trial of actual cases and the argument of appeals.

### CASE-BOOKS

The case-books used by the student in his course in the Law School, especially when containing his own annotations, should prove highly valuable to him in after years at the bar. Students are therefore earnestly advised to purchase their own case-books. It has heretofore been the practice, however, for the Law School to provide case-books for the free use of the students. This practice will not be changed at the present time, but will probably be discontinued after the supply of case-books now on hand has been exhausted. A deposit of five dollars is required of students making use of the case-books belonging to the Law School, but this deposit is repaid upon return of the books in good condition.

### TUITION AND OTHER FEES

The tuition fee is sixty-five dollars a year, divided into two installments of thirty-two and one-half dollars each, one of which is payable at the beginning of each semester.

A penalty fee of one dollar must be paid by all students who register or pay fees after the prescribed time. (See calendar, page 3.) After the day previous to that on which the classes begin the penalty for delay increases at the rate of twenty-five cents per day.

A deposit of five dollars is required of students making use of the case-books belonging to the Law School. (See *Case-Books* above.)

In accordance with a regulation of the Board of Regents, students of all schools and colleges of the University are required to have a box in the University Post-Office, for which a rental charge of fifty cents a year is made.

### EXPENSES

The expense of a student at the University depends largely upon the tastes and habits of the individual. Students can without difficulty obtain board and lodging near the University. Good board can be had for \$5.00 per week, and students by clubbing together can usually get board at considerably less expense.

Further particulars as to any phase of the work of the Law School will be cheerfully given upon request. Communications addressed at any time to the Dean of the Law School, the University of Minnesota, Minneapolis, Minnesota, will receive prompt attention.

## PRIZES

The following University prizes in oratory may be competed for by members of the Law School.

*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 offers \$100 to that student who shall earn the right to represent Minnesota in the Northern Oratorical League. This league is composed of seven of the largest universities of the central states, viz., Minnesota, Iowa, Wisconsin, and Michigan State Universities, and Oberlin, Chicago, and Northwestern Universities.

*The Lowden Prize.*—Mr. Frank O. Lowden, of Chicago, offers a prize to be competed for by the Northern Oratorical League, an endowment of \$3000, 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.

*The Mercer Prize.*—Mr. H. V. Mercer, of Minneapolis, offers three medals to be awarded annually, to the three winning debaters in a Law School debate, or series of debates, to be conducted under rules laid down by the Law Faculty.

## STUDENTS

### REGULAR LAW

#### THIRD-YEAR DAY—46

Ainsworth, Charles L., Chippewa Falls, Wis.  
Anderson, Albert A., Hendricks  
Andrews, Rollin G., Minneapolis  
B.S., Iowa State College, 1909.  
Barke, Arthur R., Fergus Falls  
B.A., Minnesota, 1911  
Benson, John C., Heron Lake  
Bibb, Eugene S., Minneapolis  
Cant, Kenneth, Duluth  
Carroll, Joe D., Miller, S. D.  
Elwell, Alden W., Minneapolis  
Erdall, Leonard T., Minneapolis  
Foley, John R., Barry  
Ford, James M., Minneapolis  
Frank, Leonard, St. Paul  
Greene, John J., Minneapolis  
Hayes, Charles L., St. Paul  
Helgeson, Russell A., Herman  
Horn, Charles L., Minneapolis  
Hughes, Raymond M., Aitkin  
Johnston, Lisle A., St. James  
Kain, John P., Breckenridge  
B.S., St. Johns  
Kotz, Otto B., Minneapolis  
Larrabee, Orrin H., Minneapolis  
Lobb, Albert J., Ripon, Wis.  
McCargar, Fred S., Montevideo  
McGrath, Dennis F., Owatonna  
Markve, Arthur L., Minneapolis  
B.A., Augsburg, 1908  
Miller, Fred J., St. Paul  
Nordbye, Gunnar H., Granite Falls  
Olson, Matthias N., Minneapolis  
B.A., Minnesota, 1908  
Peterson, Harry H., St. Paul  
Pickering, Earle T., Geneva  
Rudesill, Henry A., Minneapolis  
Schuster, Carl H., Rochester  
Sias, De Forrest J., Chinook, Mont.  
Smith, Lucius A., Faribault  
Stone, Philip M., Morris  
Suffel, William R., Duluth  
Sullivan, Henry H., St. Cloud  
Thomson, Theodore W., Minneapolis  
B.A., Minnesota, 1910  
Turner, Hammond, Sequin, Texas  
Tydeman, Frederick E., Montevideo  
Vesta, Olaf S., Northfield, Wis.  
Waters, Murray, Minneapolis  
Wilson, Chester S., Stillwater  
B.A., Minnesota, 1908  
Wright, Fred B., Jr., Minneapolis  
Young, Donald A., Eugene, Ore.

#### SECOND-YEAR DAY—68

Andereck, Earl M., Minneapolis  
Aslakson, John S., Cannon Falls  
B.S., St. Olaf, 1909  
Bangs, Felix F., Minneapolis  
B.A., Minnesota, 1911  
Bauers, Gregory E., Minneapolis  
Beddall, Claude R., Ellsworth, Wis.  
Casserly, Bernard A., Minneapolis  
Caverly, Raymond N., Minneapolis  
B.A., St. Thomas, 1909  
Crocker, Thomas, Minneapolis  
Cutter, Ross, Anoka  
Dahleen, Harry W., Maynard  
B.A., Minnesota, 1911  
Davies, E. Wynne, Minneapolis  
Donohue, John N., St. Paul  
B.A., Minnesota, 1911  
Douhan, Alexander E., Minneapolis  
Eder, Edward E., Blue Earth  
Eisler, Charles J., Minneapolis  
B.A., Minnesota, 1911  
Elder, Henry K., Marshall  
Erickson, Arthur C., La Crosse, Wis.  
Faegre, J. Barthell, Minneapolis  
B.A., Minnesota, 1911  
Foley, William A., River Falls, Wis.  
Gallagher, Frank T., Waseca  
Ganssle, Waldorf L., Minneapolis  
Greiner, Oscar F., Minneapolis  
Grindeland, Ingolf, Warren  
Groettum, Richard, Minneapolis  
Hanson, George C., Bode, Ia.  
Hass, William C., Wheaton  
Hershman, Albert L., Minneapolis  
Hull, Bert J., Wahpeton, N. D.  
Johnson, Clay W., Fergus Falls  
Jones, Robert D., Revillo, S. D.  
B.S., South Dakota, 1909



- Jungck, Harold H., Minneapolis  
 Kilbride, Thomas P., Albert Lea  
 Klimenthagen, Ray R., St. Paul  
 Larsen, Edward J., Minneapolis  
 Larson, Enoch G., Minneapolis  
 Larson, Oscar G., Windom  
 Lee, Theodore L., Oakes, N. D.  
 Leum, Henry, Mayville, N. D.  
 B.A., Luther, 1909  
 McCullough, Reuben C., Duluth  
 B.A., Wilberforce  
 McHugh, J. Leonard, Duluth  
 McKenzie, John, Jr., Minneapolis  
 B.A., Minnesota, 1910  
 Meighen, Philip J., Minneapolis  
 Meixner, Carl C., Owatonna  
 Melvin, Charles L., Dodge Center  
 Merdink, Henry J., Stephen  
 Murphy, Francis E., Glencoe  
 Murray, J. Emmett, Minneapolis  
 O'Keefe, John J., Hudson, Wis.  
 Osterlind, Francis H., Merriam Park  
 Ostrander, Lyle H., Alden  
 Owen, Morris J., Minneapolis  
 Palmer, Ben W., St. Paul  
 B.A., Minnesota, 1911  
 Pardee, N. E., Wausau, Wis.  
 Porter, Albert G., Willmar  
 Reeves, Jay E., Groton  
 Richardson, Allen C., Eyota  
 Ridgway, Florence M., Minneapolis  
 M.D., C.M., Hamline, 1906  
 Rockwell, R. Logan, Plainview  
 Scott, Irvin E., Elgin  
 B.S., Carleton, 1909  
 Sheild, Rexford M., Winona  
 Smith, Chauncey G., Minneapolis  
 Solesher, Pliny, Jerry City, Ohio  
 B.A., Oberlin, 1910  
 Stenersen, Vernon E., Minot, N. D.  
 Thompson, Nathan M., Minneapolis  
 Ulsaker, Oscar M., Wahpeton, N. D.  
 Viker, Selma, Halstad  
 B.A., Minnesota, 1911  
 Vollum, Alfred T., Hayward  
 B.A., Minnesota, 1911  
 Webster, Russell O., Minneapolis

## FIRST-YEAR DAY—23

- Beare, Thomas W., Brainerd  
 Begin, Z. L., Robbinsdale  
 Bredezen, Karl E., Mankato  
 Bressler, Calder B., Minneapolis  
 Dreis, Frank J., Minneapolis  
 Grashuis, William, Clara City  
 Hauge, Oscar C., Minneapolis  
 Heller, Albert, Minneapolis  
 Holmer, Adolph F., Excelsior  
 B.A., Minnesota, 1911  
 Hoshour, Harvey S., Burnham, Pa.  
 B.A., Pennsylvania College, 1910  
 Johnson, Tord C., Fergus Falls  
 Latimer, Mrs. Elsie H., Minneapolis  
 B.A., Washington, 1909  
 Latimer, Thomas E., Minneapolis  
 B.A., Washington, 1908; M.A., Illinois,  
 1909  
 McCauley, John W., Minneapolis  
 Maland, Oswald, Elmore  
 Manahan, Richard, Chatfield  
 Murayama, Takashi, Tokio, Japan  
 Odland, John J., Sentinel Butte, N. D.  
 Simmons, Frank H., Minneapolis  
 Smith, Rollin L., Minneapolis  
 B.Litt., Princeton, 1911  
 Stadsvold, Sidney, Fosston  
 Stephens, C. Merriam, Crookston  
 Ziesemer, Raymond, St. Paul  
 B.A., Carleton, 1911

SENIORS IN THE COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS  
TAKING FIRST YEAR LAW—8

- Doherty, Fayette C., Tracy  
 Downing, Harold L., Minneapolis  
 Fabian, John H., Campbell  
 Frisch, Leonard H., Minneapolis  
 Hadler, John J., Ada  
 Hilyer, Gale P., Washington, D. C.  
 McBean, Alan J., Minneapolis  
 Simpson, Charles D., Minneapolis

## FOURTH-YEAR NIGHT—25

- Ballou, Ellis L., Minneapolis  
 Bielejewski, Casimir P., Minneapolis  
 Blythe, Mrs. Virginia, Minneapolis  
 Christopher, Harry, Minneapolis  
 Eide, Carl J., Minneapolis  
 B.A., Minnesota, 1904  
 Foley, Daniel, Minneapolis  
 Gerth, Otto A., Minneapolis

Gleason, John J., Minneapolis  
 Green, Harlow B., Minneapolis  
 Hamblin, Fred L., Minneapolis  
 Higgins, Clarence W., Minneapolis  
 Hughes, Donald G., Minneapolis  
 Johnson, Frank E., Bird Island  
 Lindgren, Harold C., Adrian  
 McGregor, Donald A., Minneapolis  
 Oberg, Ezra N., Minneapolis  
 Peabody, Orley M., Minneapolis

Pearson, Waldemar G., Minneapolis  
 Plank, George W., Minneapolis  
 Rehnke, Edgar, Minneapolis  
 B.A., Minnesota, 1909  
 Sivright, D. Calvin, Hutchinson  
 Smiley, William Y., Minneapolis  
 B.A., Minnesota, 1909  
 Smith, Amos D., Minneapolis  
 Stevens, Lewis C., Granite Falls  
 Swagler, Ralph W., St. Peter

## THIRD-YEAR NIGHT—16

Barrier, Carleton, Arlington Heights, Mass.	Martin, Harry G., Minneapolis
Diehl, R. W., St. Paul	D.B., Iowa State Teachers' College, 1905
Durham, Frank H., Minneapolis	Peterson, James A., St. Paul
Edwards, De Witt C., Casselton, N. D.	Searle, Alexander, Sioux Falls, S. D.
Frazer, Ray, Minneapolis	Shannon, Wiley J., Minneapolis
Gray, Raymond H., Elk River	B.S., Northwestern, 1908
B.A., Minnesota, 1905	Spencer, Clement A., St. Charles
Hansen, Lewis L., Minneapolis	Sullivan, Frank J., St. Cloud
Herbst, Edith G., Osakis	Torelle, Arthur W., Minneapolis
Weedell, George A., Minneapolis	

## SECOND-YEAR NIGHT—17

Barnes, Walter G., Minneapolis	Mason, Harold C., Somerset, Wis.
Carey, Anna E. V., Mapleton	B.A., Minnesota, 1911
Curran, Hugh H., Edgewood, Iowa	Olson, Harry C., Minneapolis
Upper Iowa, 1905	Paul, Edward A. B., Minneapolis
Freeland, Harvey L., Minneapolis	B.A., Dartmouth, 1910
Gleason, Robert V., Minneapolis	Probst, John B., St. Paul
Hage, Peder M., St. Paul	B.A., St. Thomas
Johnson, Fred B., Minneapolis	Ramsey, Harold B., Minneapolis
Kenyon, Ray H., Minneapolis	B.A., Minnesota, 1910
McAlmon, William, Minneapolis	Stiles, Glenn, Minneapolis
McGregor, William E., Minneapolis	B.A., Minnesota, 1911
Vanstrum, George A., Minneapolis	

## FIRST-YEAR NIGHT—6

Davidson, Raymond G., Minneapolis	Millar, Leslie C., Tucson, Ariz.
B.A., Minnesota, 1906	Olson, Didrick, Minneapolis
Kjellander, Harold R., Minneapolis	B.A., Minnesota, 1908
Meleck, Hertz N., Minneapolis	Robb, Walter C., Minneapolis
M.D., Hamline, 1904	B.A., Minnesota, 1908

## SPECIAL LAW

## THIRD-YEAR DAY—7

Andresen, Charles A., Minneapolis	Hedding, Charles A., Minneapolis
Beaton, Neil E., Duluth	La Plant, Lawrence M., Anoka
Hanson, Walter O., Rochester	Lothrop, Hugh L., Zumbrota
Luther, Martin L., Minneapolis	

## SECOND-YEAR DAY—24

Anderson, William, Minneapolis	Nelson, Olaf H., Springfield
Cook, Wolford B., Minneapolis	Reed, Russell, Minneapolis
Cooper, Ray L., Minneapolis	Rorem, Allen T., St. Paul
Dickinson, Willis C., Minneapolis	Scherven, A. William, Minneapolis
Ganley, John F., Minneapolis	Seibel, John A., Minneapolis
George, Alexander R., Winona	Sigford, Swan, Harris
Harris, H. Frank, Detroit	Smith, Henning, Minneapolis
Harris, William B., St. Paul	Stokes, Max G., Britton, S. D.
Karatz, Abe H., Minneapolis	Tonne, Franklin D., Fairmount
Kjorstad, Harry E., Black River Falls, Wis.	Wendland, Theodore F., Minneapolis
Leahy, Francis M., Maple Lake	Wiegand, Charles H., Eagle River, Wis.
Moore, Thomas E., Minneapolis	Zack, Samuel, St. Cloud

## FIRST-YEAR DAY—44

Anderson, Julian A., Milan	Huffman, Hallan L., Bemidji
Armatage, Wellesley D., Minneapolis	Kanter, Alexander, Minneapolis
Barrick, Ralph L., Minneapolis	Krebsbach, Paul, Adams
Blixt, Arthur, Minneapolis	Lauritzen, Carlyle, Minneapolis
Boeke, George F., Minneapolis	Lawler, Samuel F., St. Paul
Cobb, Fred H., Minneapolis	Legg, Fred C., Minneapolis
Crotty, Mark F., Argyle, Wis.	Lovejoy, James A., Minneapolis
Curry, Harry, Minneapolis	McCoy, Robert C., Stillwater
Cutter, Hazel, St. Paul	Mills, Stuart C., Brainerd
Duke, Haydn O., Minneapolis	Nickels, Harrison C., Minneapolis
Dunn, Harold F., Weeping Water, Neb.	Olson, Floyd W., Minneapolis
Dunnell, Warren, Minneapolis	Pattison, Guy J., Beardsley
Fahey, James F., Green Isle	Pierce, Edwin J., St. Paul
Fleming, Robert B., St. Paul	Ribbel, Kenneth B., Brainerd
Forsyth, Robert A., River Falls, Wis.	Robertson, Robert J., Minneapolis
Ganssle, Gilbert W., Minneapolis	Roisner, Morris, Minneapolis
Goetzenberger, Joseph J., Minneapolis	Schneider, Burt, Minneapolis
Gold, Roy F., Minneapolis	Skadberg, John, Duluth
Griffith, H. Morton, Brooksville, Ky.	Stabeck, Lloyd K., Minneapolis
Hamilton, Howard, Winona	Stevens, G. Irl, Minneapolis
Hanson, Bert, Elbow Lake	Tucker, Earl B., Minneapolis
Haynes, Ralph W., Minneapolis	West, Burr, Milaca

## FOURTH-YEAR NIGHT—5

Callahan, J. Gerald, Minneapolis	Hennesey, Walter H., Minneapolis
Gorham, George T., Minneapolis	Peterson, Harold R., Minneapolis
	Raab, Frank, Anthon, Okla.

## THIRD-YEAR NIGHT—7

Freudenfeld, Alfred J., Minneapolis	Miller, Earl H., Bovina Center, N. Y.
Hensel, Edward W., Fond du Lac, Wis.	Neudeck, William E., Minneapolis
Hinds, Frank H., Shakopee	Pederson, P. Edward, Minneapolis
	Swanson, Erling, Minneapolis

## STUDENTS

25

### SECOND-YEAR NIGHT—7

Beaverson, George, Minneapolis	Kiesler, Frank G., Hutchinson
Halverson, Henry L., Minneapolis	Kimball, Bruce P., Minneapolis
Jensen, Fred, Spencer, Ia.	Mumby, James P., Seymour, Ia.
Voegeli, Thomas P., Minneapolis	

### FIRST-YEAR—22

Borth, Paul, Minneapolis	Hughes, Neal, Minneapolis
Brethauer, John D., Minneapolis	MacGill, C. Frederick, St. Paul
Bridgham, Charles, Minneapolis	Madden, Walter J., Rochester
Brown, Chester E., Minneapolis	Pedersen, Selmer I., Fosston
Brugger, Hiram D., Minneapolis	Reedy, Thomas W., Beresford, S. D.
Camp, Ray H., Minneapolis	Schmidt, Richard S., Minneapolis
Davis, Charles G., Minneapolis	Sell, Charles A., Adrian
Davis, Harry S., Minneapolis	Slade, Max D., Adrian
Finkle, Henry G., Minneapolis	Storlie, Fred O., Waseca
Guernsey, Herbert J., Minneapolis	Van Valkenburg, Walter, Minneapolis
Haverstock, Earl H., Minneapolis	Wilson, Charles C., Minneapolis

# The University of Minnesota

## THE COLLEGE OF PHARMACY

1912-1913



BULLETIN OF THE UNIVERSITY OF MINNESOTA  
VOL. XV, NO. 3. MAY 1912

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MINNEAPOLIS, MINN.

1912							1913																															
<b>JULY</b>							<b>JANUARY</b>							<b>JULY</b>																								
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# UNIVERSITY CALENDAR

1912-1913

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.

1912

September	3	Tuesday	Registration closes except for new students
September	3-10	Week	Fees payable except for new students
September	10-16	Week	Examinations for removal of conditions, registration of new students, and payment of fees
September	11-17	Week	Military encampment of cadets
September	18	Wednesday	First semester begins
November	27	Wednesday	Thanksgiving recess begins 6:00 p. m.
December	2	Monday	Thanksgiving recess ends 8:00 a. m.
December	20	Friday	Christmas vacation begins 6:00 p. m.

1913

January	7	Tuesday	Christmas vacation ends 8:00 a. m.
January	21	Tuesday	Registration for second semester closes
January	27	Monday	Final examinations begin
January	28	Tuesday	Payment of fees for second semester closes
February	5	Wednesday	Second semester begins
February	12	Wednesday	Lincoln's Birthday: a holiday
February	13	Thursday	First semester class reports due
February	22	Saturday	Washington's Birthday: a holiday
March	19	Wednesday	Easter recess begins 6:00 p. m.
March	27	Thursday	Easter recess ends 8:00 a. m.
May	30	Friday	Decoration Day: a holiday
June	2	Monday	Final examinations begin
June	7	Saturday	Second semester closes
June	8	Sunday	Baccalaureate service
June	9	Monday	Senior class day exercises
June	11	Wednesday	Alumni Day
June	12	Thursday	Forty-first Annual Commencement
June	13	Friday	Summer vacation begins

The University year for 1913-14 will begin Tuesday, September 9.

*Program of Entrance Examinations 1912-13*

Entrance examinations for admission to the various colleges of the University will be conducted according to the following schedule, in Room 205, Library Building, unless otherwise specified.

Any student finding a conflict in his program should report to the Registrar for adjustment.

Tuesday,	Sept. 10	9 a. m.	Astronomy, Botany, Geology, Chemistry, Physiography, Zoology
		2 p. m.	American Government, History, Physics, Economics, Commercial Geography
Wednesday,	Sept. 11	9 a. m.	English
		2 p. m.	German, French, Latin, Scandinavian
Thursday,	Sept. 12	9 a. m.	Elementary Algebra
		2 p. m.	Higher Algebra
Friday,	Sept. 13	9 a. m.	Plane Geometry
		2 p. m.	Solid Geometry

A representative of each department will be at the office of the head of the department each forenoon of entrance examination week from 9 to 12 to give information and advice.



## THE UNIVERSITY

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 COLLEGE OF FORESTRY, including—

FOREST EXPERIMENT STATIONS AT ITASCA AND CLOQUET

THE SCHOOL OF AGRICULTURE including—

THE DAIRY SCHOOL

THE SHORT COURSE FOR FARMERS

TEACHERS' SUMMER TRAINING SCHOOL

THE SCHOOL OF TRACTION ENGINEERING

THE SCHOOL OF AGRICULTURE, CROOKSTON

THE SCHOOL OF AGRICULTURE, MORRIS

THE EXPERIMENT STATIONS, including—

THE MAIN STATION AT ST. ANTHONY PARK

THE SUB-STATION AT CROOKSTON

THE SUB-STATION AT GRAND RAPIDS

THE SUB-STATION AT DULUTH

THE SUB-STATION AT WASECA

THE SUB-STATION AT ZUMBRA HEIGHTS

AGRICULTURAL EXTENSION

BUREAU OF RESEARCH IN AGRICULTURAL ECONOMICS

THE LAW SCHOOL

THE COLLEGE OF MEDICINE AND SURGERY, including—

THE SCHOOL FOR NURSES

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE SCHOOL OF MINES, including—

MINNESOTA SCHOOL OF MINES EXPERIMENT STATION

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

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THE GEOLOGICAL AND NATURAL HISTORY SURVEY

## THE BOARD OF REGENTS

The Hon. JOHN LIND, Minneapolis, President of the Board	-	-	1914
GEORGE EDGAR VINCENT, Ph.D., LL.D., Minneapolis	-	-	<i>Ex-Officio</i>
The President of the University			
The Hon. ADOLPH O. EBERHART, Mankato	-	-	<i>Ex-Officio</i>
The Governor of the State			
The Hon. C. G. SCHULZ, St. Paul	-	-	<i>Ex-Officio</i>
The State Superintendent of Public Instruction			
The Hon. W. J. MAYO, Rochester	-	-	1913
The Hon. MILTON M. WILLIAMS, Little Falls	-	-	1913
The Hon. HENRY B. HOVLAND, Duluth	-	-	1914
The Hon. A. E. RICE, Willmar	-	-	1915
The Hon. CHARLES L. SOMMERS, St. Paul	-	-	1915
The Hon. B. F. NELSON, Minneapolis	-	-	1916
The Hon. PIERCE BUTLER, St. Paul	-	-	1916
The Hon. CHARLES A. SMITH, Minneapolis	-	-	1916

## EXECUTIVE OFFICERS

GEORGE EDGAR VINCENT, Ph.D., LL.D., President
ERNEST B. PIERCE, B.A., Registrar
GEORGE H. HAYES, University Comptroller and Secretary of the Board of Regents
JAMES T. GEROULD, B.A., Librarian
JOHN F. DOWNEY, M.A., C.E., Dean of the College of Science, Literature, and the Arts
FRANCIS C. SHENEHON, C.E., Dean of the College of Engineering and Mechanic Arts
ALBERT F. WOODS, M.A., Dean and Director of the Department of Agriculture
WILLIAM R. VANCE, Ph.D., LL.B., Dean of the Law School
FRANK FAIRCHILD WESBROOK, M.A., M.D., C.M., Dean of the College of Medicine and Surgery
ALFRED OWRE, B.A., M.D., C.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, M.A., Ph.D., Dean of the School of Chemistry
GEORGE F. JAMES, Ph.D., Dean of the College of Education
HENRY T. EDDY, C.E., Ph.D., LL.D., Dean of the Graduate School
ADA L. COMSTOCK, M.A., Deaft of Women

# THE COLLEGE OF PHARMACY

## FACULTY

- GEORGE EDGAR VINCENT, Ph.D., LL.D., President 1005 5th St. S. E.  
CYRUS NORTHROP, LL.D., President Emeritus 519 10th Ave. S. E.  
FREDERICK J. WULLING, Phm.D., LL.M., Dean, Professor of Pharmacology, and Director of the University Medicinal Plant Gardens  
3305 2nd Ave. S.  
RICHARD OLDING BEARD, M.D., Professor of Physiology  
The Virginia, Lowry Hill  
CHARLES F. SIDENER, B.S., Professor of Quantitative Chemistry  
1320 5th St. S. E.  
GEORGE B. FRANKFORTER, M.A., Ph.D., Professor of Chemistry  
525 E. River Road  
FRANK F. WESBROOK, M.A., M.D., C.M., Professor of Bacteriology  
906 5th St. S. E.  
EVERHART P. HARDING, M.S., Ph.D., Assistant Professor of Chemistry  
1316 7th St. S. E.  
M. RUSSELL WILCOX, M.D., Assistant Professor of Physiology  
802 Donaldson Bldg.  
IRA HARRIS DERBY, Ph.D., Assistant Professor of Chemistry  
2157 Commonwealth Ave., St. Paul  
FREDERIC E. CLEMENTS, Ph.D., Professor of Botany 800 4th St. S. E.  
EDGAR D. BROWN, Phm.D., M.D., Professor of Materia Medica and Therapeutics  
3525 3rd Ave. S.  
..... Professor of Pharmacognosy  
FREDERIC K. BUTTERS, B.S., B.A., Assistant Professor of Botany  
815 S. 7th St.  
FREDERICK H. SCOTT, Ph.D., M.B., D.Sc., Assistant Professor of Physiology  
1023 University Ave. S. E.  
FRANK F. GROUT, M.S., Assistant Professor of Geology and Mineralogy  
1202 7th St. S. E.  
GUSTAV BACHMAN, Phm. D., Phm.M., Instructor in Pharmacy  
2624 Fremont Ave. S.  
OSCAR BLOSMO, Ph.C., Instructor in Dispensing 529 Oak St. S. E.  
CHARLES F. DIGHT, M.D., Lecturer in Materia Medica  
4818 39th Ave. S.  
JOHN A. HANDY, Ph.C., B.S., Instructor in Pharmaceutical Chemistry  
803 University Ave. S. E.

- MANLEY H. HAYNES, Phm. B., Assistant in Pharmacognosy  
703 E. River Road
- WILLIAM H. HUNTER, Ph.D., Instructor in General and Qualitative  
Chemistry 112 Church St. S. E.
- JOHN ELDON HYNES, Ph.C., M.D., Assistant in Clinical Microscopy  
3349 University Ave. S. E.
- C. NAUMANN McCLOUD, Phm.D., M.D., Lecturer on First Aids to the  
Injured 524 Lowry Bldg., St. Paul
- ALICE M. MISZ, M.A., Instructor in Botany 651 Otsego St., St. Paul
- EDWIN L. NEWCOMB, P.D., Instructor in Pharmaceutical Botany and  
Pharmacognosy 719 6th Ave. S. E.
- HAROLD E. ROBERTSON, B.A., M.D., Instructor in Clinical Microscopy  
508 Essex St. S. E.
- FREDERIC W. SCHLUTZ, B.A., M.D., Instructor in Physiological Chemistry  
802 Donaldson Bldg.
- WALTER D. SHELDEN, B.S., M.D., Instructor in Therapeutics  
3233 Irving Ave. S.
- ..... Instructor in Pharmaceutical Latin  
..... Assistant in Materia Medica

## SPECIAL LECTURERS

W. A. FROST	W. G. NOYES	A. D. THOMPSON
STEWART GAMBLE	A. J. KLINE	E. A. TUPPER
J. W. HARRAH	C. B. McCALL	THOMAS VOEGELI
CHARLES H. HUHNS	HENRY McCOLL	JUSTIN S. BREWER

## GENERAL INFORMATION

### ADMISSION

#### *A. To the Two-Year Course*

While nearly all the students enrolled in this College are graduates of full four-year high school courses, such a training prior to entrance is not obligatory at the present time. The requirements, however, are being raised gradually in such a way that soon they shall be a full high school preparation or its equivalent for all matriculants.

I. Applicants may be admitted without examination if they bring certificates of graduation from, or standing in, institutions of collegiate grade or present other credentials showing that they have successfully completed the branches of study embraced in a full four-year high school course, or an equivalent, provided that among the branches completed are:

English, two years, including the principles of composition and practice in written expression.

Algebra, one year, elementary, up to beginning of Higher Algebra.

Geometry, one year, elementary.

Physics, one year, elementary.

Latin, two years: grammar, one year; Caesar (four books), one year. Two years of a modern language may be substituted for the second year of Latin.

II. Other applicants must pass examinations in the branches above specified, i. e., in English, Algebra, Geometry, Physics, and Latin or present satisfactory evidence of having completed these branches for which substitutes cannot be accepted.

Students will be allowed to carry not more than two conditions, which, however, must be removed before the final examinations in the first-year subjects.

In certain cases credit is given for drug store experience.

#### *B. To the Three-Year Course*

The minimum requirements for admission to the three-year course are the same as those for admission to the two-year course II, with the exception that students may carry as conditions not more than three of the entrance subjects, one of which cannot be English. Students must pursue the branches in which they are conditioned during their first year and pass examinations in them or present evidence of having satisfactorily completed the branches. The subjects are not taught at the College but may be taken at the academy near by, or at the city high schools or with private tutors. The University Y. M. C. A. usually establishes courses for the benefit of students conditioned in entrance branches.

Applicants whose preparatory course of study has not conformed precisely to the requirements above enumerated will be allowed to offer, in lieu of a portion of these requirements, equivalent preparation in similar branches of study; and if they show by examination, or by other evidence, that their preparation has been substantially equivalent, such branches will be accepted as substitutes for those omitted.

The examinations for entrance are conducted by the Faculty of the College of Pharmacy, beginning at 9:00 a. m., on Tuesday, September 17, 1912. Lecture work begins as soon as possible after the examinations, usually the following day.

Every applicant is required to furnish a certificate of good moral character.

Those who do not pass the entrance examinations in not more than three of the required subjects, may enter and complete their course in three years, provided they pursue the subjects required for admission in addition to the professional work that may be assigned to them, and pass their entrance examinations, before the end of the first year.

### REGISTRATION

Registration begins September 10th. All applicants for admission to the regular courses must present to the Dean not later than September 16th, their school or high school certificates, diplomas, or such other credentials as they may wish to offer toward meeting in whole or in part the entrance requirements. If these are found satisfactory, the applicant will fill out the necessary registration blanks and present them in the office of the University Registrar, who will issue to him a statement of fees, including tuition fee, microscope rental, and general deposit fee. The applicant will pay the fees indicated to the Cashier and receive receipts therefor. Registration is completed by depositing these receipts in the office of the Dean. The student is then classified.

### ADVANCED STANDING

Applicants for advanced standing must pass the entrance examinations or present the usual equivalents. They must furnish satisfactory evidence of time spent and subjects covered in previous professional studies, and must pass the examinations of all departments in which they wish to be exempt, if such examinations are deemed necessary by the professors in charge. Students will not be permitted to substitute private work in any branch for the regular course work.

### UNCLASSED STUDENTS

Unclassed or special students may enter at any time providing there is laboratory room for them. They will not be rated on their work nor examined unless they make special request therefor. Work completed will be credited should the student subsequently enter the regular course.

## EXAMINATIONS AND STANDINGS

Examinations are held at the end of the regular school year and during the last week of the first semester, and are supplementary to the written tests and quizzes that are held at frequent intervals during the year, and with them form largely the basis of final determination of fitness for promotion or graduation. Students are rated throughout the year, and all who have a standing of ninety per cent, or more, in certain of the branches, may not be required to take the final examination in those branches.

Students are not required to write graduating theses, but instead they keep complete records of their laboratory work. The records are to be kept in substantially bound books, to be approved by the Faculty. The respective professors call for the records for inspection and rating once a month or oftener. Duplicates of records are to be furnished the College by the students. The College provides the paper.

The standing of students is determined by the results of recitations, written examinations, laboratory work and attendance. It is indicated by the terms *excellent*, *passed*, *conditioned*, *incomplete*, or *failed*. Conditions may be removed as indicated below. Incomplete work must be made up before the final examinations of the following year.

In order to become eligible for final examinations, students are required to attend at least four-fifths of the lectures in each course. This rule is not intended for the benefit of those who seek admission after the opening of the college year, but is designed to cover cases of sickness or unavoidable absence. It does not apply to laboratory courses which must be taken in full and must be entered during the first week in which they begin.

Students having conditions in more than two major or in more than three minor subjects of the first year cannot enter upon the second year's work. All entrance conditions must be removed before the next spring examination. Candidates for graduation must have removed all conditions before entering upon the second semester of the graduating year.

Condition examinations are held during the first week of the course in September. The dates are usually posted in June. Conditioned students are required to inform themselves as to these dates as soon as they learn that they are conditioned, as no other notice is given.

A fee of one dollar is charged for a second condition examination.

Failure at the second condition obliges the student to repeat the work of the respective course.

Students who carry a condition into a succeeding year may find a conflict of lecture or laboratory hours. In such cases they are to give preference to the lower course.

Absence will not be excused unless satisfactory reasons are given to the professor in charge. Habitual absence without a satisfactory excuse, continued indifference to study, or persistently poor scholarship may subject the student to temporary or permanent suspension. Students are earnestly requested to be present at the beginning of the school

year, but those who cannot enter in the fall may enter at the beginning of the second semester taking any of the subjects beginning then. Any of the facilities for work in the University are open to the students of this College, subject to the approval of the Dean. Opportunity is afforded to do advanced work in all branches. Text-books may be obtained after coming to the University.

The work of the College, as outlined in the following pages, is conducted by means of lectures, recitations, and laboratory exercises. Students find their time fully occupied. Those who feel unable to complete the work in two years may divide it in a manner to complete it in three years. Practicing pharmacists who desire to take certain branches of study may avail themselves of any of the college facilities.

### GRADUATION REQUIREMENTS

Regular attendance at lectures, recitations, and laboratory exercises is required. Students will not be permitted to present themselves for final examination unless they have been in attendance upon at least seven-eighths of the total of work.

Every person upon whom the degree is conferred must be of good moral character and must be at least twenty-one years old; must have attended two full lecture and laboratory courses, the last at this College, and must have passed a successful examination in the subjects required for graduation.

Drug store experience is not a requirement for graduation.

Those who fail to appear for examination after having paid their full fee, or those who do not pass satisfactorily, will be permitted to present themselves at any subsequent examination, upon payment of an additional fee of five dollars, and complying with all other requirements.

### DEGREES

The College confers the degree of Bachelor of Pharmacy, Master of Pharmacy, and Doctor of Pharmacy for the completion of respectively the regular and the two graduate courses.

### FEEs

#### *Two-Year Regular Course*

First-year tuition.....	\$82.50
Second-year tuition.....	82.50
	—————\$165.00

#### *Three-Year Regular Course*

First-year tuition.....	\$55.00
Second-year tuition.....	55.00
Third-year tuition.....	55.00
	—————\$165.00
Annual deposit covering all laboratories, etc.....	\$5.00
Second condition examination fee, each subject .....	1.00



*First Graduate Course*

Tuition for each semester . . . . .	\$10.00
Annual deposit . . . . .	5.00

There are no other tuition fees. Fees are payable at the time of registration. Those desiring to take special work will be required to pay an average of ten dollars a subject for the lecture courses and twenty-five dollars for the laboratory courses.

Students are to provide themselves with a designated set of metric weights, a set of apothecary's weights, steel spatulas, and note and drawing books. The expense of these may be kept within three dollars. Students using platinum crucibles are charged for them. Upon the return of the crucible in the original condition the charge is cancelled; if the crucible is in any wise damaged the full value is collected from the student.

Fees will not be returned, except in case of discontinuance for sufficient reason before the student has been assigned to a place in the laboratory.

A deposit of five dollars will be made with the Cashier each year, by every student, at the time of enrollment as a caution fee. The fee is intended to cover the cost of unnecessary damage to or in the college buildings and of breakage and loss of laboratory apparatus, material, penalties for late registration or late payment of fees, condition examinations, and the rental of post-office box, locker, etc. The unused balance will be returned to the student at the close of each year. If responsibility for such damage cannot be individually fixed, a pro rata charge upon all students will be made.

In each laboratory course the student will be assigned a certain amount of apparatus and material, for which he will give a receipt. At the end of each course, if such apparatus and material are restored in good condition, this receipt will be returned to him. All apparatus lost or damaged will be charged to him, and must be paid for before he can receive credits for his course, or take his annual examinations.

## COLLEGE TRAINING FOR PHARMACISTS

The recognition of the need of substantial college training for pharmacists finds expression in many ways. In New York, Pennsylvania, Hawaii, Wisconsin, Ohio, Louisiana, and Washington, such training is obligatory either by law or by rule of the boards of pharmacy. In a number of other states credit is given for college work. In Minnesota graduates from recognized colleges need to have had only two years of practical experience while all others must have had four years of drug store experience before they become eligible for examination by the State Board of Pharmacy for full license to practice in Minnesota. Graduates of the three-year course who have gained practical experience concurrently with their college work need only one additional year of drug store experience before they become eligible for examination for full registration.

At the Joint Conference of the National Association of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties, held at Indianapolis, Indiana, in September, 1906, the following resolution was adopted:

"Special education for the practice of pharmacy is in this age a necessity and should as rapidly as possible be made compulsory. The rules of the boards of pharmacy are such as to promote and encourage it in all practicable ways. The special pharmaceutical education should include substantial laboratory courses." The training advocated by these two most representative bodies and by the American Pharmaceutical Association can be obtained only at colleges or schools of pharmacy of recognized standing. It is admitted that the State of Minnesota through its University College of Pharmacy is affording instruction of the most approved kind.

In the organization of this college the Board of Regents and the Faculty have had the co-operation of the pharmacists of the State. The character of instruction is of high order and every effort is made to comply with the demands of the profession of the Northwest, or elsewhere, in the maintenance of a course of instruction of the highest grade.

#### POSITIONS FOR GRADUATES

The demand for graduates of this College has always been greater than the supply and is continually growing. The rule is that practically all of the senior class are engaged before graduation. This college is recognized in all states, including those in which standards of efficiency have been established.

#### STATE BOARD OF PHARMACY

The State Board of Pharmacy meets at the College four times each year to examine candidates for registration. For information concerning the Board or State examinations, address the Secretary of the Board, Mr. E. A. Tupper, 721 South 10th St., Minneapolis, Minnesota.

#### COLLEGE OF PHARMACY ALUMNI ASSOCIATION

The Alumni Association of the College of Pharmacy meets annually in the college building the day before Commencement, at 3 p. m. Every member of the Association is urgently requested to report change of address to the Secretary.

#### THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES

The College of Pharmacy of the University of Minnesota is one of the colleges constituting the membership of the American Conference of Pharmaceutical Faculties.

## COMMUNICATIONS

Address communications to the Dean, Professor Frederick J. Wulling, The University of Minnesota, Minneapolis, Minnesota.

## PHI DELTA CHI

The Theta chapter of the Phi Delta Chi fraternity was organized at the College of Pharmacy in 1904. Students of the college are eligible to membership.

THE NORTHWESTERN BRANCH OF THE AMERICAN  
PHARMACEUTICAL ASSOCIATION

The Northwestern Branch of the American Pharmaceutical Association, composed of the representative pharmacists of the Northwest, has its headquarters at the College of Pharmacy. About four meetings are held annually. Students of pharmacy are eligible to membership in the Branch, but are privileged to attend the meetings without becoming members.

## COURSES OF STUDY

Three courses are offered, the regular and two graduate courses.

The complete regular course extends over two years of nine full months each. Students may arrange their work so as to take the course in three years. The twenty-first annual course begins on September 16, 1912, which is the last day on which students in pharmacy may register without a fine. The office of the Registrar is open for the purpose of registration as early as September 10th, but students must first report at the Dean's office in the pharmacy building.

In addition to the regular 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. The curriculum includes higher pharmaceutical chemistry, pharmaceutical assaying, higher organic chemistry, proximate and ultimate analysis, chemistry of food, water analysis, toxicology, spectroscopic work, therapeutics, clinical microscopy 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 to the first graduate course 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 this college; an acquaintance with either German or French sufficient to enable the student to read and understand the scientific literature of those languages. The fees for this course are ten dollars per semester. 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.

## PROPOSED NEW COURSES

Beginning as soon as the proposed enlarged quarters of the College permit, two additional courses may be instituted: the one a lower and shorter than the regular course to conform to the minimum requirements of the American Conference of Pharmaceutical Faculties; the other, a higher than the regular course to lead to the degree of Bachelor of Science in Pharmacy, and to include four years of work. The details have not yet been worked out, but it is probable that the former will include about two-thirds of the work of the regular course and will cover two years of at least six months each and that the entrance requirements will include the first year in high school or equivalent training or whatever the entrance requirements of the Conference may be at the time.

The higher course will cover four years of nine months each and will include two years of academic and cultural work. The qualifications for entrance to this course will be the same as those required for entrance to the College of Science, Literature, and the Arts. Those presenting evidence of having completed the first two years of a collegiate course may complete the course in two years, providing the collegiate work completed includes certain subjects in the sciences and mathematics. Full announcement regarding these courses will be made duly.

## COURSES OF INSTRUCTION COMPRISING THE REGULAR PHARMACY COURSE

### FIRST YEAR

#### *First Quarter*

Botany 1, Comparative Morphology of the Cryptogams, six hours  
Pharmacy 9, Chemical Philosophy, five hours  
Pharmacy 1, History of Pharmacy; Pharmacy 2, Metrology; and Pharmacy 3, Physics of Pharmacy, six hours  
Chemistry 1, General, fifteen hours

#### *Second Quarter*

Botany 1, Comparative Morphology of the Cryptogams, six hours  
Pharmacy 10, Pharmaceutical Chemistry of the Non-Metals and their Preparations, three hours  
Pharmacy 3, Physics of Pharmacy, six hours  
Pharmacy 7, Pharmacy Quiz, one hour  
Chemistry 2, Qualitative Analysis, fifteen hours

#### *Third Quarter*

Botany 2, Morphology, Anatomy, and Classification of Higher Seed Plants, six hours  
Pharmacy 11, Pharmacopoeial Inorganic Salts and their Official Preparations, two hours  
Pharmacy 4, Pharmaceutical Processes, and Pharmacy 5, Pharmacopoeial Preparations, eight hours  
Pharmacognosy 1, Pharmacognosy of the Cryptogams, and Pharmacognosy 2, Pharmaco-Histology, three hours  
Pharmacy 7, Pharmacy Quiz, one hour  
Materia Medica 1, Inorganic Materia Medica, three hours  
Chemistry 5, Organic Chemistry, fifteen hours

#### *Fourth Quarter*

Botany 2, Morphology, Anatomy, and Classification of Higher Seed Plants, six hours  
Pharmacy 11, Pharmacopoeial Inorganic Salts and their Official Preparations, two hours  
Materia Medica 1, Inorganic Materia Medica, three hours

Pharmacy 5, Pharmacopoeial Preparations, and Pharmacy 6, Mathematics of Pharmacy, nine hours  
 Pharmacy 7, Pharmacy Quiz, two hours  
 Pharmacy 8, Identification of Inorganic Official Preparations, one hour  
 Pharmacognosy 1, Pharmacognosy of the Cryptogams, and Pharmacognosy 2, Pharmaco-Histology, three hours  
 Chemistry 5, Organic Chemistry, fifteen hours

#### SECOND YEAR

##### *First Quarter*

Pharmacy 12, Classification of Pharmaceutical Organic Compounds, Pharmacy 13, Chemistry of the Pharmacopoeial Organic Compounds and their Preparations, two hours  
 Pharmacy 14, Pharmacopoeial Testing, sixteen hours  
 Pharmacognosy 3 and 4, Pharmacognosy of the Angiosperms, and Pharmacognosy 5, Field Work, six hours  
 Pharmacy 23, Identification of Salts, one hour  
 Pharmacy 16, Incompatibility, and Pharmacy 17, Dispensing, twenty hours  
 Materia Medica 2, Organic Materia Medica, three hours

##### *Second Quarter*

Pharmacy 13, Chemistry of the Pharmacopoeial Organic Compounds and their Preparations, two hours  
 Pharmaceutical Mineralogy and Crystallography 1, four hours  
 Pharmacognosy 3 and 4, Pharmacognosy of the Angiosperms, and Pharmacognosy 5, Field Work, six hours  
 Pharmacy 18, Manufacture of Official Organic and Inorganic Salts and Preparations, fourteen hours  
 Pharmacy 14, Pharmacopoeial Testing, ten hours  
 Pharmacy 23, Identification of Salts, one hour

##### *Third Quarter*

Pharmacognosy 3 and 4, Pharmacognosy of the Angiosperms, and Pharmacognosy 5, Field Work, nine hours  
 Chemistry 3, Quantitative Analysis, nine hours  
 Pharmacy 23, Identification of Salts, one hour  
 Pharmacy 13, Chemistry of the Pharmacopoeial Organic Compounds and their Preparations, two hours  
 Pharmacy 19, National Formulary, fifteen hours  
 Therapeutics 3, Therapeutics, one hour  
 Physiology 1, Physiology, Anatomy, and Histology, two hours

##### *Fourth Quarter*

Pharmacy 15, Quantitative Analysis of U. S. P. Salts and Preparations, five hours

Pharmacy 13, Chemistry of the Pharmacopoeial Organic Compounds and their Preparations, one hour

Pharmacy 23, Identification of Salts, one hour

Pharmacognosy 3 and 4, Pharmacognosy of the Angiosperms, and Pharmacognosy 5, Field Work, nine hours

Pharmacy 20, Pharmaceutical Assay; Pharmacy 21, Synthetic Remedies; Pharmacy 22, Homeopathic Pharmacy, and Pharmacy 24, Microchemistry, ten hours

Pharmacy Law, one and one-half hours

First Aids, one and one-half hours

## DEPARTMENTAL STATEMENTS

### BACTERIOLOGY

#### 1. General Bacteriology (Postgraduate) Dr. WESBROOK

Twelve lecture and recitation hours, and twelve laboratory hours per week; second year, fourth quarter.

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.

### BOTANY AND MICROSCOPY

FREDERIC E. CLEMENTS, Ph.D., Professor of Botany  
FREDERIC K. BUTTERS, B.S., B.A., Assistant Professor of Botany  
ALICE MISZ, M.A., Instructor in Botany  
..... Assistant

1, 2, and 3: ten credits (seventy-two hours lecture, one hundred forty-four hours laboratory); first year.

#### 1. Comparative Morphology of the Cryptogams Messrs. CLEMENTS and BUTTERS and Miss MISZ

The course embraces morphology of the cryptogams. Especial attention is paid to the green Algae, the foundation of the vegetable kingdom. The other groups of Algae and the Fungi are briefly treated, particular stress being laid on their economic relations to other plants, to animals and to man. Examples of liver-worts, mosses, ferns, and their allies are studied in the laboratory, and the line of development which leads from the Algae through the archeogoniate series to the seed plants is emphasized.

#### 2. The Morphology, Anatomy, and Classification of the Higher Seed Plants Messrs. CLEMENTS and BUTTERS and Miss MISZ Prerequisite, Botany 1.

In this course especial attention is paid to vegetable histology. The characteristic plant tissues are examined, and their arrangement is noted in roots, stems, leaves, fruit, and seeds. The formation and occurrence of carbohydrates, glucosides, alkaloids, organic acids, resins, gums, gum resins, and oleo-resins are carefully studied. Considerable time is devoted to the study of the basis of classification of flowering plants and to the identification of plants in the field.



## 3. Micro-Botany

Mr. BUTTERS and Miss MISZ

Designed to furnish practical training in the use of the microscope, in the preparation of material for microscopic examination, including the use of microchemical reagents, and in the representation by drawings of all structures observed.

The work of this course is co-incident with that of 2 and 3.

## CHEMISTRY

GEORGE B. FRANKFORTER, M.A., Ph.D., Professor of Chemistry

CHARLES F. SIDENER, B.S., Professor of Quantitative Chemistry

EVERHART P. HARDING, M.S., Ph.D., Assistant Professor of Chemistry

IRA HARRIS DERBY, Ph.D., Assistant Professor of Chemistry

WILLIAM H. HUNTER, Ph.D., Instructor in Chemistry

## 1. General Chemistry

Messrs. DERBY and HUNTER

Five credits (forty-five hours lecture, ninety hours laboratory); first quarter, first year.

This course includes a study of the chemical properties of the metallic and non-metallic elements.

## 2. Qualitative Analysis

Messrs. DERBY and HUNTER

Five credits (forty-five hours lecture, ninety hours laboratory); second quarter, first year. Prerequisite, Chemistry 1.

This course covers the common reactions of the metals and acids and their qualitative separation. The ionic theory and the law of mass action are discussed with especial reference to qualitative reactions.

## 3. Quantitative Analysis

Mr. SIDENER and ASSISTANT

Three credits (twenty-seven hours lecture, fifty hours laboratory); third quarter, second year. Prerequisites, Chemistry 1 and 2.

A study of the principles of quantitative estimation; gravimetric, volumetric, and gasometric.

## 4. Toxicology, Water and Food Analysis (Postgraduate)

Messrs. FRANKFORTER, DERBY, and HARDING

Three and one-half credits (twenty-seven hours lecture, seventy-two hours laboratory); second quarter, second year.

The chemistry of the atmosphere, water, soil, etc.; the sanitary examination of air and water.

## 5. Organic Chemistry

Messrs. FRANKFORTER and DERBY

Nine and one-half credits (seventy-two hours lecture, one hundred ninety-eight hours laboratory); third and fourth quarters, first year.

This course includes work in both the aliphatic and aromatic series and the preparation of the more important compounds.

## CLINICAL MICROSCOPY

## 1. Clinical Microscopy (Postgraduate)

Drs. ROBERTSON and HYNES

Instruction includes (a) the macroscopical study of urine, its colors, sediments, and finer chemical tests; (b) the microscopical study of urinary sediments, including blood, pus, epithelial cells, casts, etc.

## DISPENSARY PRESCRIPTION PRACTICE

The dispensing department of the University Hospitals Out-Patient Department at 1808 Washington Avenue South, Minneapolis, has lately been placed in charge of the College of Pharmacy. The senior students are sectioned into classes of three for the purpose of doing practical prescription work at the dispensary under the direction of Dr. Blossmo. The dispensary practice continues throughout the college year.

## FIRST AIDS TO THE INJURED

1. Emergency Cases Dr. McCLOUD  
 Two-thirds credit (twelve hours lecture); third quarter, second year.  
 A series of lectures designed to qualify the pharmacist to administer upon emergency cases before the arrival of the physician.

## MATERIA MEDICA AND THERAPEUTICS

EDGAR D. BROWN, Phm.D., M.D., Professor of Materia Medica and Therapeutics

CHARLES F. DIGHT, M.D., Lecturer in Materia Medica  
 ..... Assistant in Materia Medica

1. Inorganic Materia Medica Dr. BROWN and ASSISTANT
2. Organic Materia Medica Dr. BROWN and ASSISTANT  
 Six credits (one hundred and eight hours lecture and recitation); third and fourth quarters, first year; first and second quarters, second year.

The work in inorganic and organic materia medica is based principally on the U. S. P., but unofficial and synthetic drugs are also studied. The course includes the study of the general characteristics of drugs and physiological action. Pharmacodynamics, including the study of the identity and quality of drugs, shares attention in the course in pharmacognosy.

3. Therapeutics Drs. BROWN and DIGHT  
 One credit (eighteen hours lecture and recitation); third quarter, second year. Prerequisites, Materia Medica 1 and 2.  
 In this course drugs are studied in groups, as governed by their physiologic action, and the therapeutic features of such groups are described. Remedial measures other than those depending upon drugs are fully considered.

## PHARMACY

FREDERICK J. WULLING, Phm.D., LL.M., etc., Professor of Pharmacology  
 GUSTAV BACHMAN, Phm.D., Phm.M., Instructor in Pharmacy  
 OSCAR BLOSSMO, Ph.C., Instructor in Dispensing

## History of Pharmacy

Dr. WULLING

One-third credit (six hours lecture); first quarter, first year.

The history of the U. S. Pharmacopoeia through all its revisions. Dispensatories, text-books, and works of reference.

## 2. Metrology

Drs. WULLING, BACHMAN, and BLOSMO

Two-thirds credit (twelve hours lecture); first quarter, first year.

Weights and measures, including metric system; balances—construction, varieties, methods of weighing; specific gravity in detail; specific volume, alligation, etc.

## 3. The Physics of Pharmacy

Drs. WULLING, BACHMAN, and BLOSMO

Three credits (eighteen hours lecture, seventy-two hours laboratory); second quarter, first year. Prerequisite, Pharmacy 2.

Students are required to have had elementary physics before entering. This course covers a review and more extended elucidation of such divisions of physics as apply to pharmaceutical processes. Special attention is paid to heat. Specific heat; thermometers—the various scales, testing and comparing thermometers; combustion of solids, liquids, and gases in various kinds of furnaces, stoves, and burners; application of heat in drying ovens, steam, hot-air and water ovens; drying closets, desiccators, blow-pipes, crucibles; baths for controlling and equalizing heat; evaporation—spontaneous, rapid, slow, in vacuo; ebullition—boiling points, fusion; sublimation, calcination, dehydration, torrefaction, roasting, reduction, oxidation, carbonization, deflagration, ignition, etc.; solution—pharmaceutical, simple, chemical, saturated; circulatory displacement; dialysis—construction of dialyser, osmosis endosmosis, exosmosis, crystalloids and colloids, etc.

## 4. Pharmaceutical Processes

Drs. WULLING, BACHMAN, and ASSISTANT

Three and one-half credits (twenty-four hours lecture, seventy-two hours laboratory); second quarter, first year. Prerequisite, Pharmacy 3.

The processes not taken up in Course 3 constitute the subjects of this course. In part they are: Drug grinding and powdering; comminution; contusion; trituration; sifting; elutriation; levigation; lixiviation; filtration—filtering media, filtration of solutions, oils, syrups, rapid filtration, filtration in vacuo, hot filtration, colation; washing—displacement, continuous; decantation—the syphon and its uses; precipitation—methods, vessels, separating, drying, weighing; granulation—granular effervescent salts; desiccation; exsiccation; crystallization—water of crystallization, deliquescence, methods of obtaining crystals, collecting, draining, washing, drying crystals, fractional crystallization; distillation—simple, fractional, destructive; extraction; maceration; expression; percolation—history, theories, percolators, exhaustion, repercolation, continuous percolation, fractional percolation; clarification; decolorization.

## 5. Pharmacopoeial Preparations

Drs. WULLING, BACHMAN, and ASSISTANT

Five credits (thirty hours lecture, one hundred twenty hours laboratory); third and fourth quarters, first year.

This course includes the study and preparation of official bodies for which the U. S. P. gives formulae and processes, and includes waters, solutions, syrups, mucilages, spirits, infusions, decoctions, tinctures, fluid extracts, vinegars, wines, liniments, oleates, ointments, cerates, resins, oleo-resins, honeys; glycerites, mixtures, emulsions, elixirs, collodions, pills, capsules, powders, suppositories, bougies, plasters, papers, cachets, etc.

## 6. Mathematics of Pharmacy

Drs. WULLING and BACHMAN

While students are required to have a preparation in Arithmetic and Algebra before entering, they receive frequent drills at stated hours and as occasion requires or suggests throughout the entire course. Students are required to take final examinations in the subject at the end of the first and second year, at which examination they must attain a rating of at least eighty per cent.

7. Pharmacy Quiz Dr. BACHMAN  
 Three credits (fifty-four hours); second, third, and fourth quarters, first year. Prerequisites, Pharmacy 2, 3, 4, and 5.  
 A thorough review of the work covered in Courses 2, 3, 4, and 5.
8. Identification of Inorganic Official Preparations Dr. BACHMAN  
 One credit (eighteen hours); second and third quarters, first year.  
 The study of the physical properties of official preparations.
9. Chemical Philosophy Dr. WULLING  
 One and one-half credits (twenty-seven hours lecture); first quarter, first year.  
 Treats of the principles underlying chemistry, and endeavors to elucidate chemical facts and phenomena. The subject is divided into chemical statics, embracing the study of the theories of atoms and molecules, atomic weights, atomic and molecular volume, quantivalence, molecular structure, ions, electric qualities, etc., and chemical dynamics, the study of reactions and their equations, thermics, chemical properties in general, etc.
10. The Pharmaceutical Chemistry of the Non-Metals and their Preparations Dr. WULLING  
 One and one-half credits (twenty-seven hours lecture); second quarter, first year. Prerequisite, Pharmacy 9.
11. Pharmacopoeial Inorganic Salts and Their Official Preparations Dr. WULLING  
 Three credits (fifty-four hours lecture); third and fourth quarters, first year. Prerequisite, Pharmacy 10.  
 Especial reference to description, properties, and manufacture.
12. Classification of Pharmaceutical Organic Compounds Dr. WULLING  
 One credit (eighteen hours lecture); first quarter, second year.  
 A preparation for Pharmacy 13.
13. Chemistry of the Pharmacopoeial Organic Compounds and their Preparations Dr. WULLING  
 Three credits (fifty-four hours lecture); entire second year. Prerequisite, Pharmacy 12.  
 This course includes the critical study of cellulin and its derivatives, destructive distillation products, starches, sugars, fermentation products, organic acids, fixed oils and fats, volatile oils, waxes, and animal fats, alkaloids, glucosides, animal drugs and products, etc.
14. Pharmacopoeial Testing Drs. WULLING, BACHMAN, and ASSISTANTS  
 Five credits (thirty-six hours lecture, one hundred eight hours laboratory); first and second quarters, second year.  
 A critical study of the identity, purity, limit, and percentage tests of the Pharmacopoeia and their application either wholly or in part to practically every official organic and inorganic salt and compound.
15. Quantitative Analysis of U. S. P. Salts and Preparations Drs. WULLING and BACHMAN  
 Two credits (eighteen hours lecture, thirty-six hours laboratory); fourth quarter, second year. Prerequisites, Chemistry 3 and Pharmacy 14.  
 This course includes the gravimetric, volumetric, and gasometric determinations of the U. S. Pharmacopoeia, but not pharmaceutical assay work (20).

16. Incompatibility Drs. WULLING and BACHMAN  
One-half credit (nine hours lecture); first and second quarters, second year.

Therapeutic, pharmaceutical, and chemical incompatibility is taken up in lecture and recitation work preliminary to 17.

17. Dispensing Drs. WULLING and BACHMAN  
Five and one-half credits (twenty-seven hours lecture, one hundred forty-four hours laboratory); first and second quarters, second year.  
Prerequisite, Pharmacy 16.

The study of the prescription and practical work in dispensing upwards of one hundred typical prescriptions.

18. Manufacture of Official Organic and Inorganic Salts and Preparations Drs. WULLING, BACHMAN, and ASSISTANT  
Four and one-third credits (twenty-four hours lecture, one hundred eight hours laboratory); second quarter, second year.

The preparation of about forty official salts included in the course.

19. National Formulary Drs. WULLING and BACHMAN  
One credit (six hours lecture, twenty-four hours laboratory); third quarter, second year.

This course, lecture and laboratory, includes the study of the National Formulary and the making of one or more members of each class of preparations.

20. Pharmaceutical Assay Drs. WULLING, BACHMAN, and ASSISTANT  
One and one-third credits (six hours lecture, thirty-six hours laboratory); fourth quarter, second year. Prerequisites, Pharmacy 14 and Chemistry 3.

The quantitative determination of active constituents of a number of the potent organic drugs and preparations.

21. Synthetic Remedies Dr. WULLING  
One-third credit (six hours lecture); fourth quarter, second year.  
Prerequisite, Pharmacy 12 and 13 and Chemistry 4.

A study of the chemistry of synthetic remedies in medical use.

22. Homeopathic Pharmacy Drs. WULLING and BACHMAN  
Fourth quarter, second year.

A brief exposition of the principles underlying homeopathic medication, with some laboratory work.

23. Identification of Salts Dr. BACHMAN  
One and one-half credits (thirty-six hours laboratory); entire second year.

The study of the physical identity of the more important official inorganic and organic salts.

24. Micro-Chemistry Dr. WULLING  
Fourth quarter, second year. Optional.

A brief course is provided for seniors if time permits.

## PHARMACEUTICAL JURISPRUDENCE

1. Law for Pharmacists Dr. WULLING  
 Two-thirds credit (twelve hours lecture); fourth quarter, second year.  
 The lectures introduce the subjects of contracts, agency, commercial paper, and insurance, and discuss the liability of retail and manufacturing pharmacists, etc.

## PHARMACEUTICAL MINERALOGY AND CRYSTALLOGRAPHY

1. Mineralogy Mr. GROUT  
 One credit (eighteen hours lecture); second quarter, second year.  
 A study of the occurrence and properties of minerals of pharmaceutical importance; ores of metals used in pharmacy; non-metallic minerals and mineral waters in their mineralogic and geologic relations.
2. Crystallography Mr. GROUT  
 One credit (eighteen hours lecture); second quarter, second year.  
 Prerequisite, Mineralogy 1.  
 A survey of form and more evident physical characters as a basis for practice in sight recognition of economic minerals and their distinction from common rocks.

## PHARMACOGNOSY

The courses in Pharmacognosy are designed to give the student that specific training which will enable him to determine the identity and quality of both crude and powdered vegetable drugs. Some attention is given in these courses to the methods and results of pharmacophysiological research.

..... Professor of Pharmacognosy  
 EDWIN L. NEWCOMB, P.D., Instructor in Pharmacognosy  
 (At present in charge of the work)  
 MANLEY H. HAYNES, Phm.B., Assistant

Courses 1 and 2 Dr. NEWCOMB and ASSISTANT  
 Together, two credits (eighteen hours lecture, thirty-six hours laboratory); second semester, first year.

1. Pharmacognosy of the Cryptogams  
 In this course many of the valuable drugs and economic products obtained from the cryptogams are studied.
2. Pharmaco-Histology  
 This course is designed to complete the preparation of the student for the senior work in Pharmacognosy. It includes micrometry and the detailed study of the inner structure of the parts of the higher plants as illustrated in about forty official and unofficial drugs.

Courses 3, 4, and 5

Dr. NEWCOMB and ASSISTANT

Together, ten credits (one hundred eight hours lecture, two hundred sixteen hours laboratory, including field work); first and second semester, second year. Prerequisites, Pharmacognosy 1; Botany 1, 2, and 3.

3 and 4. Pharmacognosy of the Angiosperms

In this course the time is devoted to the scientific study both macroscopically and microscopically, of the official and of some of the unofficial vegetable drugs. The work naturally divides itself into the study of crude drugs (Course 3) and of powdered drugs (Course 4.)

For convenience and purposes of comparison drugs will be studied under Course 3 in the following order: Seeds, roots, and rhizomes; barks, woods, and pith; flowers; fruits; leaves and herbs; exudations and other plant products. Here or at some other consistent place animal drugs and plant and animal fibers will be studied.

In Course 4 the more important vegetable drugs occurring in powdered form are examined and studied microscopically. The adulterants of powdered drugs and their detection are given considerable attention.

5: Field Work

In the spring of the year and at other suitable times the classes are taken on field excursions to search for native medicinal plants. The study of the distinguishing characteristics of certain orders, families, and genera, to which the medicinal plants belong, is included in this work.

## PHYSIOLOGY

RICHARD OLDING BEARD, M.D., Professor of Physiology

M. RUSSELL WILCOX, M.D., Assistant Professor of Physiology

FREDERICK H. SCOTT, B.A., Ph.D., M.B., D.Sc., Assistant Professor of Physiology

1. Physiology, Anatomy, and Histology Drs. BEARD, WILCOX, and SCOTT

One credit (eighteen hours lecture and recitation); first quarter, second year.

The work covers the study of the physiological properties of the cell, the nutritive media, the nervous mechanisms in general, muscular tissues, connective tissues, and epithelial tissues. The subjects of anatomy and histology are touched upon sufficiently to lay the foundation for the proper understanding of physiological functions.

Special attention is directed to the action of drugs and their effects upon the various systems.

2. Qualitative and Quantitative Urinalysis (Postgraduate) Dr. BEARD

One credit (nine hours lecture, eighteen hours laboratory); second semester. Prerequisite, Physiology 1.

Lectures, recitations, and laboratory work. The laboratory work includes the qualitative analysis of representative specimens of urine as regards their physical properties, inorganic and organic constituents, as well as the quantitative determination of chlorides, urea, ammonia, total nitrogen, sugar and albumin, together with the preparation of reagents.

3. Experimental Physiology (Postgraduate) Drs. BEARD and WILCOX

Four credits (thirty-six hours lecture, seventy-two hours laboratory); second semester. Prerequisite, Physiology 2.

Laboratory work and demonstrations. A study of physiologic apparatus, electric stimuli, and methods of experimentation; the demonstration and performance of experiments which illustrate physiologic function in the muscular, nervous, vascular, respiratory,

and glandular systems; and the study of the cardiac areas, the heart and respiratory sounds, and of pulse tracings, including training in the use of the sphygmograph, the stethoscope, phonendoscope, etc.

#### 4. Physiological Chemistry and Microscopy (Postgraduate)

Drs. BEARD and WILCOX

Eight credits (seventy-two hours lecture, one hundred forty-four hours laboratory); first semester. Prerequisite, Physiology 3.

Laboratory work and demonstrations. A practical study of the several classes of proteids; of carbohydrates, fats, muscle, and bone; of gastric juice, saliva, pancreatic juice, and bile in their respective digestions; of glycogen, and of blood lymph, chyle, and milk. Microscopic study of the carbohydrates in vegetable and animal forms; of the physiologic emulsions of fat; of the crystalline waste products, and of the physiologic conditions of the blood cells and of blood crystals. Practical instruction is given during this course in the enumeration of blood cells, in the estimation of haemoglobin and of the corpuscles in mass, in the spectroscopic examination of the blood in the determination of blood tests and in the use of polariscope.

### MINNESOTA PHARMACY LAW

Several lectures elucidating the rights, duties, privileges, and liabilities of pharmacists under the State law regulating the practice of pharmacy, are given by special lecturers near the close of the second year.

### SPECIAL LECTURES

From twelve to fifteen special lectures on subjects related to the practice of pharmacy are delivered by well-known pharmacists and others at intervals during the college year.

### LECTURE AND LABORATORY SCHEDULES

Lecture and laboratory schedules will be posted on the college bulletin in September.

The college year is divided into four quarters, the first and second constituting the first semester, and the third and fourth, the second semester. The college year covers nine full months or thirty-eight weeks. Each quarter consists of nine working weeks. To the second and fourth quarters, one examination week is added.



## STUDENTS

### SENIORS—27

Ash, Ben S., Delano  
Barber, Ralph C., Long Prairie  
Barnett, Samuel, St. Paul  
Beedy, Harry V., Minneapolis  
Cannon, Raymond W., Minneapolis  
Cutting, Chas. P., Sleepy Eye  
Faas, Joseph P., Sleepy Eye  
Finberg, Joseph, St. Paul  
Goodwin, George E., Webster, S. D.  
Hanson, Hjalmar T., Eau Claire, Wis.  
Henney, Morris W., DeSmet, S. D.  
Holverson, Alice M., Alexandria  
Hughes, Stuart, Minneapolis  
Hutchinson, Roy, Duluth  
Kusterman, Fred G., St. Cloud  
Larson, George A., Atwater  
\*Muehlbauer, Adolph A., St. Paul  
Olson, Alfred W., Argyle  
Perkins, Clarence A., Annandale  
Remington, Porter B., Minneapolis  
Riley, Cusack M., Waukon, Ia.  
Schaffer, Leo L., Delano  
Scheer, Wesley A., Howard Lake  
Schreiter, Norman C., Red Lake Falls  
Steinke, Benjamin F., Sleepy Eye  
Swenson, Orin L., Lamberton  
Witter, Henry R., Park Rapids

### JUNIORS—43

Ames, Harry, Minneapolis  
Blaustein, Hynie, Minneapolis  
Blomquist, Arthur T., Foreston  
Breckenridge, Clinton S., Pine City  
Brown, Alfred C., Minneapolis  
Capron, Ralph E., Minneapolis  
Clark, A. Kelley, River Falls  
Cohen, Ben M., Minneapolis  
Davidson, G. Milnor, Minneapolis  
Dunham, Eugene, Faribault  
Emerson, Leslie, Elmore  
Epstein, Abe L., Minneapolis  
Errickson, Alfred, Cashton  
Ertel, Liguori M., Maple Lake  
Graham, Thomas E., Park Rapids  
Grain, Albert, Gibbon  
Hast, Theo. J., Andrew, Ia.  
Herchmer, J. Lyndale, Kamloops, B. C.  
Hilyard, James K., St. Paul  
Holm, Noel, Minneapolis  
Hoppe, Alfred G., Minneapolis  
Hyde, Walter K., Savanna, Ill.  
Johnson, Archie O., Hudson, Wis.  
Laue, Edwin R., New Ulm  
Lawler, Lawrence, Minneapolis  
Mee, James J., Gaylord  
Micklesen, Walter H., Hudson, Wis.  
O'Brien, Frank P., Eden Valley  
Olien, Andrew T., Clarkfield  
Ostedt, Joseph H., St. Paul  
Pallmer, Holger E., Litchfield  
Pope, Samuel L., Thief River Falls  
Price, Joseph, Le Roy  
Remer, Edwin A., Little Falls  
Rempel, Peter J., Butterfield  
Scott, Roy T., Minneapolis  
Stevenson, Robert L., Albert Lea  
Strimling, Joseph, Minneapolis  
Swanson, Carl A., St. Paul  
Vikre, Sigfred M., Milan  
Wallraff, Winfred E. A., St Paul  
Watson, Hugh M., St. Charles  
Young, Clift H., Fergus Falls

### UNCLASSED—7

Abramovitz, Samuel H., Minneapolis  
Irish, Horace D., Des Moines, Ia.  
Levin, Sadie Z., Minneapolis  
Loe, Fred, Minneapolis  
Rosenthal, Joseph, Minneapolis  
Shine, John D., Minneapolis  
Shoemaker, Ralph H., North Redwood

\*Deceased.

# The University of Minnesota

## THE COLLEGE OF DENTISTRY

1912-1913



BULLETIN OF THE UNIVERSITY OF MINNESOTA  
VOL. XV, NO. 4. MAY 1912

Entered at the Post Office  
in Minneapolis as second-class matter  
MINNEAPOLIS, MINN.

1912							1913																					
<b>JULY</b>							<b>JANUARY</b>							<b>JULY</b>														
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# UNIVERSITY CALENDAR

1912-1913

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.

1912

September	3	Tuesday	Registration closes except for new students
September	3-10	Week	Fees payable except for new students
September	10-16	Week	Entrance examinations, registration of new students, and payment of fees
September	11-17	Week	Military encampment of cadets
September	18	Wednesday	First semester begins
November	27	Wednesday	Thanksgiving recess begins 6:00 p. m.
December	2	Monday	Thanksgiving recess ends 8:00 a. m.
December	20	Friday	Christmas vacation begins 6:00 p. m.

1913

January	7	Tuesday	Christmas vacation ends 8:00 a. m.
January	21	Tuesday	Registration for second semester closes
January	27	Monday	Final examinations begin
January	28	Tuesday	Payment of fees for second semester closes
February	5	Wednesday	Second semester begins
February	12	Wednesday	Lincoln's Birthday: a holiday
February	13	Thursday	First semester class reports due
February	22	Saturday	Washington's Birthday: a holiday
March	19	Wednesday	Easter recess begins 6:00 p. m.
March	27	Thursday	Easter recess ends 8:00 a. m.
May	30	Friday	Decoration Day: a holiday
June	2	Monday	Final examinations begin
June	7	Saturday	Second semester closes
June	8	Sunday	Baccalaureate service
June	9	Monday	Senior class day exercises
June	11	Wednesday	Alumni Day
June	12	Thursday	Forty-first Annual Commencement
June	13	Friday	Summer vacation begins

The University year for 1913-14 will begin Tuesday, September 9.

*Program of Entrance Examinations 1912-13*

Entrance examinations for admission to the various colleges of the University will be conducted according to the following schedule, in Room 205, Library Building, unless otherwise specified.

Any student finding a conflict in his program should report to the Registrar for adjustment.

Tuesday,	Sept. 10	9 a. m.	Astronomy, Botany, Geology, Chemistry, Physiography, Zoology
		2 p. m.	American Government, History, Physics, Economics, Commercial Geography
Wednesday,	Sept. 11	9 a. m.	English
		2 p. m.	German, French, Latin, Scandinavian
Thursday,	Sept. 12	9 a. m.	Elementary Algebra
		2 p. m.	Higher Algebra
Friday,	Sept. 13	9 a. m.	Plane Geometry
		2 p. m.	Solid Geometry

A representative of each department will be at the office of the head of the department each forenoon of entrance examination week from 9 to 12 to give information and advice.

## THE UNIVERSITY

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 COLLEGE OF FORESTRY, including—

FOREST EXPERIMENT STATIONS AT ITASCA AND CLOQUET

THE SCHOOL OF AGRICULTURE including—

THE DAIRY SCHOOL

THE SHORT COURSE FOR FARMERS

TEACHERS' SUMMER TRAINING SCHOOL

THE SCHOOL OF TRACTION ENGINEERING

THE SCHOOL OF AGRICULTURE, CROOKSTON

THE SCHOOL OF AGRICULTURE, MORRIS

THE EXPERIMENT STATIONS, including—

THE MAIN STATION AT ST. ANTHONY PARK

THE SUB-STATION AT CROOKSTON

THE SUB-STATION AT GRAND RAPIDS

THE SUB-STATION AT DULUTH

THE SUB-STATION AT WASECA

THE SUB-STATION AT ZUMBRA HEIGHTS

AGRICULTURAL EXTENSION

BUREAU OF RESEARCH IN AGRICULTURAL ECONOMICS

THE LAW SCHOOL

THE COLLEGE OF MEDICINE AND SURGERY, including—

THE SCHOOL FOR NURSES

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE SCHOOL OF MINES, including—

MINNESOTA SCHOOL OF MINES EXPERIMENT STATION

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

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THE GEOLOGICAL AND NATURAL HISTORY SURVEY

## THE BOARD OF REGENTS

The Hon. JOHN LIND, Minneapolis, President of the Board	-	-	1914
GEORGE EDGAR VINCENT, Ph.D., LL.D., Minneapolis	-	-	<i>Ex-Officio</i>
The President of the University			
The Hon. ADOLPH O. EBERHART, Mankato	-	-	<i>Ex-Officio</i>
The Governor of the State			
The Hon. C. G. SCHULZ, St. Paul	-	-	<i>Ex-Officio</i>
The State Superintendent of Public Instruction			
The Hon. W. J. MAYO, Rochester	-	-	1913
The Hon. MILTON M. WILLIAMS, Little Falls	-	-	1913
The Hon. HENRY B. HOVLAND, Duluth	-	-	1914
The Hon. A. E. RICE, Willmar	-	-	1915
The Hon. CHARLES L. SOMMERS, St. Paul	-	-	1915
The Hon. B. F. NELSON, Minneapolis	-	-	1916
The Hon. PIERCE BUTLER, St. Paul	-	-	1916
The Hon. CHARLES A. SMITH, Minneapolis	-	-	1916

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## EXECUTIVE OFFICERS

GEORGE EDGAR VINCENT, Ph.D., LL.D., President  
 ERNEST B. PIERCE, B.A., Registrar  
 GEORGE H. HAYES, University Comptroller and Secretary of the Board of Regents  
 JAMES T. GEROULD, B.A., Librarian  
 JOHN F. DOWNEY, M.A., C.E., Dean of the College of Science, Literature, and the Arts  
 FRANCIS C. SHENEHON, C.E., Dean of the College of Engineering and Mechanic Arts  
 ALBERT F. WOODS, M.A., Dean and Director of the Department of Agriculture  
 WILLIAM R. VANCE, Ph.D., LL.B., Dean of the Law School  
 FRANK FAIRCHILD WESBROOK, M.A., M.D., C.M., Dean of the College of Medicine and Surgery  
 ALFRED OWRE, B.A., M.D., C.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, M.A., Ph.D., Dean of the School of Chemistry  
 GEORGE F. JAMES, Ph.D., Dean of the College of Education  
 HENRY T. EDDY, C.E., Ph.D., LL.D., Dean of the Graduate School  
 ADA L. COMSTOCK, M.A., Dean of Women

# THE COLLEGE OF DENTISTRY

## FACULTY

- GEORGE EDGAR VINCENT, Ph.D., LL.D., President 1005 5th St. S. E.  
CYRUS NORTHROP, LL.D., President Emeritus 519 10th Ave. S. E.  
ALFRED OWRE, B.A., M.D., C.M., D.M.D., Dean, Professor of Operative  
Dentistry and Dental Metallurgy 1700 Portland Ave.  
RICHARD OLDING BEARD, M.D., Professor and Director of the Depart-  
ment of Physiology and Pharmacology The Virginia, Lowry Hill  
THOMAS G. LEE, B.S., M.D., Professor and Director of the Department  
of Anatomy 509 E. River Road  
GEORGE B. FRANKFORTER, M.A., Ph.D., Professor of Chemistry  
525 E. River Road  
FRANK F. WESBROOK, M.A., M.D., C.M., Professor of Pathology and  
Bacteriology 906 5th St. S. E.  
THOMAS B. HARTZELL, D.M.D., M.D., Professor of Oral Surgery, Thera-  
peutics, and Clinical Pathology 716 Donaldson Bldg.  
OSCAR A. WEISS, D.M.D., Professor of Prosthetic Dentistry and Ortho-  
dontia 1602 Fremont Ave. N.  
CHARLES A. ERDMANN, M.D., Professor of Gross and Applied Anatomy  
612 9th Ave. S. E.  
FRANK W. SPRINGER, E.E., Professor of Electrical Engineering  
316 12th Ave. S. E.  
FORREST H. ORTON, D.D.S., Professor of Crown and Bridge Work  
653 Goodrich Ave., St. Paul  
JOHN BLACK JOHNSTON, Ph.D., Professor of Comparative Neurology  
715 Fulton St. S. E.  
EDGAR D. BROWN, Phm.D., M.D., Professor of Materia Medica and  
Pharmacology 3525 3rd Ave. S.  
JAMES M. WALLS, D.M.D., Professor of Operative Dentistry  
828 Lowry Bldg., St. Paul  
HENRY S. GODFREY, D.M.D., Clinical Professor of Operative Dentistry  
1766 Girard Ave. S.  
JAY N. PIKE, D.D.S., Clinical Professor of Orthodontia  
820 Donaldson Bldg.  
AMOS S. WELLS, B.A., D.D.S., Clinical Professor of Crown and Bridge  
Work 801 Andrus Bldg.  
WILLIAM F. LASBY, B.A., D.D.S., Clinical Professor of Prosthetic Dentistry  
425 Walnut St. S. E.  
IRA HARRIS DERBY, Ph.D., Assistant Professor of Chemistry  
2157 Commonwealth Ave., St. Paul



- ROBERT B. GIBSON, Ph.D., Assistant Professor of Physiological Chemistry  
222 Harvard St. S. E.
- RICHARD E. SCAMMON, Ph.D., Assistant Professor of Anatomy  
112 Church St. S. E.
- FREDERICK H. SCOTT, Ph.D., M.B., D.Sc., Assistant Professor of Physiology  
1023 University Ave. S. E.
- M. RUSSELL WILCOX, M.D., Assistant Professor of Physiology  
802 Donaldson Bldg.
- WILLIAM F. ALLEN, M.A., Instructor in Histology and Embryology  
92 N. 17th St.
- PETER J. BREKHUS, B.A., D.D.S., Instructor in Crown and Bridge Work  
3324 18th Ave. S.
- OSCAR COOPERMAN, D.D.S., Instructor in Prosthetic Dentistry  
637½ 6th Ave. N.
- NORMAN J. COX, B.S., D.M.D., Instructor in Operative Dentistry  
986 15th Ave. S. E.
- GEORGE M. DAMON, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy  
3340 Portland Ave.
- CHARLES F. DIGHT, M.D., Lecturer in Pharmacology 4818 39th Ave. S.
- CARL O. FLAGSTAD, D.D.S., Instructor in Prosthetic Dentistry  
2305 S. 7th St.
- EUGENE K. GREEN, B.A., M.D., Associate in Anatomy 307 Reid Corner
- ROBERT O. GREEN, D.D.S., Instructor in Operative Dentistry  
828 Lowry Bldg., St. Paul
- CHARLES A. GRIFFITH, D.D.S., Instructor in Operative Dentistry and Superintendent of Infirmary  
615 12th Ave. S. E.
- ADDISON GULICK, M.A., Ph.D., Instructor in Physiological Chemistry  
524 12th Ave. S. E.
- JOHN A. HANDY, Ph.C., B.S., Instructor in Chemistry  
803 University Ave. S. E.
- MARY V. HARTZELL, D.M.D., Instructor in Comparative Dental Anatomy  
1224 Mary Place
- WILLIAM A. HILTON, Ph.D., Instructor in Histology and Embryology  
113 Church St. S. E.
- WILLIAM H. HUNTER, Ph.D., Instructor in Chemistry  
112 Church St. S. E.
- WILLIAM C. JOHNSON, B.A., M.D., Demonstrator of Pathology and Bacteriology  
827 University Ave. S. E.
- RAY R. KNIGHT, B.A., M.D., Instructor in the Administration of Anaesthetics  
304 Pillsbury Bldg.
- WINFORD P. LARSON, M.D., Demonstrator of Pathology and Bacteriology  
614 9th Ave. S. E.
- HARRY C. LAWTON, D.D.S., Instructor in Prosthetic Dentistry  
937 Lowry Bldg., St. Paul
- WILLIAM MCDUGALL, D.D.S., Instructor in Crown and Bridge Work  
321 14th Ave. S. E.
- JAMES W. MALAND, D.D.S., Instructor in Crown and Bridge Work  
300 Reid Corner

- FLETCHER O. MACFARLAND, B.S., M.D., Instructor in Physiology  
417 Union St. S. E.
- HERMAN A. MAVES, D.D.S., Instructor in Operative Dentistry  
505 Donaldson Bldg.
- RICHARD S. MAYBURY, D.D.S., Instructor in Operative Dentistry  
1931 4th Ave. S.
- ALFRED A. PAGENKOPF, D.D.S., Instructor in Crown and Bridge Work  
808 Pittsburgh Bldg., St. Paul
- MARK O. PATTRIDGE, D.D.S., Instructor in Operative Dentistry  
802 E. Lake St.
- CARL H. PETRI, D.D.S., Instructor in Prosthetic Dentistry  
1301 E. Franklin Ave.
- GEORGE W. REYNOLDS, D.D.S., Instructor in Crown and Bridge Work  
3811 10th Ave. S.
- WILLIAM A. ROLL, D.D.S., Instructor in Crown and Bridge Work  
321 14th Ave. S. E.
- CHARLES E. RUDOLPH, D.D.S., Instructor in Prosthetic Dentistry  
2337 Central Ave. N. E.
- ANDREW J. WEISS, Instructor in Technics  
3708 Stevens Ave.
- CHARLES A. WIETHOFF, D.D.S., Instructor in Crown and Bridge Work  
806 42nd Ave. N.
- ARTHUR A. ZIEROLD, D.D.S., Instructor in Oral Surgery  
307 Donaldson Bldg.
- CARL F. OTTO, Student Assistant in Dental Anatomy
- CHARLES N. YOUNG, Student Assistant in Dental Electricity

- MRS. M. C. CLYDE, Professional Nurse
- MISS LOUISE CHRISTENSON, Professional Nurse
- MISS GUDRUN GRENAGER, Professional Nurse
- MISS LUCY E. HALBERT, Professional Nurse
- MISS JENNIE HIGINBOTHAM, Professional Nurse
- MISS CAROLINE LUDEMANN, Professional Nurse
- MISS LAURA A. MASTERS, Professional Nurse
- A. L. MOORE, Infirmary Clerk

## GENERAL INFORMATION

### ANNOUNCEMENT

This College is a member of the Dental Faculties Association of American Universities, which maintains the highest educational standards known in this country.

### COLLEGE YEAR

The twenty-fifth annual course of study in this College will begin Wednesday, September 18, 1912, and will close June 7, 1913. Commencement exercises will occur in common with other departments of the University.

For schedule of lectures, announcements, changes in college rules, etc., see bulletin board. The Rules for the Guidance of Students are printed in a separate booklet; in this will also be found a list of the required instruments.

### CURRICULUM

The course in the College of Dentistry leads to the degree of Doctor of Dental Surgery. It covers a period of three years of collegiate study, each year representing nine months in actual residence.

The studies are graded, so far as practicable, throughout the three 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 year deals with the scientific and laboratory branches; while that of the last two years includes the principles and practice of dentistry, its associated specialties, and the application of scientific and laboratory methods to clinical experience.

### VOLUNTARY ACADEMIC REQUIREMENT

Students are advised to take at least one year of academic work for the following reasons:

The student will thereby become more certain of himself and what his future vocation ought to be. He will be better prepared for professional study. He will have more time to devote to dentistry proper if his academic work included general chemistry. The student who has had some academic work is also better equipped for the practice of dentistry in the larger sense.

## ONE-YEAR ELECTIVE COURSE

The Dental Faculties Association of American Universities recommends that after the completion of the prescribed course all students devote one year of study to advanced technical subjects in dentistry, medicine, other sciences, or art.

## JOINT ACADEMIC-DENTISTRY COURSE

The first three years of the Arts and Dentistry course are given in the College of Science, Literature, and the Arts and the last three years in the College of Dentistry. It leads to the degree of Bachelor of Arts in four years and the degree of Doctor of Dental Surgery in six years.

Students registering in this course must, before completing their registration, choose a major line of work and secure the signature of an adviser in that department. In order to complete the Academic portion of their work they must obtain ninety-four (94) credits, including a major and two minors, one in each of the groups (a), (b), (c), (page 00, Bulletin of the College of Science, Literature, and the Arts, Vol. XV, No. 7); and they must have an average of *good* in at least one-half of their work. The first year of Dentistry counts as equivalent to thirty-two (32) credits toward the B.A. degree, provided the student receives an average of *good* in one-half of such year's work.

No student may be admitted to the College of Dentistry as a candidate for the degrees of Bachelor of Arts and Doctor of Dental Surgery until he has satisfied the foregoing requirements.

## STUDENT LOAN FUND

*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.

## ALUMNI ASSOCIATION

An association of the graduates of the College has its annual meeting during Commencement week.

President, E. F. Wanous, Masonic Temple, Minneapolis.

Secretary, B. A. Sandy, Andrus Building, Minneapolis.

# RULES AND REGULATIONS OF THE COLLEGE

## REQUIREMENTS FOR ADMISSION

Admission is either by certificate or by examination. In either case candidates must present:

(1) Four years of English, or three years of English accompanied by four years of one foreign language.

(2) Mathematics, two units, including one unit in Elementary Algebra and one in Plane Geometry.

(3) Chemistry, one unit. This may be included in a natural science series.

(4) Manual Training, one unit.

Students having no credit in Manual Training will be required to demonstrate, by test, the possession of mechanical ability.

(5) A major series of three or more units and a minor series of two units, each series chosen from one of the admission groups, B, C, D, E. Either the major or the minor series must be in Mathematics, and both shall not be in the same group. To form a language series, at least two units of the same language must be offered.

(6) Enough additional work to make in all fifteen units, of which not more than four may be in Group F.

No candidate will be admitted with less than fifteen units of the required grade. The Enrollment Committee may, however, authorize substitutions in the list of required subjects to the extent of one unit, in case the candidate did not have an opportunity to take all the required subjects.

Certificates from the College Entrance Examination Board and from the State High School Board are accepted under either plan of admission as satisfying the scholarship requirement.

### 1. ADMISSION TO THE FRESHMAN CLASS BY EXAMINATION

Entrance examinations are offered at the University during the opening week of the University year. Candidates must pass examinations in all subjects specified above, except such as may be covered by College Entrance Examination Board or State High School Board certificates.

### 2. ADMISSION TO THE FRESHMAN CLASS BY CERTIFICATE\*

The following are admitted to the freshman class by certificate:

(a) Graduates of a four-year course of a Minnesota State High School or other accredited school in Minnesota, provided they meet the

\*In September, 1913 and thereafter, admission will be governed by the rules here stated; in September, 1912 candidates will be admitted under either this plan, or the one stated in the Bulletin for 1911-12.

general requirements stated above, and the following special requirements as to grades.

(1) The applicant for admission must present to the Registrar the principal's certificate containing his record on all the studies which were counted toward graduation. All records shall be entered on this certificate as *passed*, *passed with credit*, or *passed with honor*.\*

To facilitate the operation of this rule, each accredited school is expected to keep its record of standings in these three grades or else 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 grades.

(2) Candidates for admission on certificate must have an average record in the subjects counted for admission of *pass with credit*. For the purpose of this average a *pass* is offset by a *pass with honor*. Candidates are therefore admitted provided they have at least as many semester marks of *pass with honor* as they have semester marks of *pass*.

Candidates entering on certificate shall not be examined for admission on subjects which are lacking or below the required grade, except on presentation to the Enrollment Committee of satisfactory evidence that they have done adequate special work in preparation for the examination. A certificate from the principal of the last school attended, or other person approved by the Enrollment Committee, shall constitute satisfactory evidence; and adequate special preparation shall consist of not less than thirty 60-minute hours under competent instruction on each semester subject presented for examination. (See (c), last paragraph.)

(b) Graduates of the Advanced Latin and Advanced English courses of the Minnesota State Normal Schools.

(c) Graduates of a four-year course of a school in any other state which is accredited to the state university of that state, provided such candidates satisfy all the requirements as to a major and minor series, subjects, and grades demanded of the graduates of Minnesota high schools. (See 2 (a) above.)

In case the records of any candidate from another state cannot be translated into the grades used in this state, the Enrollment Committee shall order examinations in English and also in three other subjects chosen from three different admission groups. The results of such examinations shall be final.

The examinations authorized under 2 (a) and 2 (c) shall be held at the same time and according to the same schedule as the regular entrance examinations mentioned under 1.

#### *Admission Groups*

The term *unit* means not less than five recitations of forty minutes each per week for a period of thirty-six weeks. In manual subjects and

\* In per cent, 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.

kindred courses, it means the equivalent of ten recitation periods per week for thirty-six weeks.

**Group A: English**

English, four or three units

- (a) Principles of rhetoric
- (b) Practice in written expression in each of the years of the course on an average of not less than one hour a week
- (c) Classics

**Group B: Foreign Languages**

Latin—

- Grammar, one unit
- Caesar, four books, one unit
- Cicero, six orations, one unit
- Virgil, six books, one unit

French—

- Grammar, one unit
- Literature, one, two, or three units

Greek—

- Grammar, one unit
- Anabasis, four books, one unit

Spanish—

- Grammar, one unit
- Literature, one, two, or three units

German—

- Grammar, one unit
- Literature, one, two, or three units

Scandinavian Languages—

- Grammar, one unit
- Literature, one, two, or three units

**Group C: History and Social Sciences**

History—

- Ancient, to Charlemagne, one unit
- Modern, from Charlemagne, one unit
- English, one-half unit
- Senior American, one-half unit
- American Government, one-half or one unit
- Elementary Economics, one-half unit
- Commercial Geography, one-half or one unit
- History of Commerce, one-half or one unit
- Economic History of England, one-half unit
- Economic History of the United States, one-half unit

**Group D: Mathematics**

- Elementary Algebra, one unit
- Plane Geometry, one unit
- Higher Algebra, one-half unit
- Solid Geometry, one-half unit
- Trigonometry, one-half unit

**Group E: Natural Sciences**

- Physics, one unit
- Chemistry, one unit
- Botany, one-half or one unit
- Zoology, one-half or one unit
- Physiology, one-half unit
- Astronomy, one-half unit
- Geology, one-half unit
- Physiography, one-half unit

**Group F: Vocational Subjects**

Not to exceed four units may be offered from the following list of vocational subjects.

Business Subjects—

Business Law, one-half unit	Advanced Bookkeeping, one unit
Business Arithmetic, one-half unit	Stenography and Typewriting two units
Elementary Bookkeeping, one unit	

Manual Subjects—

Freehand Drawing, two units	Shop Work, two units
Mechanical Drawing, two units	Modeling and Wood Carving, one unit
Domestic Art and Science, four units	

Agriculture—

One to four units from schools receiving special state aid for Agriculture and also from other schools in which such course in Agriculture is approved by the State High School Board, as fast as the said schools are prepared to offer work in Agriculture.

*Description of Subjects Accepted for Admission*

A description of subjects accepted for admission to the University may be found in the Bulletin of General Information, a copy of which will be sent to any address upon application to the Registrar, University of Minnesota, Minneapolis.

*List of Accredited Schools*

A list of accredited schools, including state high schools and private schools, may be found in the Bulletin of General Information, a copy of which will be sent to any address upon application to the Registrar, University of Minnesota, Minneapolis.

MATRICULATION

Hereafter the number of freshmen admitted to this College will be limited to eighty-five. Students who desire to enter in September 1912, must present to the Registrar:

(1) The regular admission blank containing the list of subjects completed in the preparatory school. High School Superintendents and Principals are generally supplied with such blanks. Additional copies may be secured upon application to the Registrar.

(2) A special application blank, which should be filed not later than August 1st.

Upon the receipt of the regular admission blank the Registrar will send to the candidate the special application blank.

A selection of the candidates for admission will be made not later than August 15th, and will be based upon the applicant's entire scholastic and industrial record, preference being given to residents of Minnesota. Applicants will be notified promptly concerning admission.



The successful candidates will present themselves at the Registrar's Office during the week September 10th to 17th, for matriculation. The registration of new students must be completed not later than September 17th. Entrance and condition examinations will be held September 10th to 13th.

### REGISTRATION

Students having matriculated in previous years are required to indicate registration on proper blank not later than September 3rd. Fees must be paid in full on or before September 10th.

For the second semester, registration must be indicated on or before January 21st and fees must be paid on or before January 28th.

A penalty fee of one dollar must be paid by all students who register or pay fees after the prescribed time. After the day previous to that on which classes begin, the penalty for delay increases at the rate of twenty-five cents per day. The Registrar will send proper blanks to all students who were in college the previous year, on or before August 20th. Students who fail to receive blanks at that date should call for them.

No one is recognized as a student of the school or admitted to classes, until his class cards, countersigned by the Registrar, have been received by the Dean; this applies to both semesters.

Students will be assigned seats, benches, and lockers in the order of their registration at 9 a. m. on the opening day.

Every student in this college is assigned at the time of registration a University post-office box, for which a rental charge of 50 cents is made. Students are held responsible for the receipt of official notices sent through the University post-office.

### TERMS OF TUITION

The annual tuition fee is one hundred and fifty dollars (\$150.00). It includes all charges for matriculation, lectures, laboratory courses, dissections, technic materials, microscopes, and graduation. One-half of this fee is payable at the opening of each semester.

If the applicant fails to pass the entrance examinations, his fee will be returned.

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

The fee for condition examinations is one dollar (\$1.00).

The fee for advanced standing examinations is one dollar (\$1.00).

The fee for special examinations is five dollars (\$5.00).

Special and graduate students will pay to the Cashier a fee of fifteen to thirty dollars per year for each study they pursue, and additional fees, varying from seven and one-half to thirty dollars, for each laboratory course they may select.

A deposit of five dollars (\$5.00) will be required in addition to the first semester fee to cover loss of, and breakage or damage to, college prop-

erty, penalties for late registration or late payment of fees, condition examinations, and rental of post-office box. The unused balance will be returned at the end of the year. This fee is to be deposited with the University Cashier at the beginning of each year when the student registers. If, at any time during the college year, the amount of breakage or other charges against a student exceed the amount of the deposit, a second fee of five dollars will be required.

### INSTRUMENTS, BOOKS, TOOLS, AND MATERIALS

All students are required to provide themselves with instruments, books, tools, and materials as prescribed by the college.

### EXAMINATIONS, STANDINGS, AND CONDITIONS

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.

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.

Students will not be permitted to substitute private 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 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: (a) practical work (laboratory or clinical), (b) (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 that 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.*

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 upon the recommendation of the department concerned.

A condition not removed at the first opportunity becomes a failure subject to the rules 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 entire work of that year.

Students who carry *failures* in to 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.

Any student reported below grade in sixty per cent of his work at the middle or close of the first semester or middle of the second semester shall be dropped from the rolls and shall not be allowed to re-enter until the opening of the following year.

*Probation.*—Such student shall then be allowed to enter on probation; and, if reported by the middle of the semester or after as delinquent in two or more subjects, he shall be dropped without further action for that year.

*Work Limited.*—Students pursuing any continuous subject who have done such poor work in the first semester shall not be allowed to elect another subject in place of that in which the condition or failure was received, but shall be required to devote their full time to the remaining subjects of the course.

Exception to this rule shall be made only by the Committee on Students' Work after full investigation.

### ADVANCED STANDING

Applicants for advanced standing must present satisfactory evidence of possessing the preliminary educational qualifications required of the class they desire to enter.

They must also satisfy the professors of the branches from which they wish to be exempt, that the work pursued by them in other institutions was equal in scope and amount to that passed by the class they propose to enter.

No credits are accepted unconditionally, the Faculty reserving the privilege of examining any applicant when deemed necessary.

All certificates pertaining to advanced standing must be presented to the Dean, who will send them to the respective professors for acceptance or report of further requirements for acceptance.

### ATTENDANCE AND DISCIPLINE

All lectures, laboratory and Infirmary courses and clinics must be taken in full and must invariably be entered upon during the week in which they begin.

Tardiness and absences are controlled by the principle that each student must do the full work of the course.

No student whose absences in any semester exceed four weeks in the aggregate shall be admitted to final examination without special permission of the Students' Work Committee.

Any student's registration may be refused or cancelled by the Registrar at the request of the Students' Work Committee on account of absences, indifference to study, poor scholarship, disorderly or immoral conduct, and for dishonesty in classroom or laboratory work.

The practice of dentistry by students, except under the direct supervision of a preceptor, is prohibited by law in the State of Minnesota. Students violating this law will be suspended or expelled.

Students are not allowed to obligate themselves in the Military Department, band, or other college activities, without permission from the Faculty.

### ELIGIBILITY REGULATIONS

No student shall take part in any public performance of a dramatic or musical club, or be eligible to election or appointment to official positions upon the boards of student publications, or take part in inter-collegiate debates or oratorical contests, unless he has a clear record at the time.

### REQUIREMENTS FOR GRADUATION

A candidate for the degree of Doctor of Dental Surgery must be twenty-one years of age, of good moral character, and, after having satisfied all the requirements for admission to the College, must have complied with all the rules and regulations of the College and obtained regular credit for all subjects of the entire course.

## COURSE OF STUDY

### FRESHMAN YEAR

#### *First Semester*

Anatomy 1, General Descriptive Anatomy, twelve hours  
Chemistry 1, Advanced General, twenty hours  
Chemistry 3, Qualitative, twenty hours  
Comparative Dental Anatomy 1, four hours  
Dental Anatomy 1, four hours  
Prosthetic Dentistry 1, Prosthetic Technics, eight hours

#### *Second Semester*

Anatomy 2, Histology and Embryology, eight hours  
Anatomy 3, Dissections, twelve hours  
Dental Anatomy 2, four hours  
Physiology 1, nine hours  
Prosthetic Dentistry 2, Prosthetic Technics, nine hours

### JUNIOR YEAR

#### *First Semester*

Crown and Bridge Work 1, eight and one-half hours  
Dental Metallurgy 1, one hour  
Pharmacology 1, Materia Medica, two hours  
Operative Dentistry 1, thirteen hours  
Pathology and Therapeutics 1, one hour  
Prosthetic Dentistry 3, nineteen hours

#### *Second Semester*

Crown and Bridge Work 2, eight and one-half hours  
Pharmacology 2, Materia Medica and Prescription Writing, two hours  
Operative Dentistry 2, fourteen hours  
Orthodontia 1, six hours  
Pathology and Bacteriology 1, nine hours  
Pathology and Therapeutics 2, one hour  
Prosthetic Dentistry 4, eight hours

### SENIOR YEAR

#### *First Semester*

Crown and Bridge Work 3, thirteen hours  
Dental Electricity 3, three hours  
Operative Dentistry 3, thirteen and one-half hours  
Oral Surgery 1, four hours  
Orthodontia 2, six hours  
Prosthetic Dentistry 5, six hours

#### *Second Semester*

Crown and Bridge Work 4, thirteen hours  
Operative Dentistry 4, fifteen hours  
Oral Surgery 2, four hours  
Orthodontia 3, six hours  
Prosthetic Dentistry 6, six hours

## DEPARTMENTAL STATEMENTS

### ANATOMY

THOMAS G. LEE, B.S., M.D., Professor of Anatomy and Director of the Department

CHARLES A. ERDMANN, M.D., Professor of Gross and Applied Anatomy

JOHN BLACK JOHNSTON, Ph.D., Professor of Comparative Neurology

RICHARD E. SCAMMON, Ph.D., Assistant Professor of Anatomy

WILLIAM A. HILTON, Ph.D., Instructor in Histology and Embryology

WILLIAM F. ALLEN, M.A., Instructor in Histology and Embryology

EUGENE K. GREEN, B.A., M.D., Associate in Anatomy

WILLIAM KING, Departmental Assistant in Anatomy

With the opening of the school year 1912-13, all the teaching work in Anatomy will be given in the new Institute of Anatomy. This structure, erected at a cost of \$300,000.00, is one of the largest and most complete buildings in the country which is devoted to the teaching of Anatomy.

#### 1. General Descriptive Anatomy

Drs. SCAMMON, ERDMANN,  
and ASSOCIATES

Twelve credits (twelve hours per week, for seventeen weeks); first and second quarters. Required of freshmen.

The course will consist of lectures, recitations, laboratory work, demonstrations and practical work in gross, human, and vertebrate anatomy, including osteology, a study of the joints, muscles, nerves, and blood vessels, the anatomy of the viscera, the nervous system, and an exhaustive study of the anatomy of the head. The practical work includes a study of wet preparations and frozen sections, models, together with dissections of certain special dissections. This course is open only to Dental students and is arranged especially for their particular needs.

#### 2. Histology and Embryology

Drs. LEE, HILTON, ALLEN,  
and ASSOCIATES

Eight credits (eight recitations and laboratory hours per week for seventeen weeks); third and fourth quarters. Required of freshmen; open to Dental students who have completed Course 1 or equivalent.

The course will consist of lectures, recitations, laboratory work, and demonstrations. The instruction will include a general consideration of the structure and properties of protoplasm, the cell, cell-division, the formation of the germ layers, and the differentiation of tissues and organs. Also a detailed study of the structure of the various tissues, epithelium, connective, bone, muscle, blood and lymph; the vascular and lymphatic system, the respiratory system, the excretory system, and the nervous system. Special emphasis will be laid upon the full knowledge of the development and structure of the head, mouth, jaw, teeth, and the other portions of the digestive system.

Each student will prepare a number of specimens illustrating the structure of the teeth and jaws. The work is based upon the study of human tissues supplemented by considerable amount of comparative work on other forms for the purpose of a better understanding of the structural conditions in man.

3. Dissections Drs. SCAMMON, ERDMANN, and ASSOCIATES  
 Eight credits (twelve recitation and laboratory hours per week, for seventeen weeks); third and fourth quarters. Required of freshmen; open to Dental students who have completed Course 1 or equivalent.

A careful dissection of one-half of the human body with especial attention to the structure and relationships of the head.

### CHEMISTRY

GEORGE B. FRANKFORTER, M.A., Ph.D., Professor of Chemistry

IRA H. DERBY, Ph.D., Assistant Professor of Chemistry

JOHN A. HANDY, Ph.C., B.S., Instructor in Chemistry

WILLIAM H. HUNTER, Ph.D., Instructor in Chemistry

1. Advanced General Chemistry Messrs. DERBY, HUNTER, and HANDY  
 Six credits (four recitation hours and sixteen laboratory hours for nine weeks); first quarter. Required of freshmen.

Lectures and laboratory work. The course includes a detailed study of chemical and physical properties of the non-metals, metals, and their more important compounds.

3. Qualitative Chemistry Messrs. DERBY, HUNTER, and HANDY  
 Six credits (four recitation hours and sixteen laboratory hours for nine weeks); second quarter. Open to students completing Course 1. Required of freshmen.

Lectures, recitations, and laboratory work. The course includes the general functions of the metals and acids with their qualitative separation and identification.

For work in other special or technical lines of chemistry, numerous courses are offered. (See Bulletin of the School of Chemistry.)

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.

### COMPARATIVE DENTAL ANATOMY

MARY V. HARTZELL, D.M.D., Instructor in Comparative Dental Anatomy

1. Comparative Dental Anatomy Dr. HARTZELL  
 Two credits (four recitation hours per week, for eight and one-half weeks); third quarter. Open to students completing Anatomy 1 and 2. Required of freshmen.

The instruction in this subject embraces a comparative study of animal life, giving special attention to number, form, and arrangement of teeth, and their adaption to food habits, ranging from horny teeth of the invertebrates to the complex tooth forms of the most highly specialized animals of the present time. The lectures will be illustrated with the stereopticon, casts, models, and skulls.

### CROWN AND BRIDGE WORK

FORREST H. ORTON, D.D.S., Professor of Crown and Bridge Work

AMOS S. WELLS, B.A., D.D.S., Clinical Professor of Crown and Bridge Work

PETER J. BREKHUS, B.A., D.D.S., Instructor in Crown and Bridge Work  
 WILLIAM McDOUGALL, D.D.S., Instructor in Crown and Bridge Work  
 JAMES W. MALAND, D.D.S., Instructor in Crown and Bridge Work  
 ALFRED A. PAGENKOPF, D.D.S., Instructor in Crown and Bridge Work  
 GEORGE W. REYNOLDS, D.D.S., Instructor in Crown and Bridge Work  
 WILLIAM A. ROLL, D.D.S., Instructor in Crown and Bridge Work  
 CHARLES A. WIETHOFF, D.D.S., Instructor in Crown and Bridge Work

1. Crown and Bridge Work                      Drs. ORTON, WELLS, and ASSISTANTS  
 Four and one-quarter credits (eight and one-half laboratory hours per week); first semester. Required of juniors.  
 Demonstrations and technic work. The latter includes all the more important forms of crowns and bridges.
2. Crown and Bridge Work                      Drs. ORTON, WELLS, and ASSISTANTS  
 Four and one-quarter credits (eight and one-half laboratory hours per week); second semester. Open to students completing Course 1. Required of juniors.  
 Continuation of Course 1, as outlined above.
3. Crown and Bridge Work                      Drs. ORTON, WELLS, and ASSISTANTS  
 Seven credits (one recitation hour and twelve laboratory hours per week); first semester. Open to students completing Courses 1 and 2. Required of seniors.  
 Lectures and clinical practice covering the entire field and bridge work.
4. Crown and Bridge Work  
 Seven credits (one recitation hour and twelve laboratory hours per week); second semester.  
 Continuation of Course 3 as outlined.

#### DENTAL ANATOMY

GEORGE M. DAMON, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy  
 OSCAR COOPERMAN, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy  
 CARL O. FLAGSTAD, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy  
 HARRY C. LAWTON, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy  
 CARL H. PETRI, D.D.S., Instructor in Prosthetic Dentistry  
 CARL F. OTTO, Student Assistant in Dental Anatomy

1. Dental Anatomy                                      Dr. DAMON and ASSISTANTS  
 Two and one-half credits (one recitation and three laboratory hours per week); first semester. Required of freshmen.  
 This course will consist of lectures, recitations, and such laboratory work as drawing, dissection, modeling, and carving of teeth.



## 2. Dental Anatomy

Dr. DAMON and ASSISTANTS

Two and one-half credits (one recitation hour and three laboratory hours per week); second semester. Open to students completing Course

## 1. Required of freshmen.

Continuation of Course 1 as outlined above.

## DENTAL ELECTRICITY

FRANK W. SPRINGER, E.E., Professor of Electrical Engineering

## 3. Dental Electricity

Mr. SPRINGER

One and one-half credits (three recitation hours per week, for eight and one-half weeks); first quarter. Required of seniors.

A course of instruction will be given upon the different forms of batteries, dynamos and motors in use in dental practice. Their construction, use, care, and operation. Electricity as used in surgery and for therapeutic purposes, including application of X-rays, will be made clear by laboratory demonstrations and practical application.

## DENTAL METALLURGY

ALFRED OWRE, B.A., M.D., C.M., D.M.D., Professor of Operative Dentistry and Dental Metallurgy

## 1. Dental Metallurgy

Dr. OWRE

One credit (one recitation hour per week); first semester. Required of juniors.

Lectures, recitations, and demonstrations, taking up the most important metals with special reference to those used in dentistry.

## OPERATIVE DENTISTRY

ALFRED OWRE, B.A., M.D., C.M., D.M.D., Professor of Operative Dentistry and Dental Metallurgy

JAMES M. WALLS, D.M.D., Professor of Operative Dentistry

HENRY S. GODFREY, D.M.D., Clinical Professor of Operative Dentistry

ROBERT O. GREEN, D.D.S., Instructor in Operative Dentistry

CHARLES A. GRIFFITH, D.D.S., Instructor in Operative Dentistry

RALPH W. COUNTRYMAN, D.D.S., Instructor in Operative Dentistry

NORMAN J. COX, B.S., D.M.D., Instructor in Operative Dentistry

HERMAN A. MAVES, D.D.S., Instructor in Operative Dentistry

RICHARD S. MAYBURY, D.D.S., Instructor in Operative Dentistry

MARK O. PATTRIDGE, D.D.S., Instructor in Operative Dentistry

CARL H. PETRI, D.D.S., Instructor in Operative Dentistry

## 1. Operative Dentistry

Drs. OWRE, WALLS, and ASSISTANTS

Eight credits (three recitation and ten laboratory hours per week); first semester. Required of juniors.

Lectures, recitations, demonstrations, and laboratory work. The object of the latter is to teach technical procedure as much as possible before clinical practice is begun.

2. Operative Dentistry Drs. OWRE, WALLS, GODFREY, and ASSISTANTS  
Eight credits (two recitation and twelve laboratory hours per week);  
second semester. Open to students completing Course 1. Required of  
juniors.

Lectures, recitations, and clinical practice.

3. Operative Dentistry Drs. OWRE, WALLS, GODFREY, and ASSISTANTS  
Seven and one-half credits (one and one-half recitation and twelve  
laboratory hours per week); first semester. Required of seniors.

Lectures, recitations, conference work, demonstrations, and clinical practice cover-  
ing the entire field of operative dentistry.

4. Operative Dentistry Drs. OWRE, WALLS, GODFREY, and ASSISTANTS  
Nine credits (three recitation and twelve laboratory hours per  
week); second semester. Open to students completing Course 3. Re-  
quired of seniors.

Continuation of Course 3 as outlined above.

### ORAL SURGERY

THOMAS B. HARTZELL, M.D., D.M.D., Professor of Oral Surgery, Thera-  
peutics, and Clinical Pathology

RAY R. KNIGHT, B.A., M.D., Instructor in the Administration of Anaes-  
thetics

ARTHUR A. ZIEROLD, D.D.S., Instructor in Oral Surgery

1. Oral Surgery Dr. HARTZELL and ASSISTANTS  
Two and one-half credits (one recitation and three laboratory hours  
per week); first semester. Open to students completing Courses 1 and 2,  
Pathology and Therapeutics. Required of seniors.

The subject is taught by lectures, recitations, and practical demonstrations covering  
the entire field of oral diseases. Such subjects as physical diagnosis, anaesthesia, and urin-  
alysis are taught in connection with this course.

2. Oral Surgery Dr. HARTZELL and ASSISTANTS  
Two and one-half credits (one recitation and three laboratory hours  
per week); second semester. Open to students completing Course 1.  
Required of seniors.

Continuation of Course 1 as outlined above.

### ORTHODONTIA

OSCAR A. WEISS, D.M.D., Professor of Prosthetic Dentistry and Ortho-  
dontia

JAY N. PIKE, D.D.S., Clinical Professor of Orthodontia

WILLIAM F. LASBY, B.A., D.D.S., Clinical Professor of Prosthetic Dentistry

OSCAR COOPERMAN, D.D.S., Instructor in Prosthetic Dentistry

CARL O. FLAGSTAD, D.D.S., Instructor in Prosthetic Dentistry

CHARLES E. RUDOLPH, D.D.S., Instructor in Prosthetic Dentistry

HARRY C. LAWTON, D.D.S., Instructor in Prosthetic Dentistry

ANDREW J. WEISS, Instructor in Technics

1. Orthodontia Drs. WEISS, LASBY, and ASSISTANTS

Three credits (six laboratory hours per week); second semester. Required of juniors.

This course consists entirely of technic work in the laboratory, comprising a brief course in the technique of steel which is followed by a comprehensive course in making regulating appliances, and the preparation of materials for the same.

2. Orthodontia Drs. WEISS and PIKE

Three and one-half credits (one recitation and five laboratory hours per week); first semester. Required of seniors.

This course consists of lectures and recitations in which the theory and practice of orthodontia is fully considered.

An ample clinic is provided which affords a comprehensive training in the practice of orthodontia. Every student is required to treat at least one case of irregularity of the teeth but may treat two or three cases.

3. Orthodontia Drs. WEISS and PIKE

Three and one-half credits (one recitation and five laboratory hours per week); second semester. Open to students completing Course 2. Required of seniors.

Continuation of Course 2 as outlined above.

### PATHOLOGY AND BACTERIOLOGY

FRANK F. WESBROOK, M.A., M.D., C.M., Professor of Pathology and Bacteriology

WINFORD P. LARSON, M.D., Demonstrator of Pathology and Bacteriology

WILLIAM C. JOHNSON, B.A., M.D., Demonstrator of Pathology and Bacteriology

1. Bacteriology and Pathology Dr. WESBROOK and ASSISTANTS

Five credits (nine recitation and laboratory hours per week for seventeen weeks); second semester. Required of juniors.

A course of lectures, recitations, and demonstrations of the general principles underlying pathology and bacteriology.

### PATHOLOGY AND THERAPEUTICS

THOMAS B. HARTZELL, D.M.D., M.D., Professor of Clinical Pathology, Therapeutics, and Oral Surgery

1. Pathology and Therapeutics Dr. HARTZELL

One credit (one recitation hour per week); first semester. Required of juniors.

These subjects are taught by lectures and recitations involving general pathology as a foundation of the special pathology of the oral cavity; paying particular attention to the therapeutic requirements of the lesions of the mouth and teeth.

The work in pathology is supplemented by laboratory work under the care of the chair of pathology, Department of Medicine.

2. Pathology and Therapeutics Dr. HARTZELL  
 One credit (one recitation hour per week); second semester. Open  
 to students completing Course 1. Required of juniors.  
 Continuation of Course 1 as outlined above.

### PHYSIOLOGY AND PHARMACOLOGY

- RICHARD OLDING BEARD, M.D., Professor of Physiology and Director  
 of the Department  
 EDGAR D. BROWN, Phm.D., M.D., Professor of Pharmacology and Materia  
 Medica  
 FREDERICK H. SCOTT, Ph.D., D.Sc., M.B., Assistant Professor of Physiology  
 M. RUSSELL WILCOX, M.D., Assistant Professor of Physiology  
 ROBERT B. GIBSON, Ph.D., Assistant Professor in Physiologic Chemistry  
 ADDISON GULICK, M.A., Ph.D., Instructor in Physiologic Chemistry  
 CHARLES F. DIGHT, M.D., Lecturer in Pharmacology and Materia Medica  
 FLETCHER O. MACFARLAND, B.S., M.D., Instructor in Physiology

#### PHYSIOLOGY

Drs. BEARD, SCOTT, WILCOX, and SEDGWICK

Six credits (nine recitation and laboratory hours per week, for seven-  
 teen weeks); second semester. Required of freshmen.

This subject is taught by recitations, lectures, and practical exercises. The course  
 of study includes the discussion and, so far as possible, the observation of the material  
 bases of the animal body; the general physiology of cell life; the nutritive media; the ele-  
 ments of the nervous system; the nervo-muscular mechanisms; the vascular mechanism;  
 the digestive system; and the functions of secretion, respiration, metabolism, and excretion.

#### PHARMACOLOGY

1. Materia Medica Drs. BROWN and DIGHT  
 Two credits (two recitation hours per week); first semester. Required  
 of juniors.

This course comprises the study of the source of drugs and their constituents; parts  
 of plants used for drugs; pharmaceutic preparations; methods of administering or applying  
 remedial agents; and conditions modifying their action and effect. The various  
 systems of weights and measures are also considered, especial attention being given to the  
 metric system. The subject of drugs is next taken up, these being grouped so far as possible  
 according to their pharmaco-dynamic action. A museum containing the important drugs  
 is available to the students at all times, and they are required to study the specimens and  
 record their observations in a special note book which is inspected at frequent intervals.

2. Materia Medica and Prescription Writing Drs. BROWN and DIGHT  
 Two credits (two recitation hours per week); second semester. Open  
 to students completing Course 1. Required of juniors.

This course is a continuation of Course 1. The subject of prescription writing is also  
 taken up and is made one of the important features.

## PROSTHETIC DENTISTRY

OSCAR A. WEISS, D.M.D., Professor of Prosthetic Dentistry and Orthodontia

WILLIAM F. LASBY, B.A., D.D.S., Clinical Professor of Prosthetic Dentistry

OSCAR COOPERMAN, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy

GEORGE M. DAMON, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy

CARL O. FLAGSTAD, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy

HARRY C. LAWTON, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy

CARL H. PETRI, D.D.S., Instructor in Prosthetic Dentistry

CHARLES E. RUDOLPH, D.D.S., Instructor in Prosthetic Dentistry

ANDREW J. WEISS, Instructor in Technics

1. Prosthetic Technics Dr. DAMON and ASSISTANTS  
Four credits (eight laboratory hours per week); first semester. Required of freshmen.

This course consists entirely of technic work in the laboratory, comprising impression materials and their uses and the simpler processes of plate-work.

2. Prosthetic Technics Dr. DAMON and ASSISTANTS  
Four and one-half credits (nine laboratory hours per week); second semester. Open to students completing Course 1. Required of freshmen. Continuation of Course 1 as outlined above.

3. Prosthetic Dentistry Drs. WEISS, LASBY, and ASSISTANTS  
Ten credits (one recitation and eighteen laboratory hours per week); first semester. Open to students completing Courses 1 and 2. Required of juniors.

This course consists of lectures and recitations in which the principles and practice of plate-work are fully considered.

The technic work in this course is a continuation of that begun in the freshman year, and consists of the more difficult plate-work. This work is graded and consists only of practical processes; obsolete processes and unnecessary repetition are avoided.

4. Prosthetic Dentistry Drs. WEISS, LASBY, and ASSISTANTS  
Four and one-half credits (one recitation and seven laboratory hours per week); second semester. Open to students completing Course 3. Required of juniors.

Continuation of Course 3 as outlined above.

5. Prosthetic Dentistry Drs. WEISS, LASBY, and ASSISTANTS  
Three credits (six laboratory hours per week); first semester. Open to students completing Course 4. Required of seniors.

Lectures and recitations cover the treatment of cleft palate cases and other special forms of prosthesis.

An excellent clinic for general prosthetic dentistry affords ample opportunity for the student to treat a variety of cases by various methods of practice.

6. Prosthetic Dentistry                      Drs. WEISS, LASBY, and ASSISTANTS  
    Three credits (six laboratory hours per week); second semester.  
Open to students completing Course 5. Required of seniors.  
    Continuation of Course 5 as outlined above.

### SPECIAL LECTURES

Occasional lectures are given during the senior year on subjects having a general bearing upon the practice of dentistry, such as: Ethics, Jurisprudence, Public Educational Measures, etc.

## STUDENTS

### GRADUATES 1911—49

Altermatt, Wallace A., Springfield  
Brede, Otto H., Minneapolis  
Cole, Bert L., St. Paul  
Cooperman, Oscar, Minneapolis  
De Mota, Edward G., Sioux Center, Iowa  
Deslaurier, Albert J., St. Paul  
De Trey, Maurice, La Soldanele, Lausanne,  
Switzerland  
Dvorak, Edward J., Glencoe  
Ernst, Henry W., St. Paul  
Fairchild, Guy B., Grand Forks, N. D.  
Flagstad, Carl O., Minneapolis  
Fossum, Oscar E., St. James  
Gauthier, Victor E., Virginia  
Greene, Henry S., Luverne  
Hagen, Paul, Crookston  
Hall, Henry J., Rochester  
Hartl, Frank J., Kiner, N. D.  
Hartung, William J., St. James  
Haycock, William J., Tracy  
Henderson, James L., St. Paul  
Johnson, Clements J., Winthrop  
Kelly, John P., Minneapolis  
La Due, Nelson V., Fertile  
Lindquist, Arthur O., Minneapolis

Luhman, Archie E., Dover  
Lyman, Harry H., Caledonia  
McDougall, William, Royalton  
Maves, Theodore W., St. Peter  
Maybury, Richard S., St. Cloud  
Monroe, William E., Hutchinson  
Moore, William A., Chatfield  
Moorhouse, Raymond R., Minneapolis  
Olson, Arent H., Preston  
Oram, Warren W., Willmar  
Peterson, Johan P., Bemidji  
Porter, Walter R., Willmar  
Rieke, Harvey W., Fairfax  
Roll, William A., Clontarf  
Rosen, Maurice C., Minneapolis  
Rudolph, Charles E., Annandale  
Stickney, Truman L., Minneapolis  
Thomas, James A., Spencer, Iowa  
Thorburn, Lloyd M., Marshall  
Van Guilder, Jesse S., Cannon Falls  
Vig, Richard, Fosston  
Walhus, Martin J., Spring Grove  
Williams, Robert E., Akeley  
Wolf, George E., St. Paul  
Ziegler, Sam, Stillwater

### THIRD YEAR—58

Abrahamson, Gust E., Motley  
Austin, Louie T., Madelia  
Bonner, John P., Virginia  
Bowe, Robert J., Waseca  
Brosius, Ernest J., Minneapolis  
Carlson, Lowell H., Litchfield  
Ganfield, Leo P., St. Paul  
Gyldenskog, Ernest R., Two Harbors  
Hori, Kenjuro, Hachiman, Japan  
Hosterman, Frank P., Pelican Rapids  
Johnson, Burnett T., Rose Creek  
Johnson, Ernest S., Waseca  
Johnson, George E., Minneapolis  
Johnston, Henry, Franklyn  
Kelly, Arthur J., Houston  
Kerr, Bert H., Huron, S. D.  
Koontz, Sylvester, Albert Lea  
Krough, George M., Minneapolis  
Lang, Roy C., Glenville  
Larson, Edward G., St. Peter  
Lenz, Frank J., Eau Claire, Wis.  
Leonard, Harold J., Minneapolis  
Lier, Alfred C., Minneapolis  
McDonald, George H., Hawley  
McLean, Thomas E., Devils Lake, N. D.  
Maertz, Benjamin L., New Prague  
Matthews, Robert L., Mankato  
Mee, Thomas J., St. Paul  
Mentzer, William E., Duluth

Naegeli, William, St. Cloud  
Nellermoe, Arthur F., Sacred Heart  
Nelson, Anton, Cloquet  
Nelson, N. Bernard, Evansville  
Nesse, James N., Mabel  
Nixon, James W., Wells  
Norman, Mark L., Minneapolis  
Ohm, William H., Elba  
Olsen, Carl C., Jackson  
Olson, Elvin C., Renville  
Onstad, John H., Wahpeton, N. D.  
Ostrander, Arthur B., Kensington  
Peterson, Enoch, Waseca  
Peterson, Harold A., Litchfield  
Quesnell, Arthur J., Clarkfield  
Record, George H., Minneapolis  
Reynolds, Otis H., Chatfield  
Richardson, Robert E., Bemidji  
Richter, Henry R., Montgomery  
Roelke, Gustav A., Loretto  
Rowell, George H., North Branch  
Sathre, Wilhelm F. U., Bergen, Norway  
Seifert, Arthur V., New Ulm  
Selvig, Thorvald C., Rushford  
Simonson, Alfred W., Minneapolis  
Smith, Kenneth V., Montevideo  
Solberg, Finn, Kristiania, Norway  
Swendsen, Theodore, Minneapolis  
Wolf, Edward J., St. Cloud

## SECOND YEAR—66

Benson, Ingram S., Glenwood	McGibbon, Everett E., Sauk Center
Blomgren, Fred W., Minneapolis	McGonagle, Earl H., Royalton
Bostrom, John A., Evansville	MacNeil, Robert L., Alexandria
Bousquet, Victor A., Fergus Falls	Millham, Thomas L., Webster, S. D.
Boylan, Francis A., Watertown	Moos, Leo P., St. Cloud
Brown, Worcester W., Minneapolis	Murphy, Harry E., Brainerd
Cassidy, Thomas J., Eyota	Nelson, Edmund L., Albert Lea
Dietz, Fred W., Mapleton	Nelson, Herbert C., Maynard
Doyle, Martin W., Wayzata	Niebels, Harold E., Fergus Falls
Eckman, Carl, Cokato	Norcross, Ralph C., Milaca
Eggena, Paul H., Monticello	Norgaard, Clayton B., Wheaton
Erickson, Lloyd, Wheaton	Ostergren, Daniel O., Gladstone
Farley, Francis T., Milbank, S. D.	Otto, Carl F., Red Wing
Fenton, Harold R., Austin	Peik, Ferdinand B., Minneapolis
Fournier, Joseph, Minneapolis	Peterson, Conrad N., Lyle
Furgason, Fred W., Canby	Prosser, Clare C., Minneapolis
Grapp, George L., Waseca	Putnam, Floyd E., Pelican Rapids
Hance, Mede J., Maple Lake	Rauch, Samuel, Minneapolis
Haas, Frank A., Wheaton	Raymond, Arthur C., Sleepy Eye
Heley, James W., Mantorville	Rogstad, Ferdinand J., Detroit
Hodgson, Lorin B., Willmar	Schonlan, Clement F., Houston
Hogan, Dennis E., Minneapolis	Seavey, Ralph A., Paynesville
Johnson, Otto C., Glenwood	Snyder, Stewart D., Ada
Johnston, Lloyd W., Mapleton	Sorum, Arne, Minneapolis
Juni, Arthur H., Jordan	Stewart, Clarence R., Huron S. D.
Karnofsky, Henry E., Minneapolis	Swanstrom, Arthur, Minneapolis
King, Clair L., Fargo, N. D.	Wausbren, Benjamin, Minneapolis
Knutson, Alfred J., Dexter	Watzke, Alfred T., Morris
Lee, Alfred B., Minneapolis	Weeks, James J., Minneapolis
Little, Joseph M., St. Paul	Weiss, Louis R., Minneapolis
Logan, Patrick E., Great Falls, Mont.	Werrick, Joseph P., Belle Plaine
Lotz, Arnold R., Omaha, Neb.	Woolley, Wayne W., Buffalo
Lynn, Chauncey L., Jackson	Zack, Maurice R., St. Cloud

## FIRST YEAR—105

Adams, Charles E., Willmar	Collins, Lawrence G., Vermilion, S. D.
Anderson, Bert G., Litchfield	Cooperman, Edward, Minneapolis
Anderson, Lincoln F., Cannon Falls	Craft, Frank A., Minneapolis
Anderson, Victor, Kennedy	Crahen, Frank, Minneapolis
Beers, Clinton H., Fergus Falls	Dybing, Tenny, Norway
Berens, Valentine, Shakopee	Douglas, George S., Superior, Wis.
Berger, Hulda E., St. Paul	Eastburn, Harold V., Stephen
Bettenhausen, Earl D., Sherburn	Eckman, Oscar M., Cokato
Bjorklund, Abner G., St. Paul	Eveland, Roy H., Minneapolis
Blum, George H., Chippewa Falls, Wis.	Ewy, Henry H., Butterfield
Bly, Helge, Cottonwood	Feller, William, St. Paul
Broderson, Philip B., Minneapolis	Fouch, Ranthus B., Minneapolis
Brown, James H., Minneapolis	Fritsche, Jerome L., Minneapolis
Brown, Joseph S., Montevideo	Fry, Nellie L., St. Paul
Bruener, Albert L., St. Cloud	Gange, Lawrence W., Mellette, S. D.
Campbell, John W., Pembina, N. D.	Gingold, Sam, Duluth
Carlson, Le Roy, Minneapolis	Girvin, Earl G., Mankato
Carlson, Wilbur A., St. Peter	Glad, William, Minneapolis
Cerveney, F. Dale, Eveleth	Haarmann, Orville S., St. Paul
Clifford, Walter E., Kalispell, Mont.	Hanson, Joseph A., Kenyon
Cohen, Sam, Ashland, Wis.	Haugen, Martin, Zumbrota
Coleman, Charles L., Anoka	Hedtke, Ferdinand C., Victoria



Heimer, Roy A., Stewartville  
 Hening, J. Courtenay, Minneapolis  
 Hilden, Edward R., Utica  
 Hines, Leo D., Mantorville  
 Horr, Emmette R., Minneapolis  
 James, Charles S., Glenwood  
 Johnson, Elmer, St. Paul  
 Johnson, Oscar T., Elbow Lake  
 Johnson, Stewart W., Minneapolis  
 Kasper, John A., Glencoe  
 Kotilinek, Benjamin B., Maple Lake  
 Kottke, Daniel, Renville  
 Knaak, Albert H., Waterville  
 Larson, Walter W., Warren  
 Lund, Benjamin R., Dawson  
 Lundblad, Milton T., Winona  
 Merkert, Walter, Minneapolis  
 Miller, Frank M., Deer Park, Wis.  
 Moll, Benjamin F., Sleepy Eye  
 Monaghan, Robert D. Tacoma, Wash.  
 Nelson, Clarence L., Kasson  
 Nelson, Walter J., Minneapolis  
 Newell, Floyd V., Harmony  
 Oberg, George, Minneapolis  
 Oman, Carl R., Seattle, Wash.  
 Page, Harold, Spring Valley  
 Perlich, Harry A., Minneapolis  
 Pirsch, Leo R., Caledonia  
 Prail, Theodore W., Janesville  
 Preine, Walter W., Minneapolis  
 Reid, Robert H., Pendleton, Ind.  
 Runberg, Maurice O., Minneapolis  
 Salisbury, Leland J., Le Sueur  
 Schien, Charles W., Minneapolis  
 Sculley, John J., Le Sueur  
 Sheils, Esther Joyce, Minneapolis  
 Smith, Roland A., Minneapolis  
 Smith, William L., Minneapolis  
 Solberg, Edward, Montevideo  
 Stacey, Neil A., Winona  
 Stahmann, Benjamin J., Winona  
 Stucke, Fred C., Henderson  
 Sundby, Elmer J., Rushford  
 Swanbeck, George C., St. Peter  
 Sweitzer, Lee R., St. Paul  
 Swenson, Merrill G., South Haven  
 Taarud, Henry A., Minneapolis  
 Tagland, Orrin J., Rushford  
 Thams, Styner N., Fargo, N. D.  
 Thompson, Earl, Staples  
 Thompson, Robert T., Minneapolis  
 Toren, Ruben L., North Branch  
 Turnquist, Clarence H., Minneapolis  
 Turnquist, Herbert E., Minneapolis  
 Twohey, Frank J., Rochester  
 Van Campen, George G., Cannon Falls  
 Van Campen, Merl M., Cannon Falls  
 Weiss, Raymond O., Minneapolis  
 Wiberg, Robert A., Minneapolis  
 Ziegler, Edwin C., West Sonora, Ohio  
 Ziegler, Lorenz H., George, Iowa

## UNCLASSIFIED—18

Braasch, Hans E., Minneapolis  
 Brede, Otto H., Minneapolis  
 Brusletten, Leonard C., Kenyon  
 Crone, William H., Minneapolis  
 Erickson, Ralph T., St. Peter  
 Gross, Samuel, Minneapolis  
 Henderson, James L., St. Paul  
 Lindquist, Arthur O., Minneapolis  
 Mulligan, William H., Minneapolis  
 Oram, Warren W., Willmar  
 Prescott, Laurel W., Fergus Falls  
 Rahn, Harry G. V., Minneapolis  
 Rauch, Benjamin, Minneapolis  
 Rice, Kenneth L., Adrian  
 Ritchie, Hugh, Cannon Falls  
 Rosen, Maurice C., Minneapolis  
 Steinfeldt, Abe A., Minneapolis  
 Storms, Forrest P., Joliette, N. D.

# The University of Minnesota

## THE COLLEGE OF MEDICINE AND SURGERY

1912-1913



BULLETIN OF THE UNIVERSITY OF MINNESOTA  
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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 and one for the Summer Session 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, the college or school of the University concerning which information is desired should be stated. Address,

**THE REGISTRAR,**

The University of Minnesota,

Minneapolis, Minnesota

## TABLE OF CONTENTS

Calendar, 1912-13 . . . . .	4
Schedule of Condition Examinations . . . . .	6
Board of Regents . . . . .	8
Executive Officers . . . . .	8
Department of Medicine . . . . .	9
The College of Medicine and Surgery . . . . .	10
Faculty . . . . .	10
Requirements for Admission . . . . .	18
Matriculation and Registration . . . . .	19
Tuition and Fees . . . . .	19
Examinations, Standing and Advancement . . . . .	20
Conditions, Advanced Standing . . . . .	21
Requirements for Graduation . . . . .	22
Loan Funds, Fellowships, Scholarships . . . . .	23
Buildings, Equipment and Clinical Facilities . . . . .	25
University Hospitals . . . . .	26
Library . . . . .	29
Eight-Year Combined Course (B. A., M. D.) . . . . .	32
Seven-Year Combined Course (B. S., M. D.) . . . . .	32
Graduate and Special Students . . . . .	32
University School for Nurses . . . . .	33
Departmental Statements . . . . .	35
Schedule for 1912-13 . . . . .	65
Students . . . . .	75
Students Nurses' Training School . . . . .	78
Graduates of 1911 . . . . .	79
Alumni . . . . .	81

1912							1913													
<b>JULY</b>							<b>JANUARY</b>							<b>JULY</b>						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
..	1	2	3	4	5	6	..	..	..	1	2	3	4	..	..	1	2	3	4	5
7	8	9	10	11	12	13	5	6	7	8	9	10	11	6	7	8	9	10	11	12
14	15	16	17	18	19	20	12	13	14	15	16	17	18	13	14	15	16	17	18	19
21	22	23	24	25	26	27	19	20	21	22	23	24	25	20	21	22	23	24	25	26
28	29	30	31	..	..	..	26	27	28	29	30	31	..	27	28	29	30	31	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
<b>AUGUST</b>							<b>FEBRUARY</b>							<b>AUGUST</b>						
..	..	..	..	1	2	3	..	..	..	..	..	..	1	..	..	..	..	..	1	2
4	5	6	7	8	9	10	2	3	4	5	6	7	8	3	4	5	6	7	8	9
11	12	13	14	15	16	17	9	10	11	12	13	14	15	10	11	12	13	14	15	16
18	19	20	21	22	23	24	16	17	18	19	20	21	22	17	18	19	20	21	22	23
25	26	27	28	29	30	31	23	24	25	26	27	28	..	24	25	26	27	28	29	30
..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	..	..	..	..	..	..
<b>SEPTEMBER</b>							<b>MARCH</b>							<b>SEPTEMBER</b>						
1	2	3	4	5	6	7	..	..	..	..	..	..	1	..	1	2	3	4	5	6
8	9	10	11	12	13	14	2	3	4	5	6	7	8	7	8	9	10	11	12	13
15	16	17	18	19	20	21	9	10	11	12	13	14	15	14	15	16	17	18	19	20
22	23	24	25	26	27	28	16	17	18	19	20	21	22	21	22	23	24	25	26	27
29	30	..	..	..	..	..	23	24	25	26	27	28	29	28	29	30	..	..	..	..
..	..	..	..	..	..	..	30	31	..	..	..	..	..	..	..	..	..	..	..	..
<b>OCTOBER</b>							<b>APRIL</b>							<b>OCTOBER</b>						
..	..	1	2	3	4	5	..	..	1	2	3	4	5	..	..	1	2	3	4	
6	7	8	9	10	11	12	6	7	8	9	10	11	12	5	6	7	8	9	10	11
13	14	15	16	17	18	19	13	14	15	16	17	18	19	12	13	14	15	16	17	18
20	21	22	23	24	25	26	20	21	22	23	24	25	26	19	20	21	22	23	24	25
27	28	29	30	31	..	..	27	28	29	30	..	..	..	26	27	28	29	30	31	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
<b>NOVEMBER</b>							<b>MAY</b>							<b>NOVEMBER</b>						
..	..	..	..	..	1	2	..	..	..	..	1	2	3	..	..	..	..	..	1	
3	4	5	6	7	8	9	4	5	6	7	8	9	10	2	3	4	5	6	7	8
10	11	12	13	14	15	16	11	12	13	14	15	16	17	9	10	11	12	13	14	15
17	18	19	20	21	22	23	18	19	20	21	22	23	24	16	17	18	19	20	21	22
24	25	26	27	28	29	30	25	26	27	28	29	30	31	23	24	25	26	27	28	29
..	..	..	..	..	..	..	..	..	..	..	..	..	..	30	..	..	..	..	..	..
<b>DECEMBER</b>							<b>JUNE</b>							<b>DECEMBER</b>						
1	2	3	4	5	6	7	1	2	3	4	5	6	7	7	8	9	10	11	12	13
8	9	10	11	12	13	14	8	9	10	11	12	13	14	14	15	16	17	18	19	20
15	16	17	18	19	20	21	15	16	17	18	19	20	21	21	22	23	24	25	26	27
22	23	24	25	26	27	28	22	23	24	25	26	27	28	28	29	30	31	..	..	..
29	30	31	..	..	..	..	29	30	..	..	..	..	..	..	..	..	..	..	..	..

# UNIVERSITY CALENDAR

1912-1913

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.

1912

September	3	Tuesday	Registration closes except for new students
September	3-10	Week	Fees payable except for new students
September	10-16	Week	Examinations for removal of conditions, registration of new students, and payment of fees
September	11-17	Week	
September	18	Wednesday	First semester begins
November	27	Wednesday	Thanksgiving recess begins 6:00 p. m.
December	2	Monday	Thanksgiving recess ends 8:00 a. m.
December	20	Friday	Christmas vacation begins 6:00 p. m.

1913

January	7	Tuesday	Christmas vacation ends 8:00 a. m.
January	21	Tuesday	Registration for second semester closes
January	27	Monday	Final examinations begin
January	28	Tuesday	Payment of fees for second semester closes
February	5	Wednesday	Second semester begins
February	12	Wednesday	Lincoln's Birthday: a holiday
February	13	Thursday	First semester class reports due
February	22	Saturday	Washington's Birthday: a holiday
March	19	Wednesday	Easter recess begins 6:00 p. m.
March	27	Thursday	Easter recess ends 8:00 a. m.
May	30	Friday	Decoration Day: a holiday
June	2	Monday	Final examinations begin
June	7	Saturday	Second semester closes
June	8	Sunday	Baccalaureate service
June	9	Monday	Senior class day exercises
June	11	Wednesday	Alumni Day
June	12	Thursday	Forty-first Annual Commencement
June	13	Friday	Summer vacation begins

The University year for 1913-14 will begin Tuesday, September 9.

*Schedule of Examinations for Advanced Standing and  
to Remove Conditions*

Tuesday to Saturday, September 10-14, 1912

9:00 a. m.

2:00 p. m.

THIRD (FRESHMAN) YEAR COURSES

Tuesday	Anatomy (written)	Anatomy (practical)
Thursday	Anatomy (written)	Anatomy (practical)
Saturday	Physiology	Chemistry, organic; toxicology, water and food analysis

FOURTH (SOPHOMORE) YEAR COURSES

Tuesday	General Pathology	General Bacteriology
Wednesday	Special Pathology & Bacteriology (practical)	Special Pathology & Bacteriology (written)
Thursday	Anatomy	Pharmacology
Friday	Physiology	Anatomy
Saturday	Medical Case Taking Physical Diagnosis	Anatomy

FIFTH (JUNIOR) YEAR COURSES

Tuesday	Obstetrics Gynecology	Practice of Medicine
Wednesday	Principles of Surgery Practical Pharmacy	Surgical Anatomy
Thursday	Surgery	Pharmacology
Friday	Pediatrics Operative Surgery	Surgical Pathology Pathology of Nervous System
Saturday	Pathology of Tumors	Clinical Pathology

SIXTH (SENIOR) YEAR COURSES

Tuesday	Obstetrics & Gynecology	Practice of Medicine
Wednesday	Surgery	Hygiene
Thursday	Eye and Ear	Nose and Throat
Friday	Mental and Nervous	Therapeutic Conference

Examination for advanced standing and to remove conditions in all elective subjects, and all subjects not listed above, will be held by appointment during September 10th to 14th. In all subjects not specifically scheduled, condition examinations must be arranged for not later than September 10th.

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 pages 20 and 21 for regulation concerning unremoved conditions, etc.

## THE UNIVERSITY

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 COLLEGE OF FORESTRY, including—

FOREST EXPERIMENT STATIONS AT ITASCA AND CLOQUET

THE SCHOOL OF AGRICULTURE including—

THE DAIRY SCHOOL

THE SHORT COURSE FOR FARMERS

TEACHERS' SUMMER TRAINING SCHOOL

THE SCHOOL OF TRACTION ENGINEERING

THE SCHOOL OF AGRICULTURE, CROOKSTON

THE SCHOOL OF AGRICULTURE, MORRIS

THE EXPERIMENT STATIONS, including—

THE MAIN STATION AT ST. ANTHONY PARK

THE SUB-STATION AT CROOKSTON

THE SUB-STATION AT GRAND RAPIDS

THE SUB-STATION AT DULUTH

THE SUB-STATION AT WASECA

THE SUB-STATION AT ZUMBRA HEIGHTS

AGRICULTURAL EXTENSION

BUREAU OF RESEARCH IN AGRICULTURAL ECONOMICS

THE LAW SCHOOL

THE COLLEGE OF MEDICINE AND SURGERY, including—

THE SCHOOL FOR NURSES

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE SCHOOL OF MINES, including—

MINNESOTA SCHOOL OF MINES EXPERIMENT STATION

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

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THE GEOLOGICAL AND NATURAL HISTORY SURVEY



## THE BOARD OF REGENTS

The Hon. JOHN LIND, Minneapolis, President of the Board	-	-	1914
GEORGE EDGAR VINCENT, Ph.D., LL.D., Minneapolis	-	-	<i>Ex-Officio</i>
The President of the University			
The Hon. ADOLPH O. EBERHART, Mankato	-	-	<i>Ex-Officio</i>
The Governor of the State			
The Hon. C. G. SCHULZ, St. Paul	-	-	<i>Ex-Officio</i>
The State Superintendent of Public Instruction			
The Hon. W. J. MAYO, Rochester	-	-	1913
The Hon. MILTON M. WILLIAMS, Little Falls	-	-	1913
The Hon. HENRY B. HOVLAND, Duluth	-	-	1914
The Hon. A. E. RICE, Willmar	-	-	1915
The Hon. CHARLES L. SOMMERS, St. Paul	-	-	1915
The Hon. B. F. NELSON, Minneapolis	-	-	1916
The Hon. PIERCE BUTLER, St. Paul	-	-	1916
The Hon. CHARLES A. SMITH, Minneapolis	-	-	1916

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## EXECUTIVE OFFICERS

GEORGE EDGAR VINCENT, Ph.D., LL.D., President	
ERNEST B. PIERCE, B.A., Registrar	
GEORGE H. HAYES, University Comptroller and Secretary of the Board of Regents	
JAMES T. GEROULD, B.A., Librarian	
JOHN F. DOWNEY, M.A., C.E., Dean of the College of Science, Literature, and the Arts	
FRANCIS C. SHENEHON, C.E., Dean of the College of Engineering and Mechanic Arts	
ALBERT F. WOODS, M.A., Dean and Director of the Department of Agriculture	
WILLIAM R. VANCE, Ph.D., LL.B., Dean of the Law School	
FRANK FAIRCHILD WESBROOK, M.A., M.D., C.M., Dean of the College of Medicine and Surgery	
ALFRED OWRE, B.A., M.D., C.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. APPEBY, M.A., Dean of the School of Mines	
GEORGE B. FRANKFORTER, M.A., Ph.D., Dean of the School of Chemistry	
GEORGE F. JAMES, Ph.D., Dean of the College of Education	
HENRY T. EDDY, C.E., Ph.D., LL.D., Dean of the Graduate School	
ADA L. COMSTOCK, M.A., Dean of Women	

## THE DEPARTMENT OF MEDICINE

The Department of Medicine includes the following colleges:

The College of Medicine and Surgery

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

JOHN B. JOHNSTON, Ph.D., Secretary

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

The College of Dentistry

ALFRED OWRE, B.A., M.D., C.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 three colleges, as required, in the following branches:

Gross and microscopic Anatomy, Physiology, Chemistry, Pathology, Bacteriology and Pharmacology.

The College of Medicine and Surgery of the University is now the only medical school in the State of Minnesota.

During the summer of 1912 two new buildings, known as the Institute of Anatomy and the new Millard Hall, will be completed for the use of certain departments of the College of Medicine and Surgery.

# THE COLLEGE OF MEDICINE AND SURGERY

## FACULTY

- GEORGE EDGAR VINCENT, Ph.D., LL.D., President 1005 5th St. S. E.  
CYRUS NORTHROP, LL.D., President Emeritus 519 10th Ave. S. E.  
AMOS W. ABBOTT, M.D., Emeritus Professor of Gynecology  
21 S. 10th St.  
EVERTON J. ABBOTT, B.A., M.D., Emeritus Professor of Clinical Medi-  
cine 425 Dayton Ave., St. Paul  
JOHN W. BELL, M.D., Emeritus Professor of Clinical Medicine and Physi-  
cal Diagnosis 1036 Andrus Bldg.  
CHARLES A. WHEATON, M.D., Emeritus Professor of Surgery  
329 Summit Ave., St. Paul

## EXECUTIVE FACULTY

- FRANK F. WESBROOK, M.A., M.D., C.M., Dean and Professor and Direc-  
tor of the Department of Pathology and Bacteriology  
906 5th St. S. E.  
RICHARD OLDING BEARD, M.D., Professor of Physiology and Director  
of the Department of Physiology and Pharmacology  
The Virginia  
GEORGE B. FRANKFORTER, M.A., Ph.D., Professor and Director of the  
Department of Chemistry 525 E. River Road  
CHARLES LYMAN GREENE, M.D., Professor and Chief of the Department  
of Medicine 421 Summit Ave., St. Paul  
THOMAS G. LEE, B.S., M.D., Professor and Director of the Department of  
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509 E. River Road  
JAMES E. MOORE, M.D., Professor and Chief of the Department of Surgery  
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C. EUGENE RIGGS, M.A., M.D., Professor and Chief of the Department  
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PARKS RITCHIE, M.D., Professor and Chief of the Department of Obstet-  
rics and Gynecology 910 Lowry Bldg., St. Paul  
FRANK C. TODD, M.D., Professor and Chief of the Department of Eye,  
Ear, Nose, and Throat 506 Donaldson Bldg.
- 
- LOUIS B. BALDWIN, M.D., Superintendent, University Hospitals  
304 State St. S. E.  
LOUISE M. POWELL, R.N., Superintendent of the School for Nurses  
417 Delaware St. S. E.

## GENERAL FACULTY

- E. T. BELL, B.S., M.D., Assistant Professor of Pathology and Bacteriology  
222 Harvard St. S. E.
- EDGAR D. BROWN, Phm.D., M.D., Professor of Materia Medica and Pharmacology  
3525 3d Ave. S.
- FRANK E. BURCH, M.D., Assistant Professor of Ophthalmology and Otolaryngology  
930 Lowry Bldg., St. Paul
- ABRAHAM B. CATES, M.A., M.D., Professor of Obstetrics  
413 Pillsbury Bldg.
- JAMES T. CHRISTISON, M.D., Professor of Pediatrics  
535 Lowry Bldg., St. Paul
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342 Lowry Bldg., St. Paul
- J. FRANK CORBETT, B.S., M.D., Associate Professor of Experimental Surgery  
2446 Park Ave.
- JOHN GROSVENOR CROSS, B.S., M.S., M.D., Clinical Professor of Medicine  
910 Donaldson Bldg.
- WARREN A. DENNIS, B.S., M.D., Clinical Professor of Surgery  
942 Lowry Bldg., St. Paul
- IRA H. DERBY, Ph.D., Assistant Professor of Chemistry  
2157 Commonwealth Ave., St. Paul
- ARTHUR W. DUNNING, M.D., Clinical Professor of Nervous and Mental Diseases  
803 Lowry Bldg., St. Paul
- FREDERICK A. DUNSMOOR, M.D., Professor of Clinical Surgery  
100 Andrus Bldg.
- CHARLES A. ERDMANN, M.D., Professor of Gross and Applied Anatomy  
612 9th Ave. S. E.
- BURNSIDE FOSTER, B.A., M.D., Professor of Dermatology and Syphilology and Lecturer upon the History of Medicine  
821 Lowry Bldg., St. Paul
- ROBERT B. GIBSON, Ph.B., Ph.D., Assistant Professor of Physiologic Chemistry  
222 Harvard St. S. E.
- ARTHUR J. GILLETTE, M.D., Professor of Orthopedic Surgery  
Seven Corners, St. Paul
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910 Lowry Bldg., St. Paul
- EVERHART P. HARDING, M.S., Ph.D., Assistant Professor of Chemistry  
1316 7th St. S. E.
- GEORGE D. HEAD, B.S., M.D., Associate Professor of Medicine  
503 Donaldson Bldg.
- ALBERT C. HEATH, M.D., Clinical Professor of Rhinology and Laryngology  
339 Lowry Bldg., St. Paul
- HIBBERT W. HILL, M.D., Assistant Professor of Bacteriology  
Minnesota State Board of Health, Minneapolis
- JOHN B. JOHNSTON, Ph.D., Professor of Comparative Neurology and Secretary of the Executive Faculty  
715 Fulton St. S. E.

- WILLIAM A. JONES, M.D., Professor of Nervous and Mental Diseases  
513 Pillsbury Bldg.
- ARTHUR A. LAW, M.D., Clinical Professor of Surgery  
413 Pillsbury Bldg.
- FREDERICK LEAVITT, M.D., Clinical Professor of Obstetrics and Gynecology, and Clerk of Clinics  
910 Lowry Bldg., St. Paul
- JENNINGS C. LITZENBERG, B.S., M.D., Associate Professor of Gynecology and Obstetrics, and Chief of Staff, Out-Patient Department  
910 Donaldson Bldg.
- ARCHIBALD MACLAREN, B.S., M.D., Clinical Professor of Surgery  
412 Holly Ave., St. Paul
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506 Donaldson Bldg.
- ARTHUR T. MANN, B.S., M.D., Clinical Professor of Surgery and Clerk of Clinics  
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1023 University Ave. S. E.
- WILLIAM R. MURRAY, Ph.B., M.D., Professor of Rhinology and Laryngology  
510 Pillsbury Bldg.
- LOUIS A. NIPPERT, M.D., Clinical Professor of Medicine  
307 Reid Corner
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541 Lowry Bldg., St. Paul
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2401 Sheridan Ave. S.
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- SOREN P. REES, B.S., M.D., Clinical Professor of Medicine  
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514 Lowry Bldg., St. Paul
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814 Lowry Bldg., St. Paul
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405 Andrus Bldg.
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616 Syndicate Bldg.
- ARTHUR SWEENEY, B.A., M.D., Professor of Medical Jurisprudence  
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- HORATIO B. SWEETSER, M.D., Clinical Professor of Surgery  
707 Masonic Temple
- \*MAX P. VANDER HORCK, M.D., Professor of Diseases of the Skin and  
Genito-Urinary Organs
- S. MARX WHITE, B.S., M.D., Associate Professor of Medicine  
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802 Donaldson Bldg.
- LOUIS B. WILSON, M.D., Assistant Professor of Clinical Pathology  
830 W. College St., Rochester
- FRANK R. WRIGHT, M.D., Clinical Professor of Genito-Urinary Diseases  
707 Donaldson Bldg.

- 
- FRED L. ADAIR, B.S., M.D., Instructor in Obstetrics and Gynecology  
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- GEORGE C. BARTON, M.D., Clinical Instructor in Gynecology  
1028 Andrus Bldg.
- ARTHUR E. BENJAMIN, M.D., Clinical Instructor in Gynecology  
1020 Donaldson Bldg.
- FRANK S. BISSELL, M.D., Clinical Instructor in Medicine and Radi-  
ographer, University Hospitals 4412 Lake Harriet Blvd.
- CHARLES H. BRADLEY, M.D., Clinical Instructor in Medicine  
1016 Donaldson Bldg.
- JOHN B. BRIMHALL, M.D., Clinical Instructor in Orthopedic Surgery  
303 Moore Blk., St. Paul
- WILLIAM H. CONDIT, B.S., M.D., Clinical Instructor in Therapeutics  
636 Syndicate Bldg.
- HENRY WIREMAN COOK, B.A., M.D., Instructor in Clinical Medicine  
N. W. Nat'l. Life Ins. Bldg.
- PAUL B. COOK, M.D., Instructor in Genito-Urinary Diseases  
710 Lowry Bldg., St. Paul

\*Deceased.

- LESLIE O. DART, M.D., Clinical Instructor in Pediatrics  
304 Masonic Temple
- CHARLES F. DIGHT, M.D., Lecturer in Pharmacology and Materia Medica  
4818 39th Ave. S.
- CHARLES R. DRAKE, M.D., Assistant Pathologist, University Hospitals
- ROBERT E. FARR, M.D., Clinical Instructor in Surgery 301 Reid Courner
- EMIL S. GEIST, M.D., Clinical Instructor in Orthopedic Surgery  
820 Donaldson Bldg.
- \*JUDD GOODRICH, M.D., Clinical Instructor in Surgery
- ADDISON GULICK, M.A., Ph.D., Instructor in Physiologic Chemistry  
524 12th Ave. S. E.
- ARTHUR S. HAMILTON, B.S., M.D., Instructor in Pathology of the Nervous  
System and Clinical Instructor in Mental and Nervous Diseases  
513 Pillsbury Bldg.
- EARLE R. HARE, B.S., M.D., Clinical Instructor in Surgery  
505 Donaldson Bldg.
- WILLIAM A. HILTON, Ph.D., Instructor in Histology and Embryology  
113 Church St. S. E.
- PEDER A. HOFF, M.D., Clinical Instructor in Medicine  
939 Lowry Bldg., St. Paul
- JOHN E. HYNES, M.D., Clinical Instructor in Medicine  
3349 University Ave. S. E.
- WILLIAM C. JOHNSON, B.A., M.D., Demonstrator in Pathology and Bacteriology  
827 University Ave. S. E.
- HERBERT W. JONES, M.D., Clinical Instructor in Nervous and Mental  
Diseases 2418 W. 22d St.
- WINFORD P. LARSON, M.D., Demonstrator in Pathology and Bacteriology  
614 9th Ave. S. E.
- C. NAUMANN McCLOUD, M.D., Clinical Instructor in Pediatrics  
524 Lowry Bldg., St. Paul
- FLETCHER O. MACFARLAND, B.S., M.D., Instructor in Physiology  
417 Union St. S. E.
- JENNETTE M. McLAREN, M.D., Clinical Instructor in Obstetrics  
803 Lowry Bldg., St. Paul
- GUSTAV A. MAGNUSON, M.D., Demonstrator in Pathology and Bacteriology
- CHARLES J. MEADE, M.D., Clinical Instructor in Medicine  
Moore Blk., St. Paul
- JOHN H. MORSE, B.A., M.D., Clinical Instructor in Ophthalmology and  
Otology 2511 Washburn Ave. S.
- LOUIS A. NELSON, M.D., Clinical Instructor in Ophthalmology and  
Otology 734 Lowry Bldg., St. Paul
- HENRY T. NIPPERT, M.D., Clinical Instructor in Medicine  
339 Lowry Bldg., St. Paul
- OLOF A. OLSON, M.D., Clinical Instructor in Surgery 221 Cedar Ave.
- OSCAR OWRE, M.D., C.M., Clinical Instructor in Genito-Urinary Diseases  
707 Masonic Temple

\*Deceased.

- FREDERICK H. POPPE, B.A., M.D., Clinical Instructor in Surgery  
702 Donaldson Bldg.
- CHARLES A. REED, B.S., M.D., Clinical Instructor in Orthopedic Surgery  
310 Pillsbury Bldg.
- ERNEST T. F. RICHARDS, M.D., C.M., Clinical Instructor in Medicine  
914 Lowry Bldg., St. Paul
- HARRY P. RITCHIE, Ph.B., M.D., Clinical Instructor in Surgery  
914 Lowry Bldg., St. Paul
- FREDERIC W. SCHLUTZ, B.A., M.D., Clinical Instructor in Pediatrics  
and Research Associate in Physiologic Chemistry  
802 Donaldson Bldg.
- CHARLES N. SPRATT, B.S., M.D., Clinical Instructor in Ophthalmology  
and Otology, 900 Nicollet Ave.
- ARTHUR C. STRACHAUER, M.D., Clinical Instructor in Surgery  
616 Syndicate Bldg.
- EUGENE S. STROUT, M.D., Clinical Instructor in Ophthalmology and  
Otology 910 Donaldson Bldg.
- THOMAS W. STUMM, M.D., Clinical Instructor in Medicine  
744 Lowry Bldg., St. Paul
- SAMUEL E. SWEITZER, M.D., Clinical Instructor in Dermatology and  
Genito-Urinary Diseases 343 Andrus Bldg.
- HENRY L. ULRICH, B.S., M.D., Instructor in Clinical Medicine  
310 Pillsbury Bldg.
- H. JOURNEY WELLES, M.D., Clinical Instructor in Ophthalmology and  
Otology 306 Masonic Temple
- ARCHA WILCOX, M.D., Clinical Instructor in Surgery  
204 Donaldson Bldg.
- HENRY L. WILLIAMS, M.D., Instructor in Gynecology  
616 Donaldson Bldg.
- CHARLES B. WRIGHT, B.A., M.D., Clinical Instructor in Pediatrics  
636 Syndicate Bldg.
- 
- JOHN M. ARMSTRONG, M.D., Clinical Assistant in Genito-Urinary Diseases  
409 Lowry Bldg., St. Paul
- SEILER J. ASPELUND, B.A., M.D., Clinical Assistant in Obstetrics and  
Gynecology 315 Masonic Temple
- WILLIAM H. AURAND, M.D., Clinical Assistant in Medicine  
425 Oak St. S. E.
- ERNEST L. BAKER, M.D., Clinical Assistant in Medicine  
503 Donaldson Bldg.
- WILLIAM D. BEADIE, M.D., C.M., Clinical Assistant in Pediatrics  
334 Lowry Bldg., St. Paul
- HALLWARD M. BLEGEN, B.A., M.D., Clinical Assistant in Gynecology  
1525 E. Franklin Ave.
- ELWYN R. BRAY, B.A., M.D., Clinical Assistant in Ophthalmology and  
Otology 69 N. Milton, St. Paul
- LEVERETT D. BRISTOL, B.S., M.D., Clinical Assistant in Medicine  
923 Lowry Bldg., St. Paul



- JOHN C. BROWN, B.A., M.D., Clinical Assistant in Medicine  
5 Barton Ave. S. E.
- PAUL F. BROWN, B.A., M.D., Clinical Assistant in Surgery  
3733 Nicollet Ave.
- OLIVER R. BRYANT, M.D., Clinical Assistant in Medicine  
3160 Chicago Ave.
- JOHN BUTLER, M.D., Clinical Assistant in Dermatology  
403 Pillsbury Bldg.
- HARRY E. CANFIELD, M.D., Clinical Assistant in Ophthalmology and  
Otology  
2102 2d Ave. S.
- CHARLES D. FREEMAN, M.D., Clinical Assistant in Dermatology and  
Venereal Diseases  
642 Lowry Bldg., St. Paul
- JAMES W. GEORGE, B.S., M.D., Clinical Assistant in Obstetrics  
412 Reid Corner
- EDWARD V. GOLTZ, M.D., Clinical Assistant in Rhinology and Laryn-  
gology  
394 Selby Ave., St. Paul
- EUGENE K. GREEN, B.A., M.D., Associate in Anatomy  
307 Reid Corner
- JAMES F. HAMMOND, M.D., C.M., Clinical Assistant in Pediatrics  
334 Lowry Bldg., St. Paul
- EDGAR J. HUENEKENS, B.A., M.D., Clinical Assistant in Medicine  
1037 Andrus Bldg.
- HARRY G. IRVINE, M.D., Clinical Assistant in Dermatology  
601 Syndicate Bldg.
- E. MENDELSSOHN JONES, M.D., Clinical Assistant in Surgery  
541 Lowry Bldg., St. Paul
- ANTOINE A. LAURENT, M.D., Clinical Assistant in Diseases of Children  
203 Donaldson Bldg.
- RAE T. LA VAHE, B.A., M.D., Temporary Assistant in Pediatrics  
203 Donaldson Bldg.
- JARL FERDINAND LEMSTROM, B.S., M.D., Clinical Assistant in Medicine  
2117 4th Ave. N.
- ADOLPH E. LOBERG, M.D., Clinical Assistant in Nervous and Mental  
Diseases  
221 Cedar Ave.
- HENRY LYSNE, B.S., M.D., Clinical Assistant in Medicine  
700 20th Ave. N.
- EDWARD MOREN, M.D., Clinical Assistant in Medicine  
307 Donaldson Bldg.
- FREDERICK A. OLSON, B.A., M.D., Research Assistant in Medicine  
914 Lowry Bldg., St. Paul
- REUBEN M. PEDERSON, B.A., M.D., Temporary Assistant in Genito-  
Urinary Diseases  
2901 Washington Ave. N.
- CHELSEA C. PRATT, M.D., Clinical Assistant in Medicine  
915 E. River Road
- FRED J. PRATT, M.D., Clinical Assistant in Ophthalmology and Otology  
328 Central Ave.
- LOUIS SYDNEY B. ROBINSON, B.A., M.D., Clinical Assistant in Obstetrics  
744 University Ave., St. Paul

- CHARLES L. RODGERS, M.D., Clinical Assistant in Obstetrics  
59 Lyndale Ave. N.
- IVAR SIVERTSEN, M.D., Clinical Instructor in Gynecology  
1028 Andrus Bldg.
- ANTON G. WETHALL, B.S., M.D., Clinical Assistant in Genito-Urinary  
Diseases 325 Cedar Ave.
- ROBERT WILLIAMS, B.A., M.D., Clinical Assistant in Medicine  
3408 Chicago Ave.
- CARL A. WITHAM, M.D., Clinical Assistant in Rhinology and Laryn-  
gology 3128 Bloomington Ave.
- DOUGLAS F. WOOD, M.D., C.M., Clinical Assistant in Rhinology and  
Laryngology 307 Donaldson Bldg.

## GENERAL INFORMATION

### REQUIREMENTS FOR ADMISSION

Students entering the College of Medicine and Surgery must have received the bachelor's degree in arts or science or must register in one of the combined courses described below so as to secure the bachelor's degree before graduating in Medicine.

All students are required to present to the University Registrar evidence of at least two years' work in a recognized college of science and arts, which must include the following subjects:

Rhetoric,.....	6 credits
Physics.....	8 credits
General Inorganic Chemistry.....	6 credits
Qualitative Analysis.....	6 credits
Biology (preferably Zoology).....	6 credits
Language, two years of High School Latin and a reading knowledge of either German or French.	

One *credit* means one recitation hour per week for one semester. A single credit hour in a laboratory subject requires two or more hours of consecutive work.

The following courses given in the College of Science, Literature, and the Arts of the University of Minnesota, or their equivalent in other approved colleges, will meet these requirements.

Rhetoric, Course 1.

Physics, Courses 1, 2, 3, and 4.

Chemistry, Courses 1 or 2, and 3.

Animal Biology, Course 1; or Botany, Course 1.

German or French. To secure a reading knowledge will ordinarily require one or two years of college work, dependent upon the previous High School training.

Electives, to make up 60 credits (62 credits until September, 1914) in the College of Science, Literature, and the Arts. At least one course must be elected from the social science group of electives (Group III) in that College.

Candidates who present two or more years of collegiate work and are deficient in any of the subjects named will be required to pass examinations, conducted by the College of Science, Literature, and the Arts, upon such subjects as may be lacking.

The University Summer School offers opportunities for making up deficiencies in preparation.

## MATRICULATION AND REGISTRATION

Students who are entering the College of Medicine and Surgery for the first time will go first to the University Registrar and present their entrance qualifications.

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

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

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

3. 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.

Students having matriculated in previous years are required to indicate registration on proper blank not later than September 3d. Fees must be paid in full on or before September 10th.

For the second semester, registration must be indicated on or before January 21st, and fees paid on or before January 28th.

A penalty fee of one dollar must be paid by all students who register or pay fees after the prescribed time. After the day previous to that on which classes begin the penalty for delay increases at the rate of twenty-five cents per day. The Registrar will send proper blanks to all students who were in college the previous year, on or before August 20th. Students who fail to receive blanks at that date should call for them.

Registration is not complete until all conditions are removed.

## TUITION AND FEES

The annual tuition fee in the College of Medicine and Surgery is \$150. Students who have entered prior to September, 1910, will pay an annual tuition fee of \$100 until they have completed the course of study.

No tuition fee is charged for the fifth year of work recently added to the course.

One-half of the annual fee is payable at the time of registration at the beginning of each semester. 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 President of the University.

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

A hospital fee of \$3.00 will be paid by junior and senior students.

A fee of one dollar is charged for examination to remove a condition.

Special examinations may be ordered by the Faculty under exceptional circumstances for which a fee of five dollars for each subject must be paid to the University Cashier.

A student repeating work by reason of failure must pay the usual fee connected with that course.

Special undergraduate students will pay the Cashier fees for the studies they elect to pursue proportional to the total fees of the year in which such studies are placed.

Graduate students will pay an admission fee of \$10.00 which will entitle them to attend any lectures they may desire in regular courses.

Every student in this college is assigned at the time of registration a University post-office box, for which a rental charge of 50 cents per year is made. Students are held responsible for the receipt of official notices sent through the University post-office.

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, penalties for late registration or late payment of fees, condition examinations, and rental of post-office box. It will be returned to the student at the close of each year, minus the charges above mentioned, and 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 concerned will be made.

## EXAMINATIONS

Final examination in every subject is held at the end of the semester or quarter in which the subject is closed. Opportunity is offered to remove conditions only at the opening of the school year in September.

Students must register for examinations in the Dean's office at least twenty-four hours prior to any special or condition examination they may wish to take.

## STANDINGS AND ADVANCEMENT

The final standing of any student in a given subject shall be determined as the result of his practical work (laboratory or clinical), recitations, and oral or written examinations. All of these factors will be taken into consideration in determining the final grade.

Students' final standings are determined at the end of each year by a conference of the heads of the college departments.

Students' standings shall be reported to and obtained from the Dean's office only.

Students shall be reported as passed, incomplete, conditioned, or failed.

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

Students with entrance or other conditions must remove them before the opening of the succeeding college year.

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

### CONDITIONS

Conditions can be removed only at the beginning of the school year in September. A condition not removed in regular course becomes a failure and the work must be repeated in class.

A student who is found in faculty conference to be deficient in the major portion of his year's work will be required to repeat the year's work in full.

### ADVANCED STANDING

Students from other recognized medical colleges applying for admission to the fourth, fifth, and sixth year classes will be required to present official credentials and other satisfactory evidence of time spent in medical studies, to satisfy all admission requirements, and to pass examinations in the branches already taken by the class they seek to enter, but any student may be excused from such examinations if the instruction which he has received is considered satisfactory by the head of the corresponding department in this 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 condition of advanced standing will entitle the student to take two years of any graded study at the same time.

### CLINICAL SERVICE

The attendance of students at all clinics will be required, and periodical examinations upon series of clinics attended will be given.

Senior students shall be assigned by the Dean's office for stated periods, to act as clinical clerks in the University Hospital.

Clinical clerks shall be under the immediate supervision of the Senior Interne, and shall be assigned their respective duties by him.

They shall attend the Hospital between the hours of 2:30 and 3:30 p. m. on Monday, Tuesday, Wednesday, and Friday, and shall be excused from attendance on lectures in medicine during the period of their assignment, and they shall also attend on the same days between the hours of 3:30 and 5:30, except when the schedule calls for their attendance elsewhere.

Their duties shall be at the direction of the Senior Interne.

- (a) To record results of physical examinations as dictated by the attending physicians.
- (b) To make and record examinations in the laboratory.
- (c) To make rounds with the attending physicians.

No examinations of patients are to be made except at the express direction of the attending physicians.

Senior students are assigned to the surgical wards of the University Hospital on Mondays, Tuesdays, Wednesdays, and Fridays, between the hours of 10 and 11 a. m. for bedside clinics. Under the direction of the Junior Surgical Staff they are required to examine patients and make the laboratory examinations necessary to arrive at a diagnosis. Without access to the regular hospital records, they are required to write out a complete history of the cases assigned them, including their laboratory findings, diagnosis, and suggestions for treatment. They are then quizzed upon these papers by the Junior Staff, and the papers are filed in the office of the Chief of the Department and make a part of the student's class record.

Senior students will be detailed in turn for service as internes at the University Dispensary for periods of two weeks each. During such service they must be in residence at the Dispensary and must be on call for night service at any hour.

All students assigned to Dispensary service must be in prompt and regular attendance at the Dispensary between the hours of 1:00 and 2:15 p. m.

## REQUIREMENTS FOR GRADUATION

A candidate for the degree of Doctor of Medicine must be of good moral character, and must have satisfied all the requirements for admission, complied with all the rules and regulations of the College, and obtained credit for all the work of the complete course.

For all students entering in September, 1911, and thereafter, the complete course includes a fifth year spent as interne in an approved hospital or in laboratory studies in this College in preparation for teaching.

All students entering in September, 1912, and thereafter, must secure the degree of B.A. or B.S. from this University or an approved college before the M.D. degree will be conferred.

## MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

### *Requirements for License*

Examinations are held in the months of January, April, June, and October.

Candidates are required to take examinations in the following subjects: Anatomy, Physiology, Chemistry, Histology, Materia Medica, Therapeutics, Preventive Medicine, Practice of Medicine, Surgery,

Obstetrics, Diseases of Women and Children, Diseases of the Nervous System, Diseases of the Eye and Ear, Medical Jurisprudence, and such other branches as the Board shall deem advisable.

Candidates will also be required to take practical examinations in Dissections, Pathology, Histology, Bacteriology, Urinalysis, and Clinical Diagnosis.

The National Confederation of State Licensing and Examining Boards in June, 1906, adopted the requirements of one or two years of college work, including at least one year's work in Physics, Chemistry, Biology, and Languages, as the minimum entrance standard to apply to all students beginning the study of Medicine after June 1, 1910. The State Medical Board of Minnesota will, after 1912, require the evidence of the completion of two years' Academic work in an approved college.

### STUDENT LOAN FUNDS AND PRIZES

#### *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.

#### *Academy of Medicine Fellowship*

The Minnesota Academy of Medicine has made provision for a research fellowship in the College of Medicine and Surgery, which bears an annual stipend of \$250 to \$300. The appointment of the incumbent is placed in the hands of a committee of the Academy of Medicine, who will determine also the character and extent of the work and in what department it shall be undertaken.

Further information may be obtained from the Dean of the College of Medicine and Surgery.

#### *The Rollin E. Cutts Prize in Surgery*

Dr. Mary E. Smith Cutts, '91 Medical, has given the University, as a memorial of her husband, the late Dr. Rollin E. Cutts, '91 Medical, the sum of \$500, 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.

#### *The Dr. J. W. Bell Prize*

Through the generosity of Dr. John W. Bell, Emeritus Professor of Clinical Medicine and Physical Diagnosis, an annual prize of \$100 is offered



in the College of Medicine and Surgery, to the student showing the highest proficiency in Physical Diagnosis.

Candidates will be selected at the beginning of the senior year from those who have done especially good work in sophomore physical diagnosis and have maintained a universally high grade in general medicine throughout the junior year.

The award will be made upon the basis of the work of the sophomore, junior, and senior years in the various subjects which constitute practice.

#### *The D. Appleton and Company Prize*

D. Appleton and Company have offered for the year 1912-13 to the students of this College a prize of fifty dollars' worth of their books to be selected by the successful competitor. The prize will be awarded by a committee of the Faculty to the undergraduate student presenting the best thesis upon some medical subject. The thesis must include the results of original observation and investigation in the clinics or laboratories of this College, together with a review of the literature and a bibliography.

#### *Shevlin Fellowships*

Four fellowships, each being the income from \$10,000, have been established in the Graduate School through the gift of \$40,000 by the late Thomas H. Shevlin, of Minneapolis. The donor has designated the objects of these four fellowships as follows: Academic, Agriculture, Chemistry, and Medicine.

## EQUIPMENT

### GROUNDS AND BUILDINGS

The medical buildings are located on the University campus, overlooking the Mississippi River. They are situated between the business centers of Minneapolis and St. Paul and close to the two most direct interurban trolley lines which enable the students to reach conveniently all the hospitals of the two cities.

The buildings include the laboratories of Chemistry which are soon to be replaced by new buildings; the Institute of Public Health and Pathology; the new Millard Hall and the Institute of Anatomy to be occupied in 1912; the University Hospitals including the Elliot Memorial Building, the isolation hospital, and certain buildings used for hospital service and nurses' homes. In addition, the College occupies one building in each of the Twin Cities for the purposes of out-patient departments.

Chemistry is taught in two buildings. The main four-story brick building constitutes the headquarters of the School of Chemistry. The Laboratory of Medical Chemistry is a one-story brick building devoted to the uses of this department. It is equipped with amphitheater, two teaching laboratories, preparation rooms, balance room, storage rooms, and private offices of the staff of this department.

The Legislature in 1911 appropriated \$405,000 for the erection of new chemical laboratories, plans for which are now being drawn.

The Institute of Public Health and Pathology is a two-story and basement brick and stone building, of thoroughly modern and fire-proof construction. A portion of the building is devoted to the laboratory and record rooms of the State Board of Health, including the Pasteur clinic. The remainder of the building is occupied by the teaching laboratories of Bacteriology, Pathology, and Surgical Pathology, and by the research rooms and offices of the staff serving in these departments.

The new Millard Hall is a four-story and basement building of brick and concrete construction, fire-proof throughout and provided with modern systems of heating, ventilation, lighting, etc. The larger portion of the building as designed is under construction at a cost of \$326,000 (building, \$266,000; equipment, \$60,000). It is to be occupied during the summer of 1912 by the offices of the Dean and the Departments of Physiology and Pharmacology, Medicine, and Surgery.

The Institute of Anatomy is a companion building which has in addition a sub-basement for refrigeration and other machinery. The portion now being built will cost \$310,000 (building, \$243,000; equipment, \$67,000). It will be occupied in 1912 by the Departments of Anatomy and Obstetrics and Gynecology.

## CLINICAL FACILITIES

The Twin Cities, with a population of 500,000, afford through their several hospitals a clinical service to the University, represented by nearly 2,500 beds.

In addition to the clinical facilities which are generously offered by the hospitals of Minneapolis and St. Paul, the University conducts a hospital service of its own. The College of Medicine and Surgery opened temporary medical and surgical wards and a University Training School for Nurses in six buildings on the new campus in March, 1909. The operation of these proved the exceptional adaptation to educational purposes of a hospital service conducted by the College itself.

## UNIVERSITY HOSPITALS

The first building of the permanent hospital group was made possible by the gift of the late Dr. and Mrs. A. F. Elliot and Mr. Walter J. Trask, their executor, of Los Angeles, California. This gift, which amounted to \$113,000, was supplemented by an accrued interest to the amount of \$7,000, and by a legislative appropriation of \$40,000, making a total of \$160,000 available for the construction of a hospital building. A beautiful site was chosen upon the ground which constitutes a part of the new medical campus overlooking the Mississippi River. The building was completed and occupied in September, 1911. It is fire-proof, sound-proof, and in every way adapted to teaching purposes.

The temporary hospitals provided 60 beds for patients, and of those one building with a capacity of 24 beds is retained for isolation purposes. The Elliot Memorial Building has 120 beds. It is the first building of a projected hospital system having an ultimate capacity of at least five hundred beds.

Patients are admitted to the service only upon the certificate of physicians of the State, which testify to the applicant's inability to pay ordinary hospital charges and physician's fees, and which state the character of the case. No paying patients are received.

The hospital system is planned for the attainment of the highest possible results in the interest of patients and students alike, and demands the unselfish and self-sacrificing work of every member of the clinical staff. The laboratory departments co-operate with the staff physicians, and every resource of modern medical science is made available for the accurate diagnosis and treatment of diseases and for the application of the best clinical methods in the teaching of medicine.

Surgical clinics are held in the University Hospitals from 8:30 to 11:30 a.m. every Thursday and Saturday by the Hospital Staff.

## ALLIED HOSPITALS

Almost the entire clinical service of both public and private institutions in the Twin Cities is placed at the service of the College of Medicine and Surgery. The members of the Faculty are adequately represented upon the attending and consulting staffs of the two cities.

The junior and senior classes are divided into small sections and are assigned, in rotation, not only to the University hospital service, but to the numerous services of these neighboring institutions. The opportunities of observation and case study are thus greatly multiplied and the student is brought into constant close touch alike with teacher and patient.

Since the opening of the University Hospitals, the material has been so varied and so abundant that the surgical clinics in Minneapolis have been limited to the University and Minneapolis City Hospitals, thus saving the time of students formerly spent in traveling from place to place.

St. Paul City and County Hospital has a capacity of 600 beds and is the largest and most complete of its kind in the Northwest. Many of the members of its staff are on the staff of this College and its entire clinical facilities are at the disposal of the College. It enters over 5,500 patients annually, a large proportion of whom are of the emergency order or are suffering from acute disease. The opportunities for bedside instruction are very great, and the hospital theatres, which are new and perfectly appointed, are maintained for teaching purposes. A recent and thoroughly modern fire-proof pavilion for contagious diseases is provided, where the students have unexcelled opportunities to study diphtheria, scarlatina, erysipelas, etc. A separate building is provided for midwifery, and senior students see labor cases under the personal supervision of the Professor or Instructor in Obstetrics.

The Orthopedic Department receives a large number of crippled and deformed children, and houses the State Hospital for Crippled and Deformed Children. All of this work is under the direction of the Professor of Orthopedic Surgery of this College.

The City Hospital, Minneapolis, places its entire clinical material at the command of the clinical teachers of the University. It is a large, thoroughly modern hospital with splendid equipment. A new wing is under construction, to be occupied in the fall of 1912, when the hospital will have a capacity of 555 beds. During the year 1911, 2,759 patients were treated in the hospital, and 11,887 patients in the out-patient department and hospital dispensary. A contagious ward furnishes excellent opportunities for bedside clinical instruction in contagious diseases under the direction of the Professor of Diseases of Children. In the City Hospital, bedside and amphitheatre, medical or surgical clinics are conducted daily throughout the year by members of the Faculty. Clinics in diseases of the skin, nervous diseases, obstetrics, etc., are likewise given in the hospital throughout the school year. A special feature is made of medical bedside clinics in the wards of the hospital to small sections of senior students, during the year, by members of the Faculty.

Asbury Methodist Hospital, Minneapolis, affords clinical material for the State University. The authorities have recently erected a large and beautiful building, only a portion of which is as yet occupied. It has a capacity of over 100 beds. Many members of the Faculty are on the staff of the hospital and give clinics.

St. Joseph's Hospital, St. Paul, with 150 beds and one of the finest amphitheatres with every modern device, contributes largely to the clin-

ical instruction. Additions have been built during the past year and a complete X-ray equipment installed. Members of the Faculty are on the staff and give clinics there to the students.

Northwestern Hospital, Minneapolis, has a capacity of 100 beds and during 1911 admitted 1,497 patients.

St. Luke's Hospital, St. Paul, with a capacity of 100 beds, is largely devoted to surgical clinics. Clinics of this College are held in this hospital by many members of its staff who are on the College Faculty. Two operating rooms, with conveniences for students, give unusual facilities and a service of the highest order.

The Swedish Hospital, Minneapolis, with a capacity of 150 beds, is housed in a newly-constructed modern building and members of this Faculty exclusively utilize the material of the hospital for teaching purposes. During the past year 2,482 patients were treated.

St. Barnabas Hospital, Minneapolis, with a capacity of 150 beds, furnishes medical and surgical material for clinics to junior and senior classes of the University. Clinics are held throughout the college year. During the preceding year, 2,222 patients were treated at this hospital.

St. Mary's Hospital, Minneapolis, also furnishes clinical material for the University. The hospital is located directly across the Mississippi River from the new University Hospital. It has a capacity of 100 beds and treated 1,540 patients during the year.

The Thomas Hospital which affords treatment exclusively for tuberculosis cases in all stages and forms, is located immediately across the river from the new University Hospital. It has a capacity of 50 beds.

The College of Medicine and Surgery is in intimate relationship with the medical staff of the various state correctional and charitable institutions, for which Minnesota is justly noted. St. Mary's Hospital, Rochester, St. Mary's Hospital, Duluth, and the Duluth Department of Health are also in close affiliation with the College through their laboratory services.

#### *Internships for Juniors*

Four internships during the summer months are available at the State Hospital for the Insane, St. Peter, Minn., where most excellent opportunities are afforded for clinical and laboratory study of general disease processes as well as in the special field of mental and nervous diseases, under the direction of Dr. H. E. Tomlinson, Superintendent, and his associates. A similar internship is available in the hospital of the State School for the Feeble-Minded at Faribault under the direction of Dr. A. C. Rogers, Superintendent, and his staff.

#### OUT-PATIENT SERVICE

The University owns a clinical building situated upon the west side of the Mississippi River, within a few hundred yards of the campus, in which a dispensary service has long been conducted. This service has now been associated with the University Hospital as its out-patient department and is under the same general organization.

The out-patient service is manned by members of the general staff and clinical assistants, under the direction of a chief of staff. Its service is divided into medical, surgical, gynecological, obstetrical, children's, eye and ear, nose and throat, skin, genito-urinary, nervous and mental, and orthopedic clinics. In these, some 15,000 consultations are recorded each year.

Senior students are required to attend the clinics daily, and are drilled in taking of histories, in making of physical examinations, the writing of prescriptions, etc. Sections of senior students are assigned each day to the out-patient pharmacy and to the clinical laboratory, where they have opportunity to fill prescriptions and to make clinical diagnoses. The out-patient department also provides a resident service for senior students, which is elective and open to a limited number. Students selecting this service are required to reside at the dispensary and attend emergency, accident, or sick calls, under the direction of the staff. An externship has also been established in the out-patient department, and will be open to competitive examinations for appointment.

An obstetrical out-service department is well established, and obstetrical cases are assigned to sections of senior students under the directions of some member of the staff in this field. So far as possible, these cases are referred to the University Hospital for care and attendance.

#### *Allied Dispensaries*

The free dispensary of the city of St. Paul is privately incorporated, but is manned by members of the Faculty of this College, and is open to the attendance of University students who are regularly assigned to its clinics. It is centrally located in a twenty-room building at 204 W. 9th St., St. Paul. It receives over 10,000 visits each year.

The tuberculosis clinics of St. Paul and of the City Hospital at Minneapolis are available to the college, and the clinic of the Thomas Hospital, Minneapolis, is open to the attendance of its students.

#### LIBRARY OF THE DEPARTMENT OF MEDICINE

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 Medicine, Pathology and Bacteriology, Anatomy, Physiology and Pharmacology. These contain nearly 10,000 bound volumes, 14,000 unbound volumes, monographs, reprints, dissertations, etc., and 200 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 and sanitary publications.

The general University library contains some 145,000 bound volumes, 30,000 unbound volumes and pamphlets, and about nine 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 Anatomy, through the generosity of Alfred F., John S., and Charles S. 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.

Recently the library has secured through the gift of Doctors C. J. and C. H. Spratt the valuable library on Ophthalmology of Professor Hermann Cohn, of Breslau, numbering some 2,000 titles.

The clinical library of the College is being housed in comfortable quarters in the new Millard Hall. The building is thoroughly fireproof and the books are shelved in steel stacks. The library is open to all members of the profession as well as to the various departments of the college.

Dr. Charles A. Wheaton, of St. Paul, Emeritus Professor of Surgery, has donated his library to the college. It includes an unusually valuable collection of surgical works numbering about two thousand volumes. The books are being catalogued and will be deposited in Millard Hall.

Dr. Charles Lyman Greene, Professor of Medicine, has given his library, including valuable sets of periodicals, to the college to be deposited in Millard Hall when completed.

The library of Dr. M. P. Vander Horck, Professor of Diseases of the Skin and Genito-Urinary Organs, lately deceased, has been donated to the college by Mrs. Vander Horck.

## COURSES OF INSTRUCTION

### THE COURSE IN MEDICINE

The course in Medicine requires a minimum of seven years of work, two years in a recognized college of arts and sciences, and five years in the College of Medicine and Surgery.

For students who enter the College of Medicine and Surgery in September, 1911, and thereafter, the fifth year of residence in the College of Medicine and Surgery will be spent either (a) as interne in a hospital which is approved by the Faculty, or (b) as an advanced student in one of the laboratories of this College in preparation for teaching. The M.D. degree will not be conferred until the close of this year of hospital internship or of advanced study.

The intention of the Faculty in establishing the year of hospital internship was to require of all candidates for the M.D. degree a year of clinical experience under competent supervision and in well equipped modern hospitals. For this purpose a list of approved institutions in this and other states is being prepared. In the University Hospitals and those of the Twin Cities the work of the interne will be under the close observation of members of the staff of instruction of this College, and it is expected that the staffs of other hospitals will make official detailed reports upon the work of such students as become internes in their institutions.

The object of this hospital year is to ensure to the public competent practitioners and to give to the graduates of this College further assurance of efficiency in their profession.

In January, 1912, the Faculty decided that in order to encourage men with medical training to enter the profession of teaching in laboratory subjects in medical colleges, it was wise to offer to those who show especial promise in scientific work a year of advanced work in the laboratories of the college in lieu of this year of hospital internship. Upon the successful completion of a year of special studies such students will be granted the M.D. degree. Students desiring to avail themselves of this must indicate their intention not later than the middle of their sixth year, and must receive the approval of the head of the department in which they wish to work and of the Executive Faculty.

The twenty-fourth annual course of study in this College will begin on Wednesday, September 18, 1912, and will continue nine months, or thirty-six weeks, exclusive of holidays, closing upon Saturday, June 7, 1913. The college year is divided into two semesters; the first semester ends February 1, 1913. 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 5, 1913, and close June 7, 1913. Certain of the courses of study terminate on November 14th, and April 10th. Commencement exercises will occur in common with the other departments of the University during the week ending June 12, 1913.



### EIGHT-YEAR COURSE LEADING TO THE DEGREES OF BACHELOR OF ARTS AND DOCTOR OF MEDICINE

Students who have completed their junior work in the College of Science, Literature, and the Arts in this University may elect the first year's work in the College of Medicine and Surgery as the work of their senior academic year, and upon satisfactory completion of the same will receive the degree of B.A. from that college. (See also Bulletin of the College of Science, Literature, and the Arts.)

Students entering upon the medical part of this eight-year combined course must present evidence of having fulfilled all the requirements for admission stated on page 18 of this Bulletin.

Carleton and Macalester Colleges have entered into an arrangement with the University of Minnesota whereby students of these colleges have the same opportunities in this regard as those of the College of Science, Literature, and the Arts of this University.

By this arrangement students who have completed the five years' work in Medicine will have received both degrees in a period of eight years. As this course gives greater opportunity for elective studies in the Academic College it is strongly recommended.

### SEVEN-YEAR COURSE 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. This course has now been lengthened to seven years as indicated on a previous page and is required of all who do not take the eight-year course described above. The first two years are given in the College of Science, Literature, and the Arts, of the University of Minnesota or other approved institutions, and the last five 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 seven-year course.

The student must complete during the two years of academic work all the courses listed under *Requirements for Admission* on page 18, or their equivalent in other approved colleges.

The work of the four years of class instruction in medicine is listed in the schedule at the end of this Bulletin.

### GRADUATE WORK

Students in the College of Medicine and Surgery may become candidates for the degree of M.A., M.S., or Ph.D. in the Graduate School. Candidates must have received the bachelor's degree from this University or an approved college, and in addition to the work credited toward the

M.D. degree, must pursue courses of study conforming to the regulations of the Graduate School. Students looking forward to teaching may offer the advanced laboratory work of their post-senior year toward any of these graduate degrees.

Opportunity is offered for students registered in the Graduate School to take majors or minors for the degree of M.A., M.S., or Ph.D. in advanced courses in Anatomy, Bacteriology, Embryology, Histology, Neurology, Pathology, and Physiology in the College of Medicine and Surgery.

In all cases the students must comply with the rules and regulations of the Graduate School of the University of Minnesota.

Students registered in the Graduate School pay a fee of \$10. The amount of additional charges for the various laboratory or other courses open to special or graduate students can be learned at the office of the Dean of the College of Medicine and Surgery.

### SPECIAL STUDENTS

Special students, properly qualified, whether they be graduates in Medicine or not, may be admitted to many of the courses offered in the College of Medicine and Surgery.

### THE SCHOOL FOR NURSES

The School for Nurses is conducted in connection with the hospital service under the control of the College of Medicine and Surgery.

It is in charge of a superintendent assisted by a teaching staff selected from the Faculty of the College under the direction of the Committee on School. While the undergraduates of the school constitute the nurses' corps of the University Hospital, the School exists primarily for the efficient education of nurses. It is the first training school in the United States under direct university control.

A four years' high school course is the minimum requirement for admission. Preference will, however, be given to women of superior preliminary attainments. Applicants are required to undergo a general physical examination to determine their fitness for the service, and are expected to present suitable business and social references.

A preliminary four months' course of instruction in Anatomy, Physiology, Chemistry, Bacteriology, Pharmacology, Public Health, English, Physical Culture, History and Principles of Nursing, and Hospital and Household Economics is given to the students of the school in the laboratory and lecture rooms of the University.

Examinations at the close of this course must be successfully passed. Students during this four months' course are not in residence. The course is under a fee of \$25.

Students who have completed the preliminary course are admitted to the hospital service on two months' probation.

Upon final acceptance they are entered for the remaining two and one-half years' work in hospital. They will serve in rotation in the medical and surgical wards for men and for women, in the obstetric service, in special departments of practice, and in their senior year will be assigned to out-patient clinics and visiting nursing. Lecture courses in connection with the practical training are given by members of the Faculty and by the superintendent throughout each year. Examinations will be held at the close of each year's work.

The complete course will lead up to the degree of Graduate in Nursing, conferred upon recommendation of the Faculty, by the Board of Regents of the University.

Graduates will be admitted upon competitive examination to a post-graduate course, during which they will serve in the capacity of head nurse and will be given the opportunity to pursue special lines of study.

## DEPARTMENTAL STATEMENTS

### DEPARTMENT OF ANATOMY

THOMAS G. LEE, B.S., M.D., Professor of Anatomy and Director of the Department

CHARLES A. ERDMANN, M.D., Professor of Gross and Applied Anatomy

JOHN B. JOHNSTON, Ph.D., Professor of Comparative Neurology

RICHARD E. SCAMMON, Ph.D., Assistant Professor of Anatomy

\_\_\_\_\_, Assistant Professor of Anatomy

WILLIAM A. HILTON, Ph.D., Instructor in Histology and Embryology

WILLIAM F. ALLEN, M.A., Instructor in Histology and Embryology

\_\_\_\_\_, Instructor in Anatomy

EUGENE K. GREEN, B.A., M.D., Associate in Anatomy

HENRY JOHN, B.A., Shevlin Fellow in Anatomy

WILLIAM KING, Departmental Assistant in Anatomy

The Department of Anatomy is housed in the recently erected Institute of Anatomy, and provides for undergraduate instruction in the following branches: dissections, histology, neurology, embryology, osteology, topographical and surgical anatomy, anatomical technique, and for graduate work in any of the several branches of anatomy.

The Institute of Anatomy is situated on the new campus on the south side of Washington Avenue. The present structure comprises a central portion and one wing, provision being made for a future second wing. The central portion measures 100 by 64 feet, and the wing 140 by 64 feet, and consists of a basement, first, second, and third floors. A roof house forming a fourth story extends over a portion of the building, and there is also a sub-basement under the present wing. The total floor space amounts to about 60,000 square feet. There was appropriated for the erection of the building \$243,342.00, and for the equipment of the same, \$67,200.00.

The various anatomical courses occupy portions of the third, fourth, and fifth years of the college work. In the third year osteology, histology and splanchnology, dissection, and embryology are studied; in the fourth year neurology, anatomy of the special sense organs, and topographical anatomy. In the fourth year provision is made for additional work in surgical and applied anatomy. These courses are arranged in sequence in relation to each other and to the other departments of work in the College.

Each student is loaned a box containing a human skeleton for the purpose of study in osteology. In histology, in embryology, and in neurology, in addition to specimens completed by the students themselves, there are very large collections of specially prepared sets of slides and series of embryos which are loaned to the student during the course.

The departmental library contains a carefully selected and rapidly growing collection of reference literature, both standard and periodical.

All of the anatomical periodicals are received and complete sets of nearly all are available. An important addition to the library was the gift of the working anatomical collection of the late Prof. William His, of Leipzig. The other libraries of the University, as well as those of the Twin Cities, render it possible to consult practically all of the important anatomical and biological literature.

### *Opportunities for Advanced and Graduate Students*

The Institute of Anatomy is in position to offer excellent facilities in the form of rooms, material, apparatus, reagents, literature, assistance in the preparation of plates and in securing the proper publication of research work, and the advice and aid of the entire staff to advanced and graduate students who desire to pursue work in any phase of human or vertebrate anatomy, gross or microscopic, histology, embryology, neurology, osteology, cytology, etc.

A. To graduates in Medicine or advanced medical students to undertake special work in anatomy, in its relation to clinical medicine and surgery.

B. To graduate students to take work in some branch of anatomy as a minor or to pursue original investigation in anatomy as a major leading to the degree of M.A., M.S., or Ph.D.

For minors, see Courses 1, 2, 3, 4, 5, 16; for majors, see Courses 5, 16, 17, 18, 20, 22.

C. To properly qualified students who intend fitting themselves for teaching positions in any branch of anatomy, aid in the form of scholarships, fellowships, positions of assistants or research assistants will be provided wherever possible.

#### 1. Histology and Splanchnology of Man and Vertebrates Drs. LEE and HILTON and Mr. ALLEN

Three lectures and nine hours laboratory per week; third year, first semester. Prerequisite, Zoology 1 or equivalent.

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, followed by a comparative study of the anatomy, gross and microscopic, of the various organs of the alimentary, respiratory, and urogenital, cutaneous, vascular, and lymphatic systems.

#### 2. Comparative Embryology of Man and Vertebrates Drs. LEE, JOHNSTON, and HILTON, Mr. ALLEN and ASSOCIATES

Two lectures and six hours laboratory per week; third year, second semester. Prerequisite, Zoology 1 or equivalent.

A comparative study of reproduction, the germ cells, fertilization, cleavage, implantation of ovum, formation of germ layer, fetal membranes, placenta, formation of body. The histogenesis of tissues, development of organs. The course includes practical work upon a large collection of series of embryos cut in various planes and representing all phases of development. The elements of teratology are considered as far as time permits.

## 3. Human Osteology

Dr. ERDMANN

Third year, first semester.

Lectures, recitations, and laboratory work upon the human skeleton and supplementary work on the osteology of the other vertebrates. A practical study of the skeleton, followed by recitations from the specimen.

## 4A. Dissections

Drs. ERDMANN, SCAMMON, and ASSOCIATES

Twelve hours per week; third year, first semester. Prerequisite, Zoology 1 or equivalent.

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 is undertaken.

## 4B. Dissections, Continuation of Course 4A.

Drs. ERDMANN, SCAMMON, and ASSOCIATES

Nine hours per week; third year, second semester.

In this course the student completes the dissection of the other half of the human body.

## 5. The Human Nervous System

Drs. JOHNSTON and HILTON

Two lectures and seven hours laboratory; first semester. Prerequisite, Anatomy 1 and 2; or Zoology 2 or 5.

The special sense organs and the central nervous system are studied by dissection and in microscopic preparations. The student makes a full dissection of the eye, and other sense organs, and of the fiber paths in all segments of the human brain. Each member of the class is supplied with a series of sections of the brain stem (every twentieth transverse section) and with numerous preparations of the spinal cord, cerebellum, cortex, and other regions stained by the Nissl, Golgi, Weigert, and other methods. In these the fiber tracts and nerve centers are worked out in comparison with the dissections. A large collection of mammalian and fetal and adult human preparations is used for demonstration.

This course may precede or follow Course 16. Both should be taken by candidates electing neurology as a major for the M.A. or as a minor for the Ph.D. degree.

## 6. Topographical Anatomy

Dr. ERDMANN

Two lectures and two hours laboratory work per week; fourth year, second semester.

A study of frozen sections, special dissections, and work on the living model in preparation for the work in clinical medicine.

## 7. Surgical and Applied Anatomy

Dr. ERDMANN

Two lectures and two hours laboratory work per week; fifth year, first semester.

A comprehensive review of the relationships of anatomical structures in their application to clinical surgery, comprising surface anatomy, the outlining of organs, the location and significance of landmarks, determination of blood vessels and nerves, regional anatomy, influence of muscles in fractures, etc. Instruction is given by means of the living model, cadaver, special dissection, the lantern, models, and a study of frozen sections.

## 11. Course in Descriptive Anatomy for Dental Students

Dr. SCAMMON and ASSOCIATES

Six hours lecture and recitations, six hours laboratory work per week; first year, first semester. A specially planned course open only to dental students.

## 12. Dental Histology and Embryology

Drs. LEE, HILTON, Mr. ALLEN and ASSISTANTS

Two lectures and six hours laboratory work per week; first year, second semester. A modified and specially arranged course, open only to dental students.

The structure and histogenesis of the organs and tissues of the body, the structure and development of the teeth and jaws, mouth cavity, and glands.

## 13. Course in Dissection for Dental Students

Dr. SCAMMON and ASSOCIATES

Twelve hours per week laboratory and recitations; first year, second semester. Open to dental students only.

## 14. Course in Anatomy for Nurses

Drs. LEE and ERDMANN

Lectures, recitations, demonstrations, and laboratory exercises three hours per week, one semester.

## 16. Comparative Neurology of Vertebrates

Dr. JOHNSTON

Two lectures and eight laboratory hours; either semester. Prerequisite, Zoology 2 or 5; or Anatomy 1 and 2.

Intended for graduates; open by permission to juniors and seniors who meet the requirements. See note to Course 5. This course should be taken by students preparing for teaching in neurology.

## 17. Spinal Cord, Brain Stem, and Cerebellum

Dr. JOHNSTON

Elective; either semester. Prerequisite, Course 5 or 16.

Normal and experimental studies of the structure of the central mechanisms involved in reflex actions.

## 18. The Evolution and Structure of the Cerebral Cortex

Dr. JOHNSTON

Elective; either semester. Prerequisite, Course 5 or 16.

A study of the cerebral cortex with especial reference to the localization of function and the processes by which localization has been determined.

## 19. Neurological Technique

Dr. JOHNSTON

Elective; either semester. Prerequisite, Course 1.

Practical work in the preparation of the nervous system for gross and microscopic study.

## 20. Research in Neurology

Dr. JOHNSTON

Credit in proportion to work done; either semester.

Qualified students may undertake the investigation of problems in either human or comparative neurology.

## 21. Anatomical Technique

Dr. LEE

An elective course of lectures and practical laboratory work; either semester.

The work consists of a careful study of the principles and practice of microtechnique, fixation, sectioning, staining, making drawings for illustrations, methods of reconstruction, injection, corrosion methods, museum methods, etc., of special value to those who intend qualifying for laboratory positions.

22. Research in Human and Vertebrate Anatomy Dr. LEE  
The following elective courses are open to properly qualified students who desire to take work in some branch of Anatomy as a major leading to the degrees of M.A., M.S., or Ph.D.

22A. Cytology and Histogenesis Dr. LEE  
Either semester. Prerequisite, Courses 1 and 2.  
A comparative study of the animal cell, the differentiation of the tissues and organs.

22B. Advanced Vertebrate Morphology Dr. LEE  
Either semester. Prerequisite, Course 1 and 2.  
A comparative study of the gross and microscopic anatomy of the organs of the body in man and vertebrates.

22C. Advanced Vertebrate Embryology Dr. LEE  
Lectures, reading, and laboratory; either semester.  
A comparative study of the processes of embryonic development in man and vertebrates.

22D. Experimental Embryology Dr. LEE  
Either semester. Prerequisite, Courses 1 and 2.  
A study of the changes produced in embryonic development by means of experimental methods.

22E. Special Dissections Dr. SCAMMON  
Either semester. Prerequisite, Courses 1, 2, 4.  
Elective course in dissections, each student making a careful study of one or more special parts or regions of the body.

25. Anatomical Journal Club and Seminar.  
Weekly meetings during the year for reviews of the current literature and discussion of special topics in Anatomy, Histology, Embryology, and Neurology, and of the research work being carried on in the department.

The following text-books should be consulted:

*Dissections and Splanchnology.*—Piersol, Anatomy; Cunningham, Morris, Poirier and Charpey, Rauber-Kopsch; Spalteholz Atlas; Barker, Laboratory Manual; Cunningham, Manual of Dissection; Treve, Applied Anatomy; Quain, Anatomy; Flower, Osteology of Mammals; Gegenbauer, Elements of Comparative Anatomy; Wiedersheim, Elements of Comparative Anatomy; McClellan, Regional Anatomy; Deaver, Surgical Anatomy; Hildebrand, Chirurgisch Topographische Anatomie; Schultze, Applied Anatomy; Eisendrath, Clinical Anatomy; Boxe and Eccults, Applied Clinical Anatomy.

*Histology and Microscopic Anatomy.*—Stöhr-Lewis, Histology; Quain, Splanchnology, 11th edition; Piersol, Histology; Böhm-Davidoff-Huber, Histology; Schaefer, Histology; Bailey, Histology; Ferguson, Histology; Szymonowicz-MacCullum, Histology; Sobotta-Huber, Atlas; Lee, Vade Mecum; Kolliker, Gewebelehre; Opper, Mikroskopische Anatomie.

*Neurology.*—Van Gehuchten, Systeme Nerveux; Johnston, Nervous System of Vertebrates; Barker, Nervous System; Edinger, Vorlesungen und Einleitung; Cajal Systeme Nervioso; Kolliker; Obersteiner; Bechterew; Dejerine; Atlases by Sabin, Marburg, Nebelthau, Retzius, Bruce, Hasse.

*Embryology.*—Keibel and Mall, Human Embryology; Quain, Embryology, 11th edition; Minot, Laboratory Text-book; Minot, Human Embryology; Bailey-Miller, Embryology; Hertwig-Mark, Embryology; Heisler, Embryology; Marshall, Embryology; Kolliker, Embryologie; Schultze, Embryologie; Kollmann, Embryologie; Schenk, Embryologie.



## DEPARTMENT OF PHYSIOLOGY AND PHARMACOLOGY

RICHARD OLDING BEARD, M.D., Professor of Physiology and Director of the Department

EDGAR D. BROWN, Phm.D., M.D., Professor of Materia Medica and Pharmacology

FREDERICK H. SCOTT, M.B., Ph.D., D.Sc., Assistant Professor of Physiology

M. RUSSELL WILCOX, M.D., Assistant Professor of Physiology

ROBERT B. GIBSON, Ph.D., Assistant Professor of Physiologic Chemistry

WILLIAM H. CONDIT, B.S., M.D., Clinical Instructor in Therapeutics and Materia Medica

CHARLES F. DIGHT, M.D., Lecturer in Pharmacology and Materia Medica

ADDISON GULICK, M.A., Ph.D., Instructor in Physiologic Chemistry

FLETCHER O. MACFARLAND, B.S., M.D., Instructor in Physiology

JULIUS PARKER SEDGWICK, B.S., M.D., Assistant Research Professor in Physiologic Chemistry

FREDERIC W. SCHLUTZ, B.A., M.D., Research Associate in Physiologic Chemistry

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Departmental Office in Millard Hall

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The Department of Physiology and Pharmacology will occupy its permanent quarters, during the summer of 1912, in the new Millard Hall, which is now approaching completion, upon the new medical campus. This department will enjoy about three-fifths of the space provided in the building. In addition to the lecture amphitheatres, shared with other departments, it will equip a large students' laboratory of experimental physiology, two class laboratories of physiologic chemistry, an equally spacious laboratory of experimental pharmacology, demonstration rooms, a number of small apartments for the secluded study of special sense phenomena, a laboratory of materia medica, the offices and private laboratories of the individual members of the staff, and special laboratories for postgraduate study.

In the basement of the new Millard Hall the department will be provided with a diet kitchen, motor and still rooms, an insulated chamber for the electro-cardiograph-galvanometer, combustion rooms, and ample workshops and store rooms.

In the roof house will be placed animal enclosures of thoroughly modern and sanitary equipment, as well as small laboratories for experimental studies along special lines.

The course in Physiology is graded in the third and fourth years. Under the concentration system in vogue, one-half of the student's time is occupied with this study during one semester of each of these two years.

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

In the third year, the student takes up the study of the physiologic components of the animal body; the physiologic and physical properties of tissue cells in general; the nutritive media; and the neuromuscular mechanisms. He then enters upon the study of systemic physiology, taking in turn, the circulation, digestion, and secretion.

In the fourth year, the same methods are applied to the phenomena of respiration and excretion and 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 the 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 study of nutrition, the physiology of development and the distinctive physiologic conditions of successive ages of human life are discussed.

The last half of the semester is 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.

The course in Pharmacology, Materia Medica, and Therapeutics is similarly graded in the fourth, fifth, and sixth years. By lectures, demonstrations, laboratory experiments, and recitations, the student is familiarized with the structure and character of drugs and with pharmaceutical preparations. He observes and experimentally determines the physiologic action of drugs; learns the principles and is drilled in the practice of prescription writing; discusses the indications of therapeutic use, and by the bedside and in the dispensary service applies this knowledge under the direction of clinical instructors.

Reference libraries are accessible to the students for purposes of collateral reading.

## PHYSIOLOGY

### 1. General Cellular Physiology Drs. BEARD, SCOTT, GIBSON, and GULICK

Two lecture and recitation periods, four laboratory periods; third year, third quarter.

The study of the physiologic components of the animal body; the physiologic and physical properties of the tissue-cells in general; the specializations of function; the nutritive media, including methods of blood examination.

### 2. The Musculo-Nervous Mechanisms Drs. BEARD, SCOTT, WILCOX, GULICK, and MACFARLAND

Two lecture and recitation periods, four laboratory periods; third year, third quarter.

The study of the physiologic chemistry of nerve and muscle tissues; the phenomena of muscle and nerve action; the principles of nerve control in general; the nature of stimuli and the phenomena of stimulation.

3. Systemic Physiology Drs. BEARD, SCOTT, GIBSON, GULICK, and  
MACFARLAND

Three lecture and recitation periods, four laboratory periods; third year, fourth 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 digestion.

4. Systemic Physiology (Continued) Drs. BEARD, SCOTT, GIBSON,  
GULICK, and MACFARLAND

Three lecture and recitation periods, four laboratory periods; fourth year, first quarter.

The respiratory mechanisms; 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 kidney. Analysis of the physiologic urine is addressed both to the determination of functional facts and to the attainment of the technique of clinical diagnosis in this field.

5. Metabolism and Nutrition Drs. BEARD, SCOTT, GIBSON, GULICK,  
and MACFARLAND

Two lecture and recitation periods, four laboratory periods; fourth year, first quarter.

A study of metabolic and nutritional problems for the determination of nutritive balance, nitrogenous and body equilibrium, and specific dietetic results; including the analysis of standard dietaries and the further examination of the normal stomach contents and the fecal debris, the estimation of nitrogen excretion in total and differential forms, the relation of fat splitting and fat absorption, and the determination of respiratory quotients, etc.

6. The Physiology of Development Drs. BEARD and GULICK

One lecture and recitation period, two laboratory periods; fourth year, second quarter.

A study of the physiology of the ovum, the embryo, and the fetus; of birth, infancy, childhood, puberty, menstruation, ovulation, pregnancy, parturition, maturity, and old age.

7. The Physiology of Special Sense Organs Drs. BEARD, WILCOX,  
SCOTT, GULICK, and MACFARLAND

Two lecture and recitation periods, four laboratory periods; fourth year, second quarter.

A study of the phenomena and conditions of special sense function and of the means of determining its acuity, range, etc.

8. The Physiology of the Central Nervous System Drs. BEARD and  
SCOTT

Two lecture and recitation periods, and four laboratory periods; fourth year, second quarter.

A study of the functions of the nervous system in general, including the functional relations of nerve tracts, association paths, and central localization.

9. The Metabolism of Infancy Drs. SEDGWICK and SCHLUTZ  
Elective.

- |  |            |
|--|------------|
| 10. The Regulation of Respiration<br>Elective.   | Dr. SCOTT  |
| 11. The Physiology of Accommodation<br>Elective. | Dr. WILCOX |
| 12. The Metabolism of Sugars<br>Elective.        | Dr. GIBSON |

*Text-Books, First and Second Year.*—Howell's Text-book of Physiology; Foster's Physiology, Sixth English Edition; Abderhalden's Physiologic Chemistry.

*Collateral Reading.*—The American Text-book of Physiology; Hammarsten's Physiologic Chemistry; Von Noorden's Text-book of Metabolism; Stewart's Manual of Physiology; Tigerstedt's Physiology; Blyth's Foods and their Composition; Friedenwald and Ruhr's Diet in Health and Disease; Ott's Text-book of Physiology; Hutchinson's Applied Physiology; and Lusk's Science of Nutrition.

## PHARMACOLOGY

1. Elementary Pharmacy, General Toxicology, and Principles of Prescription Writing  
Drs. BROWN and DIGHT

Eight hours lecture or recitation per week; fourth year, fourth quarter.

The course includes the following subdivisions:

(a) Elementary pharmacy; the gross, microscopic, and chemical structure of drugs; weights and measures; pharmaceutic processes; and classes of pharmaceutic preparations.

(b) General treatment of poisoning; principles of prescription writing and incompatibilities; principles and rules of incompatibility; rules for solubility; construction of prescriptions; grammar and phrases of prescription-Latin, with class practice in writing simple prescriptions; use and materia medica of flavors.

(c) *Materia medica* is studied from the crude drugs and pharmaceutic preparations taken from the museum of material medica to which the students have access at all times.

2. General Pharmacodynamics (Experimental) Drs. BROWN and DIGHT

Nine hours per week; fourth year, fourth quarter.

Experiments on cold-blooded and warm-blooded animals, illustrating the action of drugs and the methods of pharmacologic experimentation. The class is divided into sections and these sections into groups of three to six students, each group performing experiments in the same line, but by modified methods on different drugs having a similar pharmacologic action. The results are discussed at conferences, and the conclusions arrived at from the sum of the results. The knowledge thus obtained is by direct observation and serves to impress the student with the actions of drugs, and prepares him for the systematic didactic courses given in the third year.

The experimental course includes the following subdivisions:

(a) Actions of drugs on tissues outside the body, corrosives, hemoglobin, osmosis, etc.

(b) Exercises on intact mammals, absorption and excretion of drugs; racial idiosyncrasy; treatment of poisoning; emetics; convulsants and depressants; pulse, pupils; salivation, etc.

(c) Exercises on frogs, convulsants, central depressants, local anesthetics, on striped and cardiac muscles, cardiac nerves, etc.

(d) Operative work on mammals, general anesthetics, the effects of important drugs on blood pressure, respiration, oncometric and myocardiographic work, diuresis, peristalsis, perfusion of excised organs, isolated heart, etc.

3. Systemic Pharmacology, Toxicology, *Materia Medica*, and Therapeutics  
Dr. BROWN

Two hours lecture and recitation per week; fifth year, throughout the year.

This course is the principal didactic course given in the department. The instruction is given by lectures and recitations. Each drug or group of drugs is studied in detail under the following subdivisions:

(a) *Pharmacodynamics*. The effects of drugs are studied from the experimental and clinical evidence. Constant reference is made to the results obtained in the experimental course (Course 2).

(b) *Toxicology*. Symptoms and treatment of poisoning.

(c) *Materia Medica*. The student is required to be able to identify the more important drugs, learn their physical characters, uses, etc.

(d) *Therapeutics*. The conditions in which the drugs are rationally indicated or in which their empirical use has been found of value.

#### 4. Prescription Writing

Two hours lecture and recitations per week; fifth year, throughout the year.

Hypothetical cases are given and the student is required to write a prescription for the treatment, using the proper drugs which have already been covered in the text.

#### 5. Practical Pharmacy

Dr. WULLING

Three laboratory and lecture hours per week; fifth year, first quarter.

##### 1. U. S. Pharmacopoeia.

(a) Metrology.

(b) Grades of drugs in use.

(c) Pharmacopoeial requirements as to purity.

##### 2. Identity and impurities with U. S. Pharmacopoeial tests of six official substances.

##### 3. Dispensing.

(a) The prescription.

(b) Compounding of prescriptions calling for the preparation of fourteen types of pharmacopoeial preparations.

#### 6. Therapeutic Conferences

Dr. CONDIT

One hour weekly; sixth year, first and second semesters. Required of all seniors.

Conferences on assigned topics to be prepared by students from the point of view of literature and current clinic records, will be conducted weekly.

These will include the therapy of some of the common diseases and also the varied application of some of the common drugs and methods.

*Text-Books:* Sollmann, *Pharmacology, Materia Medica and Therapeutics*; Ortnier, *Treatment of Internal Diseases*; Forchheimer, *The Prophylaxis and Treatment of Internal Diseases*.

*Collateral Reading.*—U. S. Pharmacopoeia; Thornton, *Dosebook and Manual of Prescription Writing*; National Dispensatory; National Formulary.

### DEPARTMENT OF CHEMISTRY

GEORGE B. FRANKFORTER, M.A., Ph.D., Professor of Chemistry and  
Director of the Department

IRA HARRIS DERBY, Ph.D., Assistant Professor of Chemistry

EVERHART P. HARDING, M.S., Ph.D., Assistant Professor of Chemistry

JOHN A. HANDY, Phm.C., B.S., Instructor in Chemistry

WILLIAM H. HUNTER, Ph.D., Instructor in Chemistry

(Courses in general and advanced general chemistry and qualitative analysis are required for entrance to this College and must precede the instruction in Courses 1 and 2 listed below. See Bulletin of the College of Science, Literature, and the Arts and p. 18 this Bulletin.)

## 1. Organic Chemistry

Dr. FRANKFORTER

Six hours per week; third year, first semester. Open to those who have completed courses in general and qualitative chemistry.

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.

2. Toxicology and Hygiene Drs. FRANKFORTER, HARDING, and DERBY  
Third year, first semester.

*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 animal 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 preservatives.

For work in other special or technical lines of 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 physiologic 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 PATHOLOGY AND BACTERIOLOGY

FRANK F. WESBROOK, M.A., M.D., C.M., Professor of Pathology and Bacteriology and Director of the Department

HAROLD E. ROBERTSON, B.A., M.D., Associate Professor of Pathology and Bacteriology and Pathologist to the University Hospitals

ROBERT H. MULLIN, B.A., M.B., Associate Professor of Pathology and Bacteriology

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

E. T. BELL, B.S., M.D., Assistant Professor of Pathology and Bacteriology

J. FRANK CORBETT, B.S., M.D., Associate Professor of Experimental Surgery

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

FRED L. ADAIR, B.S., M.D., Instructor in Obstetrics and Gynecology

CHARLES R. DRAKE, M.D., Demonstrator in Pathology and Bacteriology and Assistant Pathologist, University Hospitals

GUSTAV A. MAGNUSON, M.D., Demonstrator in Pathology and Bacteriology

WILLIAM C. JOHNSON, B.A., M.D., Demonstrator in Pathology and Bacteriology

WINFORD P. LARSON, M.D., Demonstrator in Pathology and Bacteriology

THOMAS P. ROTHNEM, Assistant in Pathology, University Hospitals

LEE POLLOCK, B.S., Departmental Laboratory Assistant

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, 56 by 75 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. 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 used for special work in graduate and elective courses in the diagnosis of tumors, pathology of the nervous system, practical public health, etc. The same loge arrangement obtains as in the main laboratory.

The hospitals 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 microscopic use in class.

The State Board of Health Laboratory Division, including the Pasteur Institute for the study and treatment of rabies, is located in the building. 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 and at autopsies. This is supplemented and co-ordinated by lectures, laboratory, and lantern demonstrations, and by recitations as required.

#### 1. General Bacteriology Drs. MULLIN, LARSON, and MAGNUSSON Fourth year, first quarter.

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 presented.

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 is 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 covered. 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 Drs. ROBERTSON, BELL, and JOHNSON Fourth year, second quarter.

Lectures, demonstrations, and laboratory work on the general processes involved in disease, which include:

(a) Inflammation. The comparative features of cell reaction to various irritants are carefully studied throughout a variety of tissues and animals. As soon as familiarity with cell reaction is assured, 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 from 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 illustrative clinical material.

(e) The general physical, chemical, and biological processes involved in immunity are presented, together with practical and illustrative work on the precipitins, agglutinins, opsonins, etc. The pathology of fever is also fully given.

(f) The theories of causation, the general principles involved, and the classification of tumors are illustrated by a carefully selected assortment of the various types.

### 3. Pathology of Special Diseases (includes Bacteriology) Drs. WESBROOK, ROBERTSON, MULLIN, BELL, LARSON, JOHNSON, and MAGNUSSON Fourth year, second semester.

Disease processes are grouped, so far as practicable, according to their etiology. Instruction is 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 consists of instruction in

#### A. Pathology of infectious diseases.

(a) Special bacteriology of the infectious diseases with the cultivation in the various media of all the important pathogenic bacteria, prepared and kept under observation by each student. Fluids and tissues from clinical cases and autopsies (human and animal) are 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 is studied.

The important gross and microscopic lesions in all the organs are illustrated from clinical and autopsy material, fresh and preserved, and supplemented by experimental work. Each student is required to prepare and examine under the microscope selected fresh and stained specimens of morbid tissues, fluids, etc.

B. Pathology of diseases of toxic and obscure origin. Under this are included the special degenerations, inflammations, and other pathological conditions not already dealt with under infectious diseases.

### 4. Clinical Pathology Drs. ROBERTSON, DRAKE, and JOHNSON Fifth year, first quarter. Required of all students.

The course includes:

(a) The urine; a macroscopical study of its colors and sediments, and the microscopical study of blood, pus, epithelial casts, etc., in the urine of disease.

(b) The blood; the counting of red and white cells in the blood, the estimation of hemoglobin, the making of blood smears, and the fixing, staining, mounting, and study of all forms of normal and pathological red and white blood cells. In this course students are given specimens of blood from cases of pernicious anemia, myelogenous leukemia and lymphatic leukemia, for study.

(c) Stomach contents; the macroscopical, chemical, and microscopical study of gastric contents in various diseases of the stomach, with special reference to differential diagnosis, by lectures and demonstrations.

(d) Exudates and transudates in various diseases of the pleura and peritoneum.

During the fifth and sixth years laboratory facilities are provided so that students themselves, under the supervision and direction of one of the staff, examine material obtained from cases observed in clinics at the various hospitals.



## 5. Autopsies Drs. ROBERTSON, BELL, DRAKE, and JOHNSON

Required in fifth and sixth years.

The fifth and sixth year classes are divided into sections similar to those for clinics. Such sections are called in rotation to each autopsy where the students are required to take an actual part in the examinations under the direct supervision of the pathologist in charge. The work consists of a review of the clinical history, methods of section, study and description of gross specimens. Each student is required to attend at least two autopsies during each year.

## 6. Surgical Pathology Dr. CORBETT

Fifth year, second quarter.

A demonstration laboratory course covering the subject of surgical inflammations. Abnormal conditions are demonstrated by gross and microscopic preparations from clinical cases and experimental sources and where possible the actual lesion in the living subject.

## 7. Laboratory Course on Tumors Dr. CORBETT

Fifth year, second semester.

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 common as well as the rarer types. It is intended to supplement the course on the surgery of tumors by Dr. Stewart.

The work consists of combined study of microscopical sections and gross tumors with their clinical histories, illustrated also by photographs and lantern slides.

## 8. Pathology of the Nervous System Dr. HAMILTON

Fifth year, fourth quarter.

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.

## 9. Obstetric and Gynecologic Pathology (laboratory course) Dr. ADAIR

Elective for twelve students.

Course in gross and microscopic pathology of the female generative organs, placenta, membranes, and fetus.

Both anatomical and chemical pathology of diseases peculiar to the pregnant and non-pregnant female will be studied.

## 10. Pathological Diagnosis and Technique Dr. ROBERTSON

Elective. Limited to ten students of the junior year.

Students participate in autopsies, and themselves prepare and examine material from autopsies and operations for final report and record. They thus are able to provide themselves with a set of selected permanent specimens and learn how to describe processes, write reports, and correlate and record results of value to the clinician.

Students become familiar with the various physical, chemical, and staining methods used in modern pathology and gain a knowledge of the preparation of gross and microscopic specimens for demonstration, museum, class, and medical society work. Each reviews the literature of some one or more important pathological process.

## 11. Public Health Laboratory Technique

Elective.

This course allows the student to become thoroughly familiar with the technique ordinarily employed in a public health diagnostic laboratory. The routine examination of diphtheria and sputum and the Widal test receive considerable attention. In addition the Pasteur treatment for rabies and the methods employed in the sanitary examination of water are demonstrated. Examinations made for other infectious diseases are also shown.

## 12. Advanced Bacteriological Technique and Special Problems Elective.

This course affords the student an opportunity of studying bacteriological technique in greater detail than can be given in the required course. It deals with special methods of isolation of particular pathogenic species of bacteria, together with special means for their cultivation. It necessitates the bacteriological study of feces, urine, sputum, exudates, etc.

## 13. Immunity Elective.

This course gives the student an introduction to the facts of immunity in a practical manner by the study of natural and acquired immunity. Students conduct experiments to show the different types of protective substances mentioned in the theories of immunity and become familiar with the principles and technique of the modern laboratory methods of serum diagnosis.

## 14. Research Work in one of the following lines

Second semester of fifth and throughout the sixth year, hours assigned.

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

*Text-Books.*—*Pathology.*—Adami, Inflammation; Delafield and Prudden, Handbook of Pathological Anatomy and Histology; American Text-book of Pathology; Ziegler, General and Special Pathology; Coplin, Manual of Pathology; Cattel, Post-Mortem Pathology; Durck-Hektoen, Special Pathologic Histology; Jakob, Nervous System; Mallory and Wright, Pathological Technique.

*Collateral Reading.*—Adami, Principles of Pathology; Woodhead, Practical Pathology; Thomas, Text-book of General Pathology; Lubarsch Ostertag, Ergebnisse der Pathologie u. Anatomie; Orth, Pathologische Anatomie; Birch-Hirschfeld, Pathologische Anatomie; Osler, Modern Medicine; Clifford Allbutt, System of Medicine; Leukhart, Die Thierische Parasiten des Menschen; Bouchard, Traite de Pathologie Generale; Von Noorden, Metabolism and Practical Medicine.

## HYGIENE

The very closest relations have always existed between the Minnesota State Board of Health and the University of Minnesota. Members of the State Board of Health staff have also been teachers in the University of Minnesota.

The main laboratories of the Minnesota State Board of Health, and the offices of the Epidemiologist and of the Engineer of the Board, are located in the Institute of Public Health and Pathology. Thus practical men are available as teachers; the practical sanitary work conducted affords the best illustrative teaching material. Members of the staffs of the municipal boards of health of Minneapolis and St. Paul are also on the teaching staff of this college, affording, in addition, illustrative material in municipal hygiene.

Members of the staffs of the Agricultural College, the School of Chemistry, the Department of Economics, the Department of Biology, the College of Education, and the Department of Sanitary Engineering of the University, are all employed in the teaching of medical students.

It is planned that other courses of instruction in relation to personal hygiene and public health will be given to all students of the University, and in addition to the special courses provided already for municipal and

sanitary engineers, other courses will be available for the College of Education, School of Chemistry, and for such students as require a knowledge of special phases of public health.

A graduate course for medical health officers will be announced later.

For medical students, attempt is made to follow the outline prepared by the Committee on Hygiene, Medical Jurisprudence, and Medical Economics of the Council on Medical Education of the American Medical Association. The development of this course is facilitated by the relationships above mentioned and by the co-operation of the various other state institutions, boards, and associations.

The College is indebted to the following for special instruction, viz:

- J. M. ARMSTRONG, M.D., Assistant Commissioner of Health, St. Paul;  
Clinical Assistant in Genito-Urinary Diseases
- L. B. BALDWIN, M.D., Superintendent, University Hospitals
- W. B. BANNISTER, M.D., Lieutenant Colonel U. S. Army, Ft. Snelling
- F. H. BASS, B.S., Professor of Sanitary and Municipal Engineering, and  
Director, Engineering Division, Minnesota State Board of Health
- R. O. BEARD, M.D., Professor of Physiology and Director of the Department of Physiology and Pharmacology
- W. L. BEEBE, D.V.M., Bacteriologist, State Live Stock Sanitary Board,  
St. Paul
- ROY BLAKEY, B.A., In charge of State Board of Health, Tuberculosis  
Exhibit
- A. J. CHESLEY, M.D., Epidemiologist, Minnesota State Board of Health
- J. J. DOW, Superintendent, Minnesota State School for the Blind, Fairbault
- CHRISTOPHER EASTON, Executive Secretary, The Minnesota Association  
for the Prevention and Relief of Tuberculosis, St. Paul
- J. T. GEROULD, B.A., Librarian, University of Minnesota
- CHARLES L. GREENE, M.D., Professor and Chief of the Department of  
Medicine
- T. L. HAECKER, Professor of Dairy Husbandry and Animal Nutrition,  
College of Agriculture
- JOHN M. HURTY, M.D., Secretary State Board of Health, Indianapolis,  
Indiana
- CHARLES H. KEENE, M.D., Supervisor, Hygiene and Physical Training,  
Minneapolis Public Schools
- F. D. KETCHUM, B.S., U. S. Food Inspector, South St. Paul
- A. T. LAIRD, M.D., Secretary, St. Louis County Tuberculosis Association;  
Superintendent, St. Louis Sanatorium for Tuberculosis, Duluth
- EUGENE T. LIES, B.S., General Secretary, Minneapolis Associated Charities
- W. J. MARCLEY, M.D., Late Superintendent, State Sanatorium (for  
Tuberculosis), Walker, Minn.; Secretary, Tuberculosis Commission,  
Minnesota State Board of Health
- R. H. MULLIN, B.A., M.B., Director of Laboratory Division, Minnesota  
State Board of Health; Associate Professor of Pathology and  
Bacteriology

- KENT NELSON, M.D., Major U. S. Army Medical Corps  
 ALFRED OWRE, B.A., M.D., C.M., D.M.D., Dean of the College of Dentistry
- Miss M. PATERSON, Head Nurse, Associated Charities, Minneapolis  
 A. W. RANKIN, B.A., Professor of Education, University of Minnesota  
 A. C. ROGERS, M.D., Superintendent, State School for the Feeble-Minded, Faribault
- Hon. C. G. SCHULZ, Superintendent, Department of Public Instruction, St. Paul
- Hon. GEORGE T. SIMPSON, Attorney General, St. Paul
- HALDOR SNEVE, M.D., Clinical Professor of Nervous and Mental Diseases  
 J. N. TATE, Superintendent, Minnesota State School for the Deaf, Faribault
- H. A. TOMLINSON, M.D., Superintendent of State Hospital for the Insane, St. Peter
- E. L. TUOHY, B.A., M.D., Chief, Branch Laboratory, Minnesota State Board of Health, Duluth, Minn.; Chairman, Tuberculosis Commission, Minnesota State Board of Health; Chairman, Tuberculosis Commission, St. Louis County
- H. L. ULRICH, B.S., M.D., Instructor in Clinical Medicine, University of Minnesota, Minneapolis.
- F. F. WESBROOK, M.A., M.D., C.M., Dean, Professor and Director of the Department of Pathology and Bacteriology
- LOUIS B. WILSON, M.D., Assistant Professor of Clinical Pathology, Director of Laboratories, St. Mary's Hospital, Rochester, Minn.

## DEPARTMENT OF MEDICINE

- CHARLES LYMAN GREENE, M.D., Professor of Medicine and Chief of the Department
- HENRY L. STAPLES, M.A., M.D., Clinical Professor of Medicine  
 THOMAS S. ROBERTS, M.D., Clinical Professor of Pediatrics  
 JAMES T. CHRISTISON, M.D., Professor of Pediatrics  
 LOUIS A. NIPPERT, M.D., Clinical Professor of Medicine  
 GEORGE D. HEAD, B.S., M.D., Associate Professor of Medicine  
 WALTER R. RAMSEY, M.D., Clinical Professor of Pediatrics  
 GEORGE E. SENKLER, M.D., Clinical Professor of Medicine  
 S. MARX WHITE, B.S., M.D., Associate Professor of Medicine  
 SOREN P. REES, B.S., M.D., Clinical Professor of Medicine  
 JOHN GROSVENOR CROSS, B.S., M.D., Clinical Professor of Medicine  
 JAMES GILFILLAN, M.D., Clinical Professor of Medicine  
 WALTER D. SHELDEN, B.S., M.D., Clinical Professor of Medicine  
 LESLIE O. DART, M.D., Clinical Instructor in Pediatrics  
 PEDER A. HOFF, M.D., Clinical Instructor in Medicine  
 HENRY L. ULRICH, B.S., M.D., Clinical Instructor in Medicine  
 THOMAS W. STUMM, M.D., Clinical Instructor in Medicine  
 CHARLES H. BRADLEY, M.D., Clinical Instructor in Medicine  
 C. NAUMANN MCCLOUD, M.D., Clinical Instructor in Pediatrics

CHARLES J. MEADE, M.D., Clinical Instructor in Medicine  
 HENRY T. NIPPERT, M.D., Clinical Instructor in Medicine  
 HENRY W. COOK, B.A., M.D., Clinical Instructor in Medicine  
 JULIUS PARKER SEDGWICK, B.S., M.D., Assistant Research Professor in  
 Physiologic Chemistry and Clinical Instructor in Pediatrics  
 CHARLES B. WRIGHT, B.A., M.D., Clinical Instructor in Pediatrics  
 FRANK S. BISSELL, M.D., Clinical Instructor in Medicine  
 JOHN E. HYNES, Ph.C., M.D., Clinical Instructor in Medicine  
 ERNEST T. F. RICHARDS, M.D., C.M., Clinical Instructor in Medicine  
 FREDERIC W. SCHLUTZ, M.D., Instructor in Pediatrics  
 WILLIAM H. AURAND, M.D., Clinical Assistant in Medicine  
 EDWARD MOREN, M.D., Clinical Assistant in Medicine  
 LEVERETT D. BRISTOL, B.S., M.D., Clinical Assistant in Medicine  
 EDGAR J. HUENKENS, B.A., M.D., Clinical Assistant in Medicine  
 OLIVER R. BRYANT, M.D., Clinical Assistant in Medicine  
 ROBERT WILLIAMS, B.A., M.D., Clinical Assistant in Medicine  
 ERNEST L. BAKER, M.D., Clinical Assistant in Medicine  
 JOHN C. BROWN, B.A., M.D., Clinical Assistant in Medicine  
 WILLIAM D. BEADIE, M.D., C.M., Clinical Assistant in Pediatrics  
 JAMES F. HAMMOND, M.D., C.M., Clinical Assistant in Pediatrics  
 HERBERT G. LAMPSON, M.D., Assistant in Clinical Pathology  
 CHELSEA C. PRATT, M.D., Clinical Assistant in Medicine  
 F. A. OLSON, B.A., M.D., Research Assistant in Medicine

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Departmental Office in Millard Hall

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## GENERAL MEDICINE

*Fourth Year.*—Instruction in Medicine begins in the second semester of the fourth year with courses in elementary physical diagnosis, case taking, and general symptomatology, occupying one hour daily in the fourth quarter.

This work includes lectures, quizzes, and bedside demonstrations.

*Fifth Year.*—During the fifth year the student receives systematic instruction, by means of didactic lectures, recitations, and written quizzes, in the acute infections, diseases of all the important organs of the chest and abdomen, the blood and ductless glands, and the alimentary tract.

These courses occupy six hours per week during the school year.

*Sixth Year.*—The courses in Medicine of the sixth year comprise instruction in constitutional diseases and intoxications, animal parasites, tropical diseases, life insurance examinations, case analysis, etc.

Three hours weekly throughout the sixth year are devoted to these courses.

The sixth year's work in the classroom consists chiefly of the analysis of actual case histories by the members of the class, supplemented by explanatory remarks by the instructors and when possible by the presentation of patients and the demonstration of autopsy material.

*Clinics.*—In addition to the didactic courses previously outlined, the fifth and sixth year students are required to devote two entire days each week in attendance at clinics in the hospitals and free dispensaries of Minneapolis and St. Paul.

Sixth-year students are also assigned daily in small sections to the University Hospital for ward work, and to the University Free Dispensary for practical instruction in case taking, physical diagnosis, etc.

Small sections of sixth-year students may be assigned for given periods of time to make the general hospital rounds with the Chief of Staff. Such general rounds require the attendance of all staff physicians on duty, as well as the laboratory representatives, and offer unusual opportunities to the student.

*Seminar Work.*—Seminar work is also given in the fifth and sixth years at the University Dispensary for the purpose of studying the various stages and varying types of the same disease and the effects of treatment. Cases presented at this seminar are selected from all of the medical material of the Dispensary.

Sixth-year students are required to prepare short theses upon such medical subjects as may be assigned by the instructor, which are discussed at the seminar.

*Tests and Practical Examinations.*—At the end of each of the courses of the fourth, fifth and sixth years, test examinations are held and practical clinical examinations are required monthly during the fifth and sixth years, these being supplemented by general written examinations at the end of each year.

*Clinical Laboratory Work.*—Medical pathology, including systematic application of laboratory methods to diagnostics, is taught in the pathological laboratory during the second semester of the fourth year, and laboratory teachers co-operate with the teaching staff in the lecture rooms, the University Hospitals and Dispensary, and the City Hospitals of Minneapolis and St. Paul.

Six-year students are assigned daily in small sections to the clinical laboratories of the University Hospitals where examinations of urine, blood, sputum, and stomach contents are made under competent instructors.

Every effort is made to present the available clinical material in such a manner that the student shall be brought into actual contact with the cases studied, ascertain for himself both clinical and laboratory data, and thus work out the diagnostic features of each case by logical and systematic methods of study. Furthermore, the student is constantly drilled in case taking, physical diagnosis, the use of diagnostic instruments of precision, and applied clinical pathology at the bedside.

Instruction in pediatrics is wholly clinical after the fifth year, and an abundance of material is found in the Twin City Hospitals and Dispensaries.

1. Elementary Physical Diagnosis Dr. REES  
Three lectures and recitations per week, six weeks; fourth year, fourth quarter.
2. Case Taking and General Symptomatology Dr. SHELDEN  
Three lectures and recitations per week, six weeks; fourth year, fourth quarter.
3. Diseases of Heart and Blood Vessels Dr. GREENE  
Two lectures and recitations per week; fifth year, first quarter.
4. Diseases of the Bronchi, Lungs, and Pleura Dr. REES  
Two lectures and recitations per week; fifth year, first quarter.
5. Gastric Ailments Dr. WHITE  
Two lectures and recitations per week; fifth year, second quarter.
6. Diseases of the Kidney Dr. NIPPERT  
One lecture and recitation per week; fifth year, second quarter.
7. Acute Infectious Diseases Dr. CROSS  
One lecture and recitation per week; fifth year, second quarter.  
One lecture and recitation per week; fifth year, third quarter.  
One lecture and recitation per week; fifth year, fourth quarter.
8. Diseases of the Intestinal Tract, Liver, Pancreas, Spleen, and Peritoneum Dr. GILFILLAN  
Two lectures and recitations per week; fifth year, third quarter.
9. Diseases of the Blood and Ductless Glands Dr. HEAD  
One lecture and recitation per week; fifth year, third quarter.
10. Diseases of Children Dr. CHRISTISON  
Two lectures and recitations per week; fifth year, third and fourth quarters.
11. Systematic Quizzes Reviewing the Work of the Year Drs. GREENE,  
NIPPERT, HEAD, WHITE, REES, CROSS, and GILFILLAN  
Fifth year, throughout.
12. Case Analysis  
Two exercises per week; sixth year.  
First quarter Drs. HEAD and WHITE  
Second quarter Drs. GREENE and HEAD  
Third quarter Drs. GREENE and WHITE  
Fourth quarter Drs. WHITE and CROSS  
The classroom work of the sixth year in Medicine consists principally of case analysis (using actual case histories), with short explanatory talks by the instructors, together with seminar work, etc.

13. Constitutional Diseases and the Intoxications Dr. SHELDEN  
One lecture and recitation per week; sixth year, first quarter.
14. Tropical Diseases and Diseases Due to Certain Animal Parasites  
Drs. ULRICH and CROSS  
One lecture and recitation per week; sixth year, second and third quarters.
15. The Examination for Life Insurance Dr. COOK  
One lecture and recitation per week; sixth year, fourth quarter.
16. Clinical Course in the Diseases of Children Drs. ROBERTS, SEDGWICK, DART, and WRIGHT  
Four hours per week, fifth and sixth years, at Minneapolis City Hospital, Children's Home, other hospitals, and the University Free Dispensary.
17. Clinical Course in the Diseases of Children Drs. CHRISTISON and RAMSEY  
Four hours per week, fifth and sixth years, at St. Paul City and County Hospital, and St. Paul Free Dispensary.
18. Medical Pathology  
Combined laboratory and bedside course under the Departments of Medicine and Pathology. (See Course 4 under Department of Pathology and Bacteriology.)

### 19. Physical Diagnosis

In addition to the systematic instruction given under Course 1, the topic is further developed and applied in the University Hospitals and Dispensary, the public hospitals of the Twin Cities, and in special clinical lectures and section clinics.

The classroom courses dealing with diseases of the thorax and abdomen, further emphasize and apply the various methods of diagnosis, whether physical, instrumental, chemical, or microscopic.

### 20. General Medical Clinics

(a) Senior students, regularly assigned in sections for a definite period to act as clinical clerks, visit the University Hospitals daily, take case histories and follow closely and report upon the individual patients to whom they are specifically assigned.

(b) Section clinics are held daily in the University Hospitals and University Dispensary.

(c) Section clinics and occasional clinical lectures occupy the entire afternoon and part of the forenoon on each Thursday and Saturday throughout the entire fifth and sixth years.

(d) Special tuberculosis clinics are held at the special tuberculosis out-patient clinics and in the Thomas Hospital.

A detailed statement of the clinics of the present year appears on pages 70 to 74 and will illustrate the methods employed in scheduling the work.

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*Text-Books.*—Greene, Medical Diagnosis; Butler, Diagnosis; Cabot, Physical Diagnosis; Da Costa, Physical Diagnosis; Wilson, Medical Diagnosis; Musser, Medical Diagnosis; Hare, Diagnosis; Leube, Special Medical Diagnosis; Osler, Practice; Edward, Practice of Medicine; French, Practice of Medicine; Tyson, Practice of Medicine; Mering, Lehrbuch der Innere Medizin; Anders, Practice of Medicine.



*Reference Books.*—Osler, Modern Medicine; Allbutt, System; Ebstein und Schwalbe, Handbuch; Gibson, Practice of Medicine; Mackenzie on the Heart; Babcock on the Heart; Gibson on the Heart and Aorta; Boas on the Stomach and Intestines; Zweig, Magen und Darmkrankheiten; Bourget, Die Krankheiten des Magens; Greene, Examination for Life Insurance; Cornet; Eichhorst; Manson, Tropical Diseases; Ker, Infectious Diseases.

*Therapeutics.*—Forchheimer, Prophylaxis and Treatment; Croftan, Clinical Therapeutics; Ortnr, Treatment of Internal Diseases; Yeo, Manual of Treatment; Hutchinson and Collier, Index of Treatment; Wilcox, the Treatment of Disease; Hare, Practical Therapeutics; Eichhorst, Specielle Pathologie und Therapie.

*Diseases of Children.*—Holt, Diseases of Children; Rotch, Pediatrics; American Text-book of Diseases of Children; Keating, Cyclopeda of Diseases of Children; Corlett, Acute Infectious Exanthemata; Chapin, Theory and Practice of Infant Feeding; Stengel, Nothnagel's Encyclopeda.

*Medical Pathology.*—Webster, Diagnostic Methods; Wood, Chemical and Microscopical Diagnosis; Sahli, Diagnostic Methods; Simon, Clinical Diagnosis; Hutchinson and Rainey, Methods; Emerson, Clinical Diagnosis; Nichol, Clinical Laboratory Methods; Boston, Clinical Diagnosis; Schleip, Atlas of Hematology; Cabot, Clinical Examination of the Blood; Da Costa, Clinical Hematology; Ewing, Pathology of the Blood; Dickson, The Bone Marrow; Ogden, Clinical Examination of the Urine; Braun, Animal Parasites of Man.

## DEPARTMENT OF SURGERY

JAMES E. MOORE, M.D., Professor of Surgery and Chief of the Department

FREDERICK A. DUNSMOOR, M.D., Professor of Clinical Surgery

J. CLARK STEWART, B.S., M.D., Professor of Principles of Surgery

\*MAX P. VANDER HORCK, M.D., Professor of the Diseases of the Skin and Genito-Urinary Organs

ARCHIBALD MACLAREN, B.A., M.D., Clinical Professor of Surgery

ARTHUR J. GILLETTE, M.D., Professor of Orthopedic Surgery

BURNSIDE FOSTER, B.A., M.D., Professor of Dermatology and Syphilology and Lecturer upon the History of Medicine

HENRY J. O'BRIEN, M.D., Clinical Professor of Surgery

JOHN T. ROGERS, M.D., Clinical Professor of Surgery

ARTHUR T. MANN, B.S., M.D., Clinical Professor of Surgery and Clerk of Clinics

HORATIO B. SWEETSER, M.D., Clinical Professor of Surgery

ANTON SHIMONEK, M.D., Clinical Professor of Surgery

WARREN A. DENNIS, B.S., M.D., Clinical Professor of Surgery

ALEXANDER R. COLVIN, M.D., Clinical Professor of Surgery

CHARLES A. ERDMANN, M.D., Professor of Gross and Applied Anatomy

J. FRANK CORBETT, B.S., M.D., Associate Professor of Experimental Surgery

FRANK R. WRIGHT, M.D., Clinical Professor of Genito-Urinary Diseases

ARTHUR A. LAW, M.D., Clinical Professor of Surgery

\*JUDD GOODRICH, M.D., Clinical Instructor in Surgery

JOHN B. BRIMHALL, M.D., Clinical Instructor in Orthopedic Surgery

ROBERT E. FARR, M.D., Clinical Instructor in Surgery

CHARLES A. REED, B.S., M.D., Clinical Instructor in Orthopedic Surgery

\*Deceased.

SAMUEL E. SWEITZER, M.D., Clinical Instructor in Dermatology and Genito-Urinary Diseases  
 ARCH A WILCOX, M.D., Clinical Instructor in Surgery  
 EMIL S. GEIST, M.D., Clinical Instructor in Orthopedic Surgery  
 PAUL B. COOK, M.D., Instructor in Genito-Urinary Diseases  
 EARLE R. HARE, B.S., M.D., Clinical Instructor in Surgery  
 OSCAR OWRE, M.D., Clinical Instructor in Genito-Urinary Diseases  
 HARRY P. RITCHIE, Ph.B., M.D., Clinical Instructor in Surgery  
 FREDERICK H. POPPE, B.A., M.D., Clinical Instructor in Surgery  
 ARTHUR C. STRACHAUER, M.D., Clinical Instructor in Surgery  
 JOHN M. ARMSTRONG, M.D., Clinical Assistant in Genito-Urinary Diseases  
 JOHN BUTLER, M.D., Clinical Assistant in Dermatology  
 HARRY G. IRVINE, M.D., Clinical Assistant in Dermatology

Departmental Office in Millard Hall

The course in Surgery is graded in the fifth and sixth years. Examinations are held at the close of each of these years. Lectures and recitations are given by the teaching staff in surgery and clinics at the dispensaries and hospitals of Minneapolis and St. Paul by a large corps of instructors.

1. Surgical Pathology Dr. CORBETT  
 Five hours per week; fifth year, second quarter.  
 A demonstration laboratory course covering the subjects of surgical inflammations. Abnormal conditions are demonstrated by gross and microscopic preparations and experimental sources, and where possible by similar lesions on the living subject. (See also Course 6 under Pathology and Bacteriology.)
2. Principles of Surgery Dr. STEWART  
 Two lectures per week; fifth year, first semester.  
 Systematic discussion of the diseases and injuries of the bones and joints (except fractures and dislocations); injuries and diseases of the skin, lymphatics, blood vessels (including aneurism), and nerves; of the tendons, fasciae, and bursae. Lectures will be illustrated by lantern slides and demonstration of gross specimens.  
 Surgical Quiz (one hour per week) Dr. HARE
3. Surgical Technique Dr. MANN  
 Fifth year, first semester.  
 Lectures upon the principles of operative procedure; the preparation of patient, operator, and operating rooms; the principles of asepsis, antisepsis, and sterilization; ligatures and sutures; and the treatment of wounds.
4. Practice of Surgery Dr. MOORE  
 Two lectures and recitations per week; fifth year, second semester.  
 Regional surgery; fractures and dislocations.  
 Surgical Quiz (one hour a week) Dr. HARE
5. Practice of Surgery Dr. MOORE  
 Lectures and recitations, two hours per week; sixth year, first semester.  
 Surgery of the head, neck, chest, back, breast, abdomen, including hernia, anus, rectum, and urinary tract.  
 Surgical Quiz (one hour per week) Dr. RITCHIE

6. Operative Surgery Dr. MANN  
 Four laboratory hours per week; fifth year, third quarter.  
 Practical exercises on the cadaver illustrative of the courses in surgery.
7. Orthopedic Surgery Dr. GILLETTE  
 Two lectures and recitations per week; sixth year, fourth quarter.  
 This includes diseases of bones, joints, synoviae, and bursae, congenital and acquired deformities; dystrophies, with the principles of treatment.
8. Dermatology, Genito-Urinary and Venereal Diseases  
 One lecture or recitation per week; sixth year, throughout.
9. Clinical Lectures on Dermatology, Genito-Urinary and Venereal Diseases Drs. FOSTER, WRIGHT, and SWEITZER  
 Weekly at Minneapolis and St. Paul City Hospitals and daily at the University Clinical Building and St. Paul Dispensary; sixth year.
10. Tumors Dr. STEWART  
 Two lectures and demonstrations per week; sixth year, second semester.  
 The course on tumors is comprehensive, including a complete systematic laboratory course on tumor histology by Dr. Corbett and regional tumor surgery with lantern slide demonstrations by Dr. Stewart. The general subject of tumors, their life history, classification, pathogenesis, diagnosis, and treatment, is taken up by lectures.  
 Regional surgery of tumors is also considered fully and is copiously illustrated by lantern slides.  
 Quiz (one hour per week) Dr. HARE
11. Laboratory Course on Tumors Dr. CORBETT  
 Two hours per week; fifth year, second semester.  
 Each variety of tumor is taken up and studied. Students are given sections illustrating same. With this microscopic study is combined recitation and demonstrations of gross tumors with histories, photographs, and lantern slides. (See also Course 7 under Department of Pathology and Bacteriology.)
13. Clinical Surgery  
 Courses of clinics at which operations in the whole domain of surgery are witnessed by the students of the fifth and sixth years. These clinics are held in the dispensaries and hospitals of the cities of Minneapolis and St. Paul, upon Thursdays and Saturdays throughout the year. The classes alternate at the two cities in their attendance upon these clinics. They are conducted personally, throughout the year, by the clinical chiefs and their associates as follows:  
 University hospital clinics, medical and surgical clinics will be held every Thursday and Saturday, the former by Dr. Greene and his assistants, and the latter by Dr. Moore and his assistants. Bedside clinics will be given throughout the week by various members of the staff.  
 At the City and County Hospital, St. Joseph's Hospital, St. Luke's Hospital in St. Paul, weekly, by Dr. John T. Rogers.  
 At the City and County Hospital, St. Joseph's Hospital, St. Luke's Hospital, or Free Dispensary, in St. Paul, with sections of class weekly, by Drs. John T. Rogers, A. J. Gillette, W. A. Dennis, and A. Colvin.

At St. Luke's Hospital, Dr. Archibald MacLaren.

At St. Joseph's Hospital, Dr. H. J. O'Brien.

At the City Hospital, Minneapolis, surgical clinics will be given every Thursday and Saturday from 8:30 to 10 by Drs. Dunsmoor, Sweitzer, Mann, Wilcox, and Farr.

*Text-Books.*—Rose and Carless, Surgery; Keen, Surgery; Binnie, Operative Surgery; Scudder on Fractures; Stimson on Fractures and Dislocations; Bradford and Lovett, Orthopedic Surgery.

*Dermatology, Genito-Urinary and Venereal Diseases.*—Key or White and Martin, Diseases of Urinary Organs and Lydston, Genito-Urinary, Venereal, and Sexual Diseases; Hyde, Diseases of the Skin; Walker, Dermatology; Jackson, Diseases of the Skin; Hyde and Montgomery, Venereal Diseases; Crocker, Diseases of Skin; Morris, Diseases of the Skin; Hayden, Diseases of the Skin; Stelwagon, Diseases of the Skin; Taylor, Genito-Urinary and Venereal Diseases of the Skin.

## DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

PARKS RITCHIE, M.D., Professor of Obstetrics and Gynecology and Chief of Department

ABRAHAM B. CATES, M.A., M.D., Professor of Obstetrics

FREDERICK LEAVITT, M.D., Clinical Professor of Obstetrics and Gynecology

JENNETTE M. McLAREN, M.D., Clinical Instructor in Obstetrics

FRED L. ADAIR, B.S., M.D., Instructor in Obstetrics and Gynecology

LOUIS SYDNEY B. ROBINSON, B.A., M.D., Clinical Assistant in Obstetrics

JAMES W. GEORGE, B.S., M.D., Clinical Assistant in Obstetrics

CHARLES L. RODGERS, M.D., Clinical Assistant in Obstetrics

JENNINGS C. LITZENBERG, B.S., M.D., Associate Professor of Gynecology and Obstetrics and Chief of the Out-Patient Service

JOHN L. ROTHROCK, M.A., M.D., Clinical Professor of Gynecology

ARTHUR E. BENJAMIN, M.D., Clinical Instructor in Gynecology

HENRY L. WILLIAMS, M.D., Instructor in Gynecology

GEORGE C. BARTON, M.D., Clinical Instructor in Gynecology

IVAR SIVERTSEN, M.D., Clinical Instructor in Gynecology

HALLWARD M. BLEGEN, B.A., M.D., Clinical Assistant in Gynecology

S. J. ASPELUND, M.D., Clinical Assistant

### Departmental Office in Institute of Anatomy

The course in Obstetrics is graded in the junior and senior years. Examinations are held at the close of each of these years. Besides the regular didactic lectures given students throughout their junior year by Drs. Ritchie and Cates, the entire subject of obstetrics is reviewed by quiz in the senior year by Drs. Leavitt and Litzenberg. A laboratory course in obstetric pathology will be given to seniors by Dr. Adair.

The opportunity of studying the subject clinically is ample. The public hospitals of both cities allow free use of many hundreds of patients, for the study and observation of women before, during, and after labor. The establishment of a maternity ward in our new University Hospital

has greatly enlarged our facilities. An out-patient department in each city, which permits of experiences from a different standpoint, also furnishes an abundance of material.

Participation in the conduct of at least six deliveries in the senior year is required of each candidate for a degree. Proof of such work will be the filling out of certain history sheets, and filing the same with the chairman of this department, no single case being reported by more than five students, preferably by one or two.

1. Obstetric Anatomy and Physiology Dr. CATES

Lectures and recitations to juniors during September and October. Maternal pelvic anatomy; physiology of pregnancy; pathology of pregnancy; diagnosis of pregnancy.

2. Theory and Practice of Obstetrics Dr. RITCHIE

Lectures and recitations to juniors during November, December, and January.

Abortion and premature labor; physiology and clinical history of labor; mechanism and management of labor; puerperium and care of the new-born infant; post-partum hemorrhage.

3. Dystocia Dr. CATES

Lectures and recitations to juniors. Second semester. Abnormal positions and presentations of the fetus; forceps; version; eclampsia; placenta previa; extra-uterine pregnancy; puerperal septicaemia; pelvic deformities; obstetric surgery.

4. Recitations by Seniors Drs. LEAVITT and LITZENBERG

5. Manikin Demonstrations

Drs. Leavitt and Robinson at the St. Paul City and County Hospital and by Drs. Litzenberg and Adair at the University Dispensary, to seniors and juniors.

6. Hospital Ward Work Drs. LEAVITT, LITZENBERG, ADAIR, and  
ROBINSON

Weekly clinics throughout the year will be given to members of the senior and junior classes. Students will be taken in small sections through the maternity ward, where opportunity is afforded for the antepartum examination of the pregnant woman, the observation of the puerperium with its management, and the study of the ailments and the care of the new-born infant.

*Text-Books.*—Hirst, Edgar, Williams, Davis.

## GYNECOLOGY

The course in gynecology consists of lectures, recitations, demonstrations, and clinical instruction.

1. Lectures and Recitations Dr. WILLIAMS

Fifth year, second quarter.

In this course the essentials of the subject of gynecology are reviewed by quiz and lecture.

2. General Principles of Gynecology      Drs. LITZENBERG and LEAVITT  
Two hours per week for six weeks; sixth year, first semester.  
Infections, inflammations, and allied disorders of the genital tract.
3. Tumors of the Genital Organs      Dr. ADAIR  
Two hours per week for six weeks; sixth year, first semester.  
Including tumors of the external genitals, vagina, uterus and adnexa.
4. Injuries and Displacements      Dr. LITZENBERG  
Two hours per week for six weeks; sixth year, second semester.  
Including tubal pregnancy and malformations, traumatism and displacements of the uterus and other pelvic organs, disorders of menstruation, and sterility.
6. Clinical Gynecology
  - a. Weekly clinics in diseases of women are given in the hospitals of Minneapolis by Drs. Benjamin and Barton.
  - b. Weekly clinics in the City and County Hospital of St. Paul, during January, February, and March, by Dr. Rothrock. Every operation in this subject is presented in these clinics. In addition to these exclusively gynecological clinics, numerous gynecologic operations are performed in the department of surgery.

## DEPARTMENT OF EYE, EAR, NOSE, AND THROAT DISEASES

- FRANK C. TODD, M.D., Professor and Chief of the Department  
WILLIAM R. MURRAY, B.A., M.D., Professor of Rhinology and Laryngology  
JOHN S. MACNIE, B.A., M.D., Clinical Professor of Ophthalmology and OTOLOGY  
ALBERT C. HEATH, M.D., Clinical Professor of Rhinology and Laryngology  
FRANK E. BURCH, M.D., Assistant Professor of Ophthalmology and Otolology  
ELMER H. PARKER, M.D., Assistant Professor of Rhinology and Laryngology  
CHARLES N. SPRATT, B.S., M.D., Clinical Instructor in Ophthalmology and Otolology  
EUGENE S. STROUT, M.D., Clinical Instructor in Ophthalmology and Otolology  
LOUIS A. NELSON, M.D., Clinical Instructor in Ophthalmology and Otolology  
JOHN H. MORSE, B.A., M.D., Clinical Instructor in Ophthalmology and Otolology  
H. JOURNEY WELLES, M.D., Clinical Instructor in Ophthalmology and Otolology  
ELWYN R. BRAY, M.D., Clinical Assistant in Ophthalmology and Otolology  
EDWARD V. GOLTZ, M.D., Clinical Assistant in Rhinology and Laryngology  
FRED J. PRATT, M.D., Clinical Assistant in Ophthalmology and Otolology  
HARRY E. CANFIELD, M.D., Clinical Assistant in Ophthalmology and Otolology

DOUGLAS F. WOOD, M.D., C.M., Clinical Assistant in Rhinology and Laryngology

CARL A. WITTHAM, M.D., Voluntary Assistant in Rhinology and Laryngology

The student during the first two years receives instruction in the anatomy and physiology of these organs in those departments, and the courses upon diseases of the eye, ear, nose, and throat are given during the senior year, excepting that a certain amount of clinical work is provided during the third year.

The required work consists of a course of lectures and recitations and of dispensary and hospital clinics given in Minneapolis and St. Paul by a competent corps of instructors. Students are taught the technique of examination and treatment of the common and important diseases. An elective course is also furnished in ophthalmoscopy, and in refraction.

1. Diseases of the Eye and its Appendages Dr. TODD  
Lectures (two hours a week); sixth year, first semester.

2. Diseases of the Ear Dr. TODD  
Lectures (nine hours); sixth year, first semester.

3. Diseases of the Nose and Throat Dr. MURRAY  
Lectures and recitations (two hours a week); sixth year, second quarter.

Pathology, diagnosis, and treatment.

4. Clinical lectures on eye, ear, nose, and throat operations, Minneapolis, given every Thursday. Sections of senior and junior classes.

Dr. TODD

5. Clinical lectures and operations on nose and throat, given at Asbury and City Hospitals, Minneapolis, every Saturday. Sections of senior and junior classes.

Dr. MURRAY

6. Clinical lectures and operations on eye and ear, given at Northwestern Hospital, Minneapolis, every Saturday. Sections of senior and junior classes.

Dr. SPRATT

7. Clinical instruction will be given at the University and St. Paul Free Dispensaries in the diagnosis of diseases of the eye and ear; in the methods of examination in the use of instruments, including the ophthalmoscope, and in the treatment of eye and ear diseases, etc. Small sections daily. Sixth year.

Diseases of eye and ear, Minneapolis

Drs. MACNIE, STROUT

Diseases of the eye, St. Paul

Dr. BURCH

8. Clinical instruction will be given at the University and St. Paul Free Dispensary in the diagnosis of nose and throat diseases, in the methods of examination, use of instruments, and treatment of these. Small sections daily. Diseases of the nose and throat, Minneapolis.

Drs. MURRAY and PARKER

St. Paul (two days a week, fifth and sixth years)

Dr. HEATH

9. Ophthalmoscopy Dr. MACNIE  
 A practical course of instruction. Technique of ophthalmoscopy with illustrations on models and patients, normal and abnormal cases, demonstrating diseases of the interior of the eye. This course elective in the senior year.
10. Intubation Dr. PARKER  
 An elective course in intubation illustrated by work on the cadaver will be given to sixth year students. Class limited to six students.
11. Refraction Dr. MORSE  
 Elective for seniors.

*Text-Books.*—Reik, Diseases Ear, Nose, and Throat; Wood and Woodruff, Commoner Diseases of the Eye; De Schweinitz, Diseases of the Eye; May, Diseases of the Eye; Coakley, Diseases of the Nose and Throat; Kyle, Diseases of the Nose and Throat.

*Collateral Reading.*—Ballenger, Diseases of Ear, Nose, and Throat; Weeks, Diseases of Eye; Fucho, Diseases of Eye.

#### DEPARTMENT OF NERVOUS AND MENTAL DISEASES

- C. EUGENE RIGGS, M.A., M.D., Professor of Nervous and Mental Diseases and Chief of Department
- WILLIAM A. JONES, M.D., Professor of Nervous and Mental Diseases
- ARTHUR W. DUNNING, M.D., Clinical Professor of Nervous and Mental Diseases
- HALDOR SNEVE, M.D., Clinical Professor of Nervous and Mental Diseases
- CHARLES R. BALL, M.D., Clinical Instructor in Nervous and Mental Diseases
- ARTHUR S. HAMILTON, B.S., M.D., Instructor in Pathology of the Nervous System, and Clinical Instructor in Nervous and Mental Diseases
- HERBERT W. JONES, M.D., Clinical Instructor in Nervous and Mental diseases
- ADOLPH E. LOBERG, M.D., Clinical Assistant in Nervous and Mental Diseases

The required courses of lectures and recitations and clinics in this department will be given in the sixth year. The courses relating to the anatomy, physiology, and pathology of the nervous system are given by these departments in the third, fourth, and fifth years. Instruction will be by recitations and the "case method." An elective course in electrotherapeutics will be offered in the sixth year.

1. Neurology Drs. RIGGS and JONES (alternating)  
 Two hours per week; sixth year, first semester.  
 Lectures, recitations, and demonstrations.
2. Psychiatry Drs. RIGGS and JONES (alternating)  
 Two hours per week; sixth year, third quarter.  
 Lectures, recitations, and demonstrations.



3. Electro-Diagnosis and Electro-Therapy Dr. BALL  
Elective for seniors.

4. Clinical Neurology and Psychiatry Drs. RIGGS and JONES  
Practical instruction will be given on Thursdays and Saturdays, sixth year. Clinics will be conducted in St. Paul, by Drs. Riggs, Dunning, Sneve, and Ball, at the City and County Hospital, and the Free Dispensary; and in Minneapolis by Drs. W. A. Jones, A. S. Hamilton, H. W. Jones, and Loberg, at the City Hospital, and the University Free Dispensary.

*Text-Books.*—Dana, Text Book of Nervous Diseases and Psychiatry; White, Outlines of Psychiatry.

*Collateral Reading.*—Oppenheim, Diseases of the Nervous System; Church and Peterson, Nervous and Mental Diseases; Starr, Nervous Diseases, Organic and Functional; Bianchi, Text-Book of Psychiatry.

## THE HISTORY OF MEDICINE AND MEDICAL ETHICS

Dr. BURNSIDE FOSTER

Two hours a week; sixth year, fourth quarter.

An elective course of lectures is given on the history of medicine and of the medical profession from the earliest times, including accounts of the epoch-making discoveries in medicine, brief sketches of the lives of eminent physicians, and an account of the great plagues in history. One lecture in this course is devoted to medical ethics, medical economics, and the relations of physicians to each other and to the community.

## MEDICAL JURISPRUDENCE

Dr. SWEENEY

Two hours a week; sixth year, fourth quarter.

A course of lectures and recitations, in the legal relations of medicine.

*Text-Books.*—Taylor, Medical Jurisprudence.

*Collateral Reading.*—Withau, Principles of Forensic Medicine and Toxicology; Wharton and Stille, Medical Jurisprudence; Reese, Medical Jurisprudence and Toxicology; Draper, Medical Jurisprudence.

## SCHEDULE FOR THE YEAR 1912-1913

In the following schedule the time occupied by the several departments, on the basis of thirty-two weeks of actual instruction, is as follows:

	<i>Hours</i>	<i>Units</i>
Anatomy	944	59
Organic Chemistry, Toxicology, Water and Food Analysis	192	12
Physiology	592	37
Pharmacology	272	17
Bacteriology, Pathology, and Hygiene	752	47
Medicine (incl. Pediatrics)	720	45
Surgery (incl. Dermatology and Genito- Urinary Diseases)	784	49
Obstetrics and Gynecology	288	18
Mental and Nervous	128	8
Eye, Ear, Nose, and Throat	144	9
Medical Jurisprudence	16	1
History of Medicine	16	1
Total	4848	303

It is expected that as soon as the new buildings are completed the work in dissection will all be placed in the freshman year, general bacteriology in the freshman year, neurology in the sophomore year, and other changes will be made to bring about a more perfect correlation of subjects.

FIRST QUARTER, SEPT. 18, 1912 TO NOV. 14, 1912

THIRD YEAR								
	8:00	9:00	10:00	11:00	1:00	2:00	3:00	4:00
Mon.	Histology and Splanchnology	Splanchnology				Dissection		
Tue.	Osteology		Embryology				Chemistry	
Wed.	Histology and Splanchnology					Dissection		
Thu.	Histology and Splanchnology		Embryology				Chemistry	
Fri.	Osteology		Embryology			Dissection		
Sat.	Osteology	Hist. & Splanchn.						
FOURTH YEAR								
Mon.	Gen. Bact.		Physiology			General Bacteriology	Physiology	
Tue.	Gen. Bact.		Physiology			General Bacteriology	Physiology	
Wed.			Special Sense Organs			General Bacteriology		
Thu.	Gen. Bact.		Special Sense Organs			General Bacteriology	Physiology	
Fri.	Gen. Bact.		Physiology			General Bacteriology	Physiology	
Sat.	Gen. Bact.		Physiology					
FIFTH YEAR								
Mon.	Children	Obstetrics	Electives		Medical Quiz	Practice	Pharmacology	
Tue.	Surgical Technic	Prin. of Surgery	Obstetrics	Surgical Anatomy		Practice	Surgical Anatomy	
Wed.	Children	Clinical Pathology			Medical Quiz	Practice	Pharmacology	
Thu.		Clinics					Clinics	
Fri.	Surgical Quiz	Prin. of Surgery	Clinical Pathology				Practice	Pharmacy 3:00 to 6:00
Sat.		Clinics					Clinics	
SIXTH YEAR								
Mon.	Eye & Ear	Obstetrics Quiz	Clinics		Dispensary	Practice	Laryngology	
Tue.	Ment. & Ner.	Gynecology	Clinics	Surgery	Dispensary	Practice	Therap. Conf.	
Wed.	Eye & Ear	Surgical Quiz	Clinics	Medical Quiz	Dispensary	Practice	Hygiene	
Thu.		Clinics					Clinics	
Fri.	Ment. & Ner.	Gynecology	Clinics	Surgery	Dispensary	Dermatology	Hygiene	
Sat.		Clinics					Clinics	

SECOND QUARTER, NOV. 15, 1912 TO FEB. 6, 1913

THIRD YEAR								
	8:00	9:00	10:00	11:00	1:00	2:00	3:00	4:00
Mon.	Osteology	Hist. & Splanch.				Dissection		
Tue.		Embryology					Chemistry	
Wed.	Osteology	Hist. & Splanch.				Dissection		
Thu.	Histology & Splanchnology			Embryology			Chemistry	
Fri.		Embryology				Dissection		
Sat.	Histology & Splanchnology							
FOURTH YEAR								
Mon.	General Pathology			Physiology		Physiology		
Tue.	General Pathology					Physiology		
Wed.	General Pathology					Physiology		
Thu.	General Pathology					Physiology		
Fri.	General Pathology					Physiology		
Sat.	General Path.	Physiology						
FIFTH YEAR								
Mon.	Children	Gynecology	Electives		Medical Quiz	Practice	Surgical Pathology	
Tue.	Surgical Technic	Prin. of Surgery	Obstetrics	Surgical Anatomy	Pharmacology	Practice	Surgical Anatomy	
Wed.	Children	Gynecology	Electives		Medical Quiz	Practice	Surgical Path.	
Thu.	Clinics				Clinics			
Fri.	Surgical Quiz	Prin. of Surgery	Obstetrics	Surgical Anatomy	Pharmacology	Practice	Surgical Pathology	
Sat.	Clinics				Clinics			
SIXTH YEAR								
Mon.	Eye & Ear	Obstetrics	Clinics		Dispensary	Practice	Laryngology	
Tue.	Ment. & Ner.	Gynecology	Clinics	Surgery	Dispensary	Practice	Therap. Conf.	
Wed.	Eye & Ear	Surgical Quiz	Clinics	Medical Quiz	Dispensary	Practice	Hygiene	
Thu.	Clinics				Clinics			
Fri.	Ment. & Ner.	Gynecology	Clinics	Surgery	Dispensary	Dermatology	Hygiene	
Sat.	Clinics				Clinics			

THIRD QUARTER, FEB. 7, 1913 TO APR. 10, 1913

THIRD YEAR								
	8:00	9:00	10:00	11:00	1:00	2:00	3:00	4:00
Mon.	Neurology		Physiology		Histology & Splanchnology			
Tue.	Neurology	Physiology			Chemistry			
Wed.	Neurology				Histology & Splanchnology		Physiology	
Thu.	Neurology	Physiology					Chemistry	
Fri.	Physiology					Histology & Splanchnology		
Sat.	Physiology							
FOURTH YEAR								
Mon.	Special Pathology and Bacteriology			Pharmacology	Dissection			
Tue.	Special Pathology and Bacteriology					Dissection		
Wed.	Special Pathology and Bacteriology			Pharmacology			Dissection	
Thu.	Special Pathology and Bacteriology					Dissection		
Fri.	Special Pathology and Bacteriology			Pharmacology			Dissection	
Sat.	Spec. Path. & Bacteriology	Dissection						
FIFTH YEAR								
Mon.	Operative Surgery		Obstetrics	Electives	Medical Quiz	Practice	Pathology of Nervous System	
Tue.	Children	Obstetrics	Surgery	Electives			Practice	Pathology of Nervous System
Wed.	Surgical Quiz	Children	Obstetrics	Electives	Medical Quiz	Practice	Pharmacology	
Thu.	Clinics				Clinics			
Fri.	Operative Surgery		Surgery	Electives	Medical Quiz	Practice	Pharmacology	
Sat.	Clinics				Clinics			
SIXTH YEAR								
Mon.	Hygiene	Tumors	Clinics			Dispensary	Practice	Therap. Conf.
Tue.	Ment. & Ner.	Hygiene	Clinics	Gynecology			Dispensary	Practice
Wed.	Hygiene	Obstetrics	Clinics			Dispensary	Practice	
Thu.	Clinics				Clinics			
Fri.	Ment & Ner.	Tumors	Clinics	Gynecology	Dispensary	Dermatology		
Sat.	Clinics				Clinics			

**FOURTH QUARTER, APR. 11, 1913 TO JUNE 7, 1913**

THIRD YEAR								
	8:00	9:00	10:00	11:00	1:00	2:00	3:00	4:00
Mon.	Neurology			Physiology	Physiology			
Tue.	Neurology	Physiology				Chemistry	Toxicology, Water & Food Analysis	
Wed.	Neurology				Physiology			
Thu.	Neurology	Physiology				Chemistry	Toxicology, Water & Food Analysis	
Fri.	Physiology							
Sat.	Physiology							
FOURTH YEAR								
Mon.	Special Pathology and Bacteriology				Topographic Anatomy			
Tue.	Medical Case-taking	Special Pathology and Bacteriology			Pharmacology			
Wed.	Physical Diagnosis	Topographic Anatomy			Topographic Anatomy			
Thu.	Medical Case-taking	Special Pathology and Bacteriology			Pharmacology			
Fri.	Special Pathology and Bacteriology				Pharmacology			
Sat.	Physical Diagnosis	Special Pathology and Bacteriology						
FIFTH YEAR								
Mon.	Pathology of Ner. System		Obstetrics	Electives	Medical Quiz	Practice	Pathology of Tumors	
Tue.	Children	Obstetrics	Surgery	Electives		Practice	Pathology of Tumors	
Wed.	Pathology of Ner. System		Obstetrics	Electives	Medical Quiz.	Practice	Pharmacology	
Thu.	Clinics				Clinics			
Fri.	Surgical Quiz	Children	Surgery	Electives	Medical Quiz	Practice	Pharmacology	
Sat.	Clinics				Clinics			
SIXTH YEAR								
Mon.	History of Medicine	Tumors	Clinics		Dispensary		Practice	Therap. Conf.
Tue.	Orthopedia		Clinics	Gynecology	Dispensary		Practice	Hygiene
Wed.	Hygiene	Obstetrics	Clinics		Dispensary		Practice	Medical Jurisp.
Thu.	Clinics				Clinics			
Fri.	History of Medicine	Tumors	Clinics	Gynecology	Dispensary		Dermatology	Medical Jurisp.
Sat.	Clinics				Clinics			

## SCHEDULE OF CLINICS, 1912-13

### MINNEAPOLIS CLINICS

(For Dispensary Clinics, see page 74)

*Thursday*

HOUR	SUBJECT	CLINICIAN	SERVICE
	Tuberculosis		Thomas H.
8:30-10:00	Medicine	Dr. White	Univ. H., 1st semester
8:30-10:00	Medicine	Dr. Shelden	Univ. H., 2d semester
8:30-10:00	Surgery	Dr. Sweetser	City H., 1st semester
8:30-10:00	Surgery	Dr. Farr	City H., 2d semester
8:30-10:00	Eye and Ear	Dr. Todd	N. W. H. or Univ. H.
8:30-10:00	Pediatrics	Dr. Sedgwick	City H., to Nov. 1
8:30-10:00	Pediatrics	Dr. Roberts	City H., Nov. 1 to Mar. 1
8:30-10:00	Pediatrics	Dr. C. B. Wright	City H., Mar. 1 to end of year
10:00-11:30	Surgery	Dr. Moore	Univ. H.
10:00-11:30	Nose and Throat	Dr. Murray	Asb. or Univ. H.
10:00-11:30	Gynecology	Dr. Benjamin	N. W. H.
10:00-11:30	Obstetrics	Dr. Litzenberg or Dr. Adair	City H.
1:00-2:15	Disp. Clinics	Disp. Clinicians	Univ. Dispensary
2:30-3:45	Medicine	Dr. Greene	Univ. H.
2:30-3:45	Medicine	Dr. Staples	C. H., Oct. 1 to Jan. 1
2:30-3:45	Medicine	Dr. Nippert	C. H., Oct. 1 to Jan. 1
2:30-3:45	Medicine	Dr. Bradley	C. H., Jan. 1 to Apr. 1
2:30-3:45	Medicine	Dr. Cross	C. H., Jan. 1 to Apr. 1
2:30-3:45	Medicine	Dr. Shelden	C. H., Apr. 1 to end of year
2:30-3:45	Medicine	Dr. Cook	C. H., Apr. 1 to end of year
2:30-3:45	Nervous and Mental	Dr. W. A. Jones	C. H.

*Saturday*

HOUR	SUBJECT	CLINICIAN	SERVICE
	Tuberculosis		Thos. H.
8:30-10:00	Surgery	Dr. Dunsmoor	Swed. H.
8:30-10:00	Surgery	Dr. Wilcox	C. H., Jan. 1 to Mar. 1
8:30-10:00	Gynecology	Dr. Barton	C. H., Nov. 1 to Jan. 1
8:30-10:00	Medicine	Dr. Hynes	Univ. H., Oct. 1 to Jan. 1
8:30-10:00	Medicine	Dr. Cook	Univ. H., Jan. 1 to Apr. 1
8:30-10:00	Medicine	Dr. Ulrich	Univ. H., Apr. 1 to end of year
8:30-10:00	Pediatrics	Dr. Sedgwick	C. H., to Nov. 1
8:30-10:00	Pediatrics	Dr. Roberts	C. H., Nov. 1 to Mar. 1

SCHEDULE OF CLINICS, 1912-13

Saturday

HOUR	SUBJECT	CLINICIAN	SERVICE
8:30-10:00	Pediatrics	Dr. C. B. Wright	C. H., Mar. 1 to end of year
8:30-10:00	Contagious	Dr. Dart	C. H., Nov. 1 to Mar. 1
8:30-10:00	Contagious	Dr. Sedgwick	C. H., Mar. 1 to end of year
10:00-11:30	Surgery	Dr. Mann	C. H., Oct. 1 to Jan. 1
10:00-11:30	Surgery	Dr. Stewart	Univ. H.
10:00-11:30	Gynecology	Dr. Barton	C. H., Jan. 1 to Mar. 1
10:00-11:30	Eye and Ear	Dr. Spratt	N. W. H.
1:00-2:15	Disp. Clinics	Disp. Clinicians	Univ. Dispensary
2:30-3:45	Medicine	Dr. Staples	C. H., Oct. 1 to Jan. 1
2:30-3:45	Medicine	Dr. Nippert	C. H., Oct. 1 to Jan. 1
2:30-3:45	Medicine	Dr. Bradley	C. H., Jan. 1 to Apr. 1
2:30-3:45	Medicine	Dr. Cross	C. H., Jan. 1 to Apr. 1
2:30-3:45	Medicine	Dr. Shelden	C. H., Apr. 1 to end of year
2:30-3:45	Medicine	Dr. Cook	C. H., Apr. 1 to end of year
4:00-5:30	Nervous and Mental	Dr. H. W. Jones or Dr. Hamilton	C. H.
4:00-5:30	Orthopedics	Dr. Geist	N. W. H.

Parturition clinics throughout the year by Dr. Litzenberg and Dr. Adair and their assistants, for seniors, at the City Hospital and in the Out-Patient Service.



## ST. PAUL CLINICS

*Thursday*

HOUR	SUBJECT	CLINICIAN	SERVICE
9:00-12:00	Surgery	Drs. MacLaren and Ritchie	St. Luke's, Oct. to June
9:00-12:00	Surgery	Dr. O'Brien	St. Joseph's, Oct. to June
9:00-12:00	Orthopedia	Dr. Gillette	City H., Oct. to June
9:00-12:00	Gynecology	Dr. Rothrock	City H., Jan. to April
1:30-2:30	Pediatrics	Dr. Christison	Dispensary, Oct. to June
1:30-2:30	Nose and Throat	Dr. Heath	Dispensary, Oct. to June
1:30-2:30	Eye and Ear	Dr. Burch	Dispensary, Oct. to June
1:30-2:30	Eye and Ear	Dr. Nelson	Dispensary, Jan. to Apr.
1:30-2:30	Ner. and Ment.	Dr. Dunning or Ball	Dispensary, Oct. to June
1:30-2:30	Gynecology	Dr. Rothrock or Dr. Ritchie	Dispensary, Oct. to June
1:30-3:00	Surgery	Dr. Goodrich	City H., Oct. to Jan.
1:30-3:00	Surgery	Dr. Colvin	City H., Jan. to April
1:30-3:00	Medicine	Dr. Senkler	City H., Oct. to Jan.
1:30-3:00	Medicine	Dr. Hoff	City H., Oct. to Jan.
1:30-3:00	Medicine	Dr. Abbott	City H., Jan. to April
1:30-3:00	Medicine	Dr. Gilfillan	City H., Jan. to April
1:30-3:00	Medicine	Dr. Meade	City H., April to June
1:30-3:00	Medicine	Dr. Nippert	City H., April to June
1:30-3:00	Medicine	Dr. Stumm	City H., Oct. to June
1:30-3:00	Obstetrics	Dr. Leavitt or Dr. Robinson	City H., Oct. to June
1:30-3:00	Pediatrics	Dr. Ramsey	City H., Oct. to June
1:30-3:00	G.-U.	Dr. Armstrong	City H., Oct. to Jan.
1:30-3:00	G.-U.	Dr. Cook	City H., Jan. to June
1:30-3:00	Eye and Ear	Dr. Nelson	City H., Oct. to Jan.
1:30-3:00	Eye and Ear	Dr. Burch	City H., Jan. to April
3:00-4:00	Clinical lecture in Medicine Entire class		City H., Oct. to June

*Saturday*

HOUR	SUBJECT	CLINICIAN	SERVICE
9:00-10:00	Ner. and Ment.	Dr. Dunning	City H., Oct. to Dec.
9:00-10:00	Ner. and Ment.	Dr. Riggs	City H., Dec. to Mar.
9:00-10:00	Ner. and Ment.	Dr. Sneve	City H., Mar. to June
10:00-12:00	Surgery	Dr. Shimonek	City H., Oct. to Jan.
10:00-12:00	Surgery	Dr. Rogers	City H., Jan. to April
1:30-2:30	Dermatology	Dr. Foster or Dr. Freeman	Dispensary, Oct. to June
1:30-2:30	Nose and Throat	Dr. Heath	Dispensary, Oct. to June
1:30-2:30	Eye and Ear	Dr. Burch	Dispensary, Oct. to Jan.

## Saturday

HOUR	SUBJECT	CLINICIAN	SERVICE
1:30-2:30	Ner. and Ment.	Dr. Dunning or Dr. Ball	Dispensary, Oct. to June
1:30-2:30	Pediatrics	Dr. Christison	Dispensary, Oct. to June
1:30-2:30	Gynecology	Dr. Rothrock or Dr. Ritchie	Dispensary, Oct. to June
1:30-3:00	Surgery	Dr. Dennis	City H., Jan. to Apr.
1:30-3:00	Surgery	Dr. Goodrich	City H., Oct. to Jan.
1:30-3:00	G.-U.	Dr. Armstrong	City H., Oct. to Jan.
1:30-3:00	G.-U.	Dr. Cook	City H., Jan. to June
1:30-3:00	Eye and Ear	Dr. Nelson	City H., Oct. to Jan.
1:30-3:00	Eye and Ear	Dr. Burch	City H., Jan. to April
1:30-3:00	Medicine	Dr. Senkler	City H., Oct. to Jan.
1:30-3:00	Medicine	Dr. Hoff	City H., Oct. to Jan.
1:30-3:00	Medicine	Dr. Abbott	City H., Jan. to April
1:30-3:00	Medicine	Dr. Gilfillan	City H., Jan. to April
1:30-3:00	Medicine	Dr. Meade	City H., April to June
1:30-3:00	Medicine	Dr. Nippert	City H., April to June
1:30-3:00	Medicine	Dr. Stumm	City H., Oct. to June
1:30-3:00	Obstetrics	Dr. Leavitt or Dr. Robinson	City H., Oct. to June
1:30-3:00	Pediatrics	Dr. Ramsey	City H., Oct. to June
3:00-4:00	Clinical lecture in Medicine Entire class		City H., Oct. to June

Parturition clinics throughout the year at City Hospital, Maternity, and Dispensary out-service with Drs. Leavitt and Jennette McLaren. (One to five students.)

NOTICE:—Throughout the school year, clinics for each week are announced in advance by the publication of a weekly bulletin covering hospitals and dispensaries in the Twin Cities.

## MINNEAPOLIS DISPENSARY CLINICS

1:00 to 3:00 p.m.

Mon., Wed., Fri.	Medicine	Drs. Cross, Moren, Pratt, and Baker	Oct. to June
Tue., Thur., Sat.	Medicine	Drs. Rees, Aurand, Hynes, Bissell, and Huenekens	Oct. to June
Daily	Surgery	Drs. Hare, Poppe, and Olson	Oct. to Feb.
Daily	Surgery	Drs. Stewart, Strachauer, and Brown	Feb. to June
Mon., Wed., Fri.	Obstetrics and Gynecology	Drs. Litzenberg and Sivertsen	Oct. to June
Tue., Thur., Sat.	Obstetrics and Gynecology	Drs. Williams and Adair	Oct. to June
Mon., Wed., Fri.	Eye and Ear	Drs. Macnie, Morse, and Wood	Oct. to June
Tue., Thur., Sat.	Eye and Ear	Drs. Strout and Pratt	Oct. to June
Mon., Wed., Fri.	Nose and Throat	Drs. Murray and Witham	Oct. to June
Tue., Thur., Sat.	Nose and Throat	Drs. Parker and Wood	Oct. to June
Mon., Wed., Fri.	Genito-Urinary	Dr. Wright	Oct. to June
Tue., Thur., Sat.	Genito-Urinary	Dr. Owre	Oct. to June
Mon., Wed., Fri.	Dermatology	Dr. Sweitzer, Butler, or Irvine	Oct. to June
Tue., Thur., Sat.	Dermatology	Drs. Butler and Irvine	Oct. to June
Mon., Wed., Fri.	Ner. and Ment.	Drs. Hamilton and Loberg	Oct. to June
Daily	Pediatrics	Drs. Sedgwick and Schlutz	Jan. to July
Daily	Pediatrics	Drs. Dart and Williams	July to Jan.
Mon., Wed., Fri.	Orthopedics	Drs. Geist and Reed	The year
Daily	Laboratory	Drs. Robertson, Ulrich, and Drake	The year

# STUDENTS

## GRADUATE STUDENTS—3

- George A. Barker, Minneapolis  
M.D., '84, Bowdoin College
- Sullivan, Dennis W., Minneapolis  
M.D., '11, Ensworth Medical College
- Thomas, Forrest, Frazier, Mo.  
M.D., '08, Ensworth Medical College

## SHEVLIN FELLOW IN MEDICINE

- John, Henry J., Minneapolis  
B.A., '11, University of Kansas

## SIXTH YEAR—35

- Amundsen, Albert E., St. Paul  
Baker, Willard R., Leavenworth, Kan.  
B.A., '08, Park College
- Barnard, Elizabeth, Minneapolis  
Benson, Ross D., Toledo, Ia.  
B.S., '07, Leander Clark College
- Bergan, Otto, Everett, Wash.  
B.S., '08, St. Olaf College
- Berrisford, Paul D., St. Paul  
Bratrud, Arthur F., St. Paul  
Bye, Richard, Lily, S. D.  
B.S., '08, St. Olaf College
- Carroll, William C., St. Paul  
B.S., '10, University of Minnesota
- Dedolph, Theodore H., St. Paul  
Douglass, Jesse E., Blue Earth  
B.S., '10, University of Minnesota
- Drake, Charles B., St. Paul  
B.A., '08, Yale University
- Eisengraeber, Gustav A., Granite Falls  
Flom, Andrew O., Minneapolis  
B.S., '08, St. Olaf College
- Gardner, Edwin L., Minneapolis  
B.S., '10, University of Minnesota
- Kirsch, Ralph L., Crookston  
B.S., '10, University of Minnesota
- Kittleson, Olaf L., Zumbrota  
B.S., '10, University of Minnesota
- Klein, Harry, Duluth  
B.S., '10, University of Minnesota
- Knight, Ralph T., Minneapolis  
B.A., '08, University of Minnesota
- Lawler, Frank J., Minneapolis  
Long, Will H., Elysian  
Michelson, Henry E., Bismarck, N. D.  
B.S., '10, University of Minnesota
- Nordley, Harry R., Minneapolis  
Passer, Adolph A., Waseca  
B.A., '02, University of Minnesota
- Peppard, Thomas A., Minneapolis  
B.S., '11, University of Minnesota
- Pollock, Lee W., Rochester  
B.S., '11, University of Minnesota
- Rothnem, Thomas Peter, Madison  
Seifert, Otto J., New Ulm  
B.S., '10, University of Minnesota
- Snyder, George William, St. Paul  
B.S., '10, University of Minnesota
- Thompson, Victor C., Preston  
Weed, Frank E., Conway, N. D.  
Whittier, Raymond W., Minneapolis  
B.S., '11, University of Minnesota
- Wilson, Paul W., Los Angeles, Cal.  
B.S., Iowa Wesleyan University
- Workman, Walter G., Tracy  
Zimmerman, James, Vandalia, Ill.  
B.A., Wabash College

## FIFTH YEAR—46

- Babcock, Fager M., Minneapolis  
B.A., '09, University of Minnesota
- Badeaux, George I., Brainerd  
B.S., '11, University of Minnesota
- Bailey, Herbert B., Jackson  
Berge, Parker L., Jackson  
Bonness, Hazel, Minneapolis  
B.S., '11, University of Minnesota
- Bratrud, Olaf E., St. Paul  
B.S., '11, University of Minnesota
- Brodie, Walter D., St. Paul  
B.S., '11, University of Minnesota
- Cabot, Verne S., Minneapolis  
Corniea, Albert D., Plato  
Davis, Thayer C., Akeley  
B.S., '11, University of Minnesota
- Dorge, Richard I., Minneapolis  
B.S., '11, University of Minnesota
- Engberg, Edward J., Cambridge

- Evert, John A., St. Paul  
B.S., '10, Macalester College
- Finley, William F., Ferryville, Wis.  
B.S., '11, University of Minnesota
- Freligh, Wilfred P., Stillwater  
B.A., '11, University of Minnesota
- Giessler, Paul W., Minneapolis  
Hall, Joseph M., Minneapolis  
B.S., '11, University of Minnesota
- Hawke, Charles C., Pueblo, Colo.  
B.A., '07, University of Denver
- Hayes, Edward W., Millville  
B.S., Carleton College
- Howe, Archibald W., St. Paul  
B.S., '11, University of Minnesota
- Johnson, Albert W., Minneapolis  
B.S., '11, University of Minnesota
- Josewitch, Alexander, Minneapolis  
B.S., '11, University of Minnesota
- Kucera, William J., Hutchinson  
B.S., '11, University of Minnesota
- Love, Fred A., Preston  
Mariette, Ernest S., Minneapolis  
B.S., '11, University of Minnesota
- Meland, Orville N., Pelican Rapids
- Michael, Joseph C., Jordan
- Moersch, Fred P., St. Paul  
B.S., '11, University of Minnesota
- Woltmann, Henry W., St. Paul  
B.S., '11, University of Minnesota
- Nesse, Silas A., Mabel  
B.S., '11, University of Minnesota
- Noonan, Daniel F., Minneapolis
- Nordland, Martin, Minneapolis  
B.S., '11, University of Minnesota
- Nuessle, Walter G., Springfield  
B.S., '11, University of Minnesota
- Pearsall, Phebe L., Pt. Byron, Ill.  
B.S., '04, Beloit College
- Phelps, Kenneth A., Fargo, N. D.  
Quinnell, Earle D., St. Paul  
B.S., '11, University of Minnesota
- Robilliard, Charles M., Faribault  
B.S., '11, University of Minnesota
- Roddis, Louis H., Long Prairie
- Rosenwald, Reuben M., Plato
- Rydell, Charles B., North Branch  
B.S., '11, University of Minnesota
- Sargeant, Arthur P., Northfield
- Sjolas, Amly S., Minneapolis  
B.S., '11, University of Minnesota
- Snell, Charles Fremont, Detroit  
B.S., '11, University of Minnesota
- Warwick, Margaret, Minneapolis  
B.S., '11, University of Minnesota
- Wippermann, Paul F. W., Warrenton, Mo.  
Ph.B., '08, Central Wesleyan College
- Wohlrahe, Arthur A., Truman

## FOURTH YEAR—40

- \*Aldworth, Harold R., Minneapolis
- \*Anderson, N. Philip, St. Paul  
Borgman, Melville B. (Special), Minneapolis
- \*Campbell, Lowell M., Minneapolis
- \*Conley, Alva A., Cannon Falls  
Craven, Lawrence L., St. Paul  
Eng, Sigfred, Black River Falls, Wis.  
B.S., '09, St. Olaf's College
- Field, Leon M., Forest City, Ia.
- \*Ghostley, George F., International Falls
- \*Halgren, John A., Waseca
- \*Hartig, Hugo J. A. J., Minneapolis
- \*Hendrickson, Gilbert, Christine, N. D.
- \*Hermansen, Hermina, Fergus Falls
- \*King, William (Special), Chippewa Falls, Wis.
- \*King, Zerah P., Minneapolis
- \*Kvitrud, Gilbert, Minneapolis
- \*Leavenworth, Richard O., Minneapolis
- \*Morell, Clifford F., Verdale
- Moses, Joseph, Jr., Minneapolis
- \*Myers, Thomas, St. Paul
- \*Nye, Katherine A., Minneapolis
- \*Odland, Henry, Hurley, S. D.
- O'Hare, Edward S., Minneapolis  
Pennie, Daniel F., Villard  
B.S., '08, Carleton College
- Reynolds, Hugh W., Chatfield
- \*Schroeder, John H., Minneapolis
- \*Sohlberg, Olof I. A., St. Paul
- \*Soloway, Saul S., Minneapolis  
Stock, Harry A., Minneapolis
- \*Stone, Harold W., Caldwell, Idaho
- \*Stratte, Joseph J., Dawson
- \*Sutton, George E., Prior Lake  
Taylor, Kenneth, St. Paul  
B.A., '06, M.A., '07, University of Minnesota
- Tolaas, Arne G. (Special), St. Paul
- Traeger, Carl A., San Jose, Ill.
- Undine, Clyde A., Minneapolis
- \*Walker, James C., Jr., Minneapolis
- \*Willius, Frederick A., St. Paul
- \*Wold, Karl C., St. Paul
- \*Woodward, Floyd O., Minneapolis

\*Students of combined seven-year course in science and medicine.

## THIRD YEAR—62

- \*Armstrong, E. Leslie, Minneapolis  
 Bakke, Hans, St. James  
 \*Bank, Harry E., Minneapolis  
 Boquist, Eric T. W., Minneapolis  
 \*Borreson, Baldwin, Davenport, N. D.  
 Burke, William, Chatfield  
 Carman, Paul I., St. Paul  
 Clark, Harry B., St. Cloud  
 \*Coffin, Lela L. (Special), Minneapolis  
 \*Cook, Robert C., Langford, S. D.  
 Cooperman, Harold, Minneapolis  
 \*Cowin, Carl C., Adrian  
 Dack, Lloyd G., Stanton  
 \*Davis, Lloyd T., Akeley  
 \*Dunn, James, Minneapolis  
 Edgar, James D., Minneapolis  
 B.A., '11, University of Minnesota  
 Eklund, William J., Duluth  
 Ellison, Edward O., Minot, N. D.  
 B.A., '11, University of North Dakota  
 Frise, Dudley C., Minneapolis  
 Ph.C., '06, University of Minnesota  
 Fullerton, Lynne A., Olympia, Wash.  
 Gibbs, Jasper (Special), Minneapolis  
 \*Ginsberg, William, St. Paul  
 Greaves, Percy, Northfield  
 \*Green, Everett, Le Sueur  
 Halloran, Walter H., St. Paul  
 Hamel, Arnold L., Crookston  
 B.A., '10, Holy Cross College  
 Hammermeister, Theo., Morgan  
 \*Hansen, Erling W., Minneapolis  
 Hansen, Olga S., Bird Island  
 \*Hansen, Theodore, Albert Lea  
 \*Haskell, Abe, Minneapolis  
 \*Haugen, Albert I., Elbow Lake  
 Hertzman, Birger C., Afton  
 B.A., '11, Gustavus Adolphus College  
 \*Holm, George A., Minneapolis  
 Jarvis, Bruce W., Davenport, Wash.  
 B.S., '11, University of Washington  
 \*Johnson, Reuben A., Minneapolis  
 \*Keller, Grover J., St. Paul  
 \*Loken, Lawrence J. G., Minneapolis  
 Lund, Simon O., Dawson  
 B.A., '08, St. Olaf College  
 \*McFarland, Arthur H., St. Paul  
 \*McKeon, Joseph O. (Special), Montgomery  
 \*Mach, Frank B., New Prague  
 Magney, Fredolph H., Minneapolis  
 Magoun, Charles E., Sioux City, Ia.  
 B.A., '10, Morningside College  
 \*Mahoney, Daniel L., Virginia  
 Mark, Arthur E., St. Paul  
 Mitchell, Louis A., Newark, O.  
 B.A., '11, University of Colorado  
 \*Murphy, Frank G., Mapleton, N. D.  
 \*Noice, Russell R., Minneapolis  
 Oftedal, Trygve, Minneapolis  
 O'Neill, John W., Eveleth  
 B.S., '05, Notre Dame  
 Payne, Roy A., Northfield  
 B.A., '06, Carleton College  
 Pettersen, Bernard, St. Paul  
 B.A., '08, University of Minnesota  
 Preston, Paul J., Luverne  
 Renshaw, Kinsley, Monona, Ia.  
 \*Roskilly, Gerald C., Virginia  
 Ruud, Henry O., Mahanomen  
 \*Rypins, Stanley, St. Paul  
 Saari, John A., Eveleth  
 \*Ward, Percy A., Zumbrota  
 Waugh, Richey L., Seattle, Wash.  
 Ph.C., '08, University of Washington  
 B.S., '09, University of Washington  
 Williams, Clayton K., Minneapolis

## SEVEN-YEAR COURSE IN SCIENCE AND MEDICINE

## SECOND YEAR—30

- Aker, Emil, Minneapolis  
 Barnard, Charles D., Spencer, Ia.  
 Bell, John W., Minneapolis  
 Binet, Henry E., Coleraine  
 Blumenfeld, Albert, South St. Paul  
 Byrnes, William A., Minneapolis  
 Gallagher, Bernard, Waseca  
 Gilroy, Earl W., Minneapolis  
 Goss, H. Leroy, Minneapolis  
 Halvorson, Walter, Mora  
 Hawkins, Vincent J., St. Paul  
 Iverson, Louis, Badger  
 King, Owen, Minneapolis  
 Klima, William W., Silver Lake  
 Lembke, Carl, Neche, N. D.  
 Levin, Oscar S., Hoffman  
 Luehrs, Leslie, Pipestone  
 Mayer, Roland G., New Ulm  
 Melody, Margaret, Minneapolis  
 Morrison, Harold E., Minneapolis  
 Noreen, Harold A., Minneapolis  
 Raadquist, Simon, Warren

\*Students of combined seven-year course in science and medicine.

Ralke, Carl H., Excelsior	Siedenberg, Arthur G., Elk Mound, Wis.
Rowe, Paul H., Casselton, N. D.	Snodgrass, Thomas J., Minneapolis
Shannon, Ray, Minneapolis	Sund, Adolph G., Minneapolis,
Siedenberg, Alfred H., Elk Mound, Wis.	Vogtel, Melvin A., New Ulm

## FIRST YEAR—43

Agnew, Allen T., Vincennes, Ind.	Molander, Herbert A., St. Paul
Anderson, Frank, Ellsworth, Wis.	Morgan, George T., Stillwater
Annon, Walter T., Anoka	Moriarty, Cecelia, St. Paul
Armstrong, Victor, Minneapolis	Nordin, Gustaf T., Minneapolis
Arnson, Johan M., Eau Claire, Wis.	Pearson, Fritz R., Hudson, Wis.
Birkland, Olav N., Red Wing	Pederson, Nellie C. E., Minneapolis
Bregel, Fred, Fairfax	Plankers, Arthur G., St. Paul
Brown, Lyle L., Crookston	Polak, Richard R., Minneapolis
Buscher, Herbert, Lester Prairie	Power, John E., Duluth
Chisholm, Reginald, Chippewa Falls, Wis.	Ralston, Frank L., La Grande, Ore.
Freed, Oscar J. R., Watertown	Rank, Theron L., Dover
Geer, Everett K., St. Paul	Schmidt, George J., Lake City
Gill, John J., Minneapolis	Schutt, Ray, Bremerton, Wash.
Groebner, Otto A., New Ulm	Shapiro, Morse J., Minneapolis
Hovde, Rolf, Duluth	Smersh, Jerome, Owatonna
Johnson, Arthur O., Minneapolis	Soloway, Herman M., Minneapolis
Kennicott, Robert H., Luverne	Sweetser, Theodore H., Minneapolis
Leavitt, John A., St. Paul	Tanner, Chester O., Fairmont
McKeon, George, Montgomery	Timm, John A., Utica
McKinley, John C., Minneapolis	Weisman, Samuel A., Minneapolis
Mack, Rellie G., Loyal, Wis.	Zeien, Maurice B., North Branch
	Zetterstrom, Henrik, Princeton

## THE SCHOOL FOR NURSES

## THIRD YEAR, A—4

Ames, Margaret, Hutchinson	Marvin, Mary, Zumbrota
Mark, Mary, St. Peter	Skonnord, Olga, Minneapolis

## THIRD YEAR, B—4

Burns, Bessie, Graceville	Schwarg, Caroline, Dodge Center
Madsen, Christenia, Minneapolis	Stewart, Lena B., Minneapolis

## SECOND YEAR, A—4

Cornish, Mary E., Vernon Center	Thompson, Barbara A., Glenwood
Ofsthun, Olive I., Glenwood	Waters, Vera, Beatrice, Neb.

## SECOND YEAR, B—3

Angle, Maude, Minneapolis	Gosman, Anna, Minneapolis
	Manger, Caroline, McIntosh

## PRELIMINARY COURSE—4

Babcock, Lana, Minneapolis	Lemstrom, Bera, Minneapolis
Greenwalt, Dorothy, Withrow	Lindquist, Signa, Minneapolis

## GRADUATES IN MEDICINE, 1911

Anderson, Francis W., Dickinson, N. D.	Larkin, Chandler C., Huron, S. D.
Barron, Moses, Minneapolis	Leitch, Archibald, Minneapolis
B.S., '10, University of Minnesota	Mitchell, Whiting B., Chehalis, Wash.
Craig, Russell, Souris, N. D.	Olson, Charles A., St. Paul
Dedolph, Karl, St. Paul	Papez, James W., Atlanta, Ga.
Fulton, Philip R., Minneapolis	Rumreich, Erhard A., Pisek, N. D.
Geist, George A., Minneapolis	Ruud, Magnus B., Fosston
B.S., '09, University of Minnesota	B.A., University of North Dakota
Hengstler, Howard W., Willmar	Spear, Albert E., Owatonna
Kelly, Paul H., St. Paul	Ph.B., '05, Hamline University
Ph.C., University of Minnesota	Turnacliff, Dale D., Waseca
Kremer, Walter John, Cold Springs	Ziskin, Thomas, Minneapolis

## HAMLIN UNIVERSITY GRADUATES

These students were taught in the College of Medicine and Surgery, University of Minnesota, and graduated by Hamline University, College of Physicians and Surgeons, in accordance with agreement of 1908.

### GRADUATES OF 1908-9

Dickey, Robert Randolph, Minneapolis	McCarty, Edison Orin, Minneapolis
Evarts, Miss Arrah B., Mantorville	MacDonald, Daniel A., Wabasha
Gelz, John James, Minneapolis	Schnache, Roy Alvin, St. Paul
Ghostley, Fred J., Minneapolis	Sewell, George Melville, Minneapolis
Ghostley, Mary C., Minneapolis	Skemp, Frank Scofield, Minneapolis
Gilkey, Seth E., Minneapolis	Thornby, Hallward J., Dawson
Haverstock, Arthur David, Minneapolis	Trenkle, Henry Landalynn, Minneapolis
Kaufhold, George F., St. Paul	Vadheim, Alfred Lyman, Garrison, S. D.
Lommen, Clarence Edgar, Buxton, N. D.	Van Deboget, Lewis, Minneapolis

### GRADUATES OF 1909-10

Clay, Frank H., Minneapolis	Love, George R., Preston
	Petit, Leon J., Minneapolis

### GRADUATES OF 1910-11

Dailey, William J., St. Paul	Laurent, Antoine A., Minneapolis
Goodheart, Charles J., Fargo, N. D.	Schumacher, Nicholas W., Minneapolis
Hedenstrom, Louis, H., St. Paul	Wooster, Arthur M., Minneapolis



# ALUMNI COLLEGE OF MEDICINE AND SURGERY

## INCLUDING YEAR 1910-11

- Abbott, Claude U., '04, Virginia  
Abbott, William P., '06, Duluth  
Adams, Bertram S., '01, Hibbing  
B.S., '98, University of Minnesota  
Adams, Rollin T., '93, Mantorville  
B.S., Carleton College  
Agnew, Anna M., '99, City Board of Health  
Laboratory, New York  
\*Ahlstrom, Alfred E., '00, St. Peter  
Aitkins, Herbert B., '93, Le Sueur Center  
B.A., Manitoba University  
Alexander, Frank H., '97, St. Paul  
Alexander, Ida Mary, '08, Clarissa  
B.A., '05, University of Minnesota  
Alger, Edmund W., '02, Minneapolis  
Allen, Charles C., Jr., '10, Austin  
B.S., '07, Carleton College  
Allen, Harry W., '00, Minneapolis  
B.S., '95, M.S., '97, University of Minnesota  
Allen, Mason, '97, St. Paul  
Alley, Albert G., '05, Granger, Wash.  
Andersen, Arnt G., '04, Hillsboro, N. D.  
Anderson, August R., '91, Sioux City, Ia.  
Anderson, Carl A., '05, Santa Ysabel, Cal.  
Anderson, Christopher A., '92, Rush City  
Anderson, Edwin C., '97, Missoula, Mont.  
Anderson, Francis W., V. S., '11, Tacoma,  
Washington  
Anderson, Ludwig Wolmer, '04, Atwater,  
Wisconsin  
Anderson, Oscar H., '09, Plum City, Wis.  
Anderson, William S., '03, Warren  
Andrews, Roy Newberry, '08, Mankato  
Angell, William A., '95, Minneapolis  
Appleby, E. Villiers, '94, London, Eng.  
Arey, Hugh C., '02, Excelsior  
Argue, Geo. William, '01, Breckenridge  
Argue, Hiram S., '05, Tacoma, Wash.  
Armstrong, John M., '01, St. Paul  
Arneberg, John G., '05, Grand Forks, N. D.  
Aronsohn, David M., '05, Glasgow, Mont.  
\*Arslanides, Michael T., '94, Caesarea, Asia  
Minor  
B.A., Anatolia College  
Artz, Carl P., '95, St. Paul  
Artz, Philip G., '05, Jamestown, N. D.  
Ashley, E. Mayo, '06, Missoula, Mont.  
Ashley, Paul L., '06, Wibaux, Mont.  
Aspelund, Joseph S., '06, Minneapolis  
Aubin, Marie Louise (Mrs. W. E. Aubin),  
'93, Racine, Wis.
- Aurand, William H., '01, Minneapolis  
Aurness, Peter A., '92, Minneapolis  
Austin, Wilford J., '05, Kimball  
Avery, Jacob Fowler, '99, Minneapolis  
Axilrod, David L., '03, Hutchinson  
Bacon, Harry P., '97, Milaca  
Bacon, Knox, '94, St. Paul  
Bailey, John Wm., '94, Seattle, Wash.  
Baillie, William F., '03, Hunter, N. D.  
\*Baird, Mrs. Jas., (Petit, '94), Mpls.  
Baker, Ernest L., '09, Minneapolis  
Baker, Mary K., (Mrs. Dan. Baker) '00, St.  
Paul  
Bakke, Peter R., '92, Grantsburg, Wis.  
\*Bakke, Peter H., '91, Kenyon  
Baldwin, Louis B., '97, Minneapolis  
Baldwin, Wm. P., '01, Casselton, N. D.  
Ball, Chas. R., '94, St. Paul  
B.A., Ohio Wesleyan  
Barclay, Alexander, Jr., '07, Cloquet  
Barney, Leon A., '09, Duluth  
B.S., '08, University of Minnesota  
Barre, William de la, '95, Minneapolis  
Barron, Moses, '11, Minneapolis  
B.S., '10, University of Minnesota  
Barsness, Nellie O., '02, St. Paul  
Bartrou, Harry J., '06, Watertown, S. D.  
Bassett, Mary E., (Mrs. Chas. W. Bray.) '95,  
Biwabik  
B.S., '93, University of Minnesota  
Batchelder, Edwin J., '93, New Richland  
Batcheller, Oliver T., '99, Brainerd  
Baxter, Stephen H., '02, Minneapolis  
B.A., '99, University of Minnesota  
Beaudoux, Henry A., '95, St. Paul  
Bebb, Rose A., '97, Seattle, Wash.  
B.L., '91, University of Minnesota  
Beckman, Emil H., '01, Rochester  
B.A., '94, Grinnell  
Beebe, Dan G., '96, Zamboango, Minanao,  
Philippine Islands  
Beede, Ethel R., '09, Houston, Tex.  
B.A., '04, University of Minnesota  
Beek, R. Hudson, '94, Lakota, N. D.  
Belden, George G., '04, Spokane, Wash.  
Benedict, Earle E., '01, Minneapolis  
Benham, Edward W., '95, Mankato  
Benjamin, Arthur E., '92, Minneapolis  
Bennett, Chas. E., '95, Aneta, N. D.  
Bennett, Oscar E., '00, Correll  
Bennion, Percival H., '02, St. Paul  
Benoit, Frank T., '05, Twin Falls, Idaho

\*Deceased

- Benson, Geo. E., '01, Minneapolis  
 Benson, Oscar T., '05, Glen Ulin, N. D.  
 Benson, Theo. J., '04, Promberg, Mont.  
 Bergan, O. K., '91, Sacred Heart  
 Bergh, L. M., '06, Montevideo  
 Bernard, John A., '89, Minneapolis  
 Best, Robert, '99, Mankato  
 Bevans, Theodore F., '03, Waterbury, Conn.  
 Bickford, Frank J., '02, Pine City  
 Biedermann, Jacob, '04, Argyle  
   B.S., '01, University of Minnesota  
 Bigelow, Chas. E., '04, Madison Lake  
 \*Binder, Geo. A., '92, St. Paul  
 Binger, Henry E., '10, Tulare, S. D.  
 Biornstad, Gisle, '94, Minneapolis  
 Birdsall, Albert T., '96, Brooklyn, N. Y.  
   B.L., '93, University of Minnesota  
 Birnberg, Tobias, '04, Campbell  
 Bissell, Frank S., '02, Minneapolis  
 Bjelland, Adolph O., '96, Mankato  
 Black, William, '09, Tyndall, S. D.  
   B.A., '03, Wabash College  
 Blackman, Ernest L., '01, Stockton, Cal.  
   B.S., Coe College, Ia.  
 \*Blais, Chas. '04, Minneapolis  
 Blake, James, '01, Hopkins  
 Blakely, Clement C., '09, Waseca  
 Blanchard, H. G., '97, Waseca  
 Blegen, Hallward M., '09, Minneapolis  
   B.A., '04, Augsburg  
 Bloom, Charles J., '08, Mora  
   B.A., '04, Carleton College  
 Bock, Rolland, '08, St. Paul  
   Ph.C., '01, University of Minnesota  
 Bockmann, Michael W. H., '03, Minneapolis  
 Boehm, John C., '93, St. Cloud  
 Bohland, Fuchs F. J., '91, Belle Plaine  
 Boleyn, E. Sidney, '94, Stillwater  
 Bolcom, George W., '94, Minneapolis  
 Bomberger, Franklin J., '02, Mapleton  
 Booker, Gertrude (Granger, Mrs. G. W.) '97,  
   Rochester  
 Booren, Clifton A., '09, Stillwater  
   B.S., '07, University of Minnesota  
 \*Borchardt, Edward A., '93, St. Paul  
 Bostrom, August E., '08, De Smet, S. D.  
   B.S., '06, University of Minnesota  
 Bouman, Herman A., '97, Minneapolis  
 Boyd, Leon Morelle, '08, Alexandria  
 Boyum, Peter A., '07, Rushford  
 Braasch, Wm. F., '03, Rochester  
   B.S., '00, University of Minnesota  
 Brabec, Frank J., '93, Perham  
   B.S., '90, University of Minnesota  
 Brand, William A., '04, Redwood Falls  
 Brandt, Albert M., '05, Bismarck, N. D.  
 Branton, Berton J., '05, Willmar  
 Bratrud, Theo., '99, Warren  
   B.A., '96, University of Minnesota
- Bray, Mrs. C. W., (Bassett, '95.) Biwabik  
   B.S., '93, University of Minnesota  
 Bray, Chas. W., '95, Biwabik  
   B.A., '91, University of Minnesota  
 Bray, E. R., '06, St. Paul  
   B.A., '03, University of Minnesota  
 Brede, Wm. G., '06, Minneapolis  
   Phm.D., '98, University of Minnesota  
 Brey, Frank, '10, Wabasha  
 Brigham, Chas. F., '02, St. Cloud  
 Brigham, Frank T., '05, Watkins  
 Brimhall, Silas J., '02, Los Angeles, Cal.  
 Brooks, Chas. N., '09, Minneapolis  
 Brooks, George F., '00, Hibbing  
 Brown, Charles E., '04, Highland, Kan.  
   B.A.  
 Brown, Harry, '96, Rolling Stone  
 Brown, John C., '08, St. Paul  
   B.A., '99, Leland Stanford University  
 Brown, Paul F., '05, Minneapolis  
   B.A., '02, University of Minnesota  
 Brown, William G., '02, Fargo, N. D.  
 Brown, Walter M., '02, St. Thomas, N. D.  
 Brunelle, Adelarde M., '86, Cloquet  
 Brush, Fred H., '05, N. Yakima, Wash.  
 Bryant, Oliver R., '05, Minneapolis  
 Buck, Carroll D., '97, Union, P. I.  
 Buckley, Daniel, '98, Seattle, Wash.  
   B.S., '95, University of Minnesota  
 Buckley, John J., '09, Portland, Ore.  
 Budworth, Benjamin F., '02, Shelly  
 Buell, Mary C., '97, Cumberland, Md.  
 Bulkeley, N. C., '06, Eveleth  
 Burch, Frank E., '97, St. Paul  
 Burgan, James H., '99, Chicago, Ill.  
 Burns, Catherine A., '87, Hopkins  
   B.S., '79, University of Minnesota  
 Burns, Herbert A., '08, Minneapolis  
 Burns, M. Alpheus, '96, Milan  
 Burns, Robert M., '05, St. Paul  
 Bussen, L. H., '02, Richardson, N. D.  
 Butler, David R., '94, Wilnot  
 Butler, John, '03, Minneapolis  
 Button, A. J., '06, Bowdle, S. D.  
 Cahoon, Grace W., '97, Butte, Mont.  
 Caine, Chas. E., '96, Morris  
 Caldwell, James P., '09, Coleraine  
 Caley, G. Ross, '00, Princeton  
 Call, Alfred M., '03, Rugby, N. D.  
 Callerstrom, G. W., '06, Dunnell  
   B.A., '03, University of Minnesota  
 Cameron, John A., '02, St. Paul  
 Campbell, Albert A., '09, Ceylon, Wis.  
 Campbell, Charlotte P., (Mrs. W. J. Pratt),  
   '00, Gardner, N. D.  
 Campbell, D. R., '05, Pullman, Wash.  
 Campbell, George E., '95, Pasadena, Cal.  
 Campbell, John E., '01, S. St. Paul  
   B.S., '98, M.S., '99, University of Minn.

\*Deceased.

- Campbell, Lorne A., '04, Clear Lake, Wis.  
 Campbell, Paul E., '03, St. Paul  
 Campbell, Robert A., '96, Minneapolis  
 Campbell, Robert W., '05, Swanville  
 Canfield, Harry E., '06, Minneapolis  
 Carlsen, E. L., '06, Tacoma, Wash.  
 Carman, Chas. L., '97, St. Paul  
 Carman, James E., '01, Detroit  
 Carpenter, Carrol C., '97, Grand Rapids  
 Cassel, Rufus J., '01, Mt. Vernon, Wash.  
 Castle, Karl H. E., '85, St. Paul  
 Cater, Getta M., (Mrs. G. C. Sweeting),  
 '01, Morton Park, Ill.  
 Catlin, John J., '03, Buffalo  
 Cavanaugh, Jas. O., '97, St. Paul  
 Cavanor, Frank T., '10, Minneapolis  
 B.A., '03, University of Illinois  
 Chamberlain, Henry W., '01, Bangor, Wis.  
 Chambers, W. C., '05, Blue Earth  
 B.S., '00, University of Minnesota  
 Chapple, Chas. L., '98, Nachez, Wash.  
 B.S., '92, University of Minnesota  
 Chase, E. Frank, '05, N. Yakima, Wash.  
 Chase, Ralph R., '89, Eau Claire, Wis.  
 Cheleen, Sigfried, '06, Lindstrom  
 Chesley, Albert J., '07, Minneapolis  
 Chilgren, G. Arthur, '92, Burlington, Ia.  
 Chilton, Leo W., '04, Idaho Falls, Idaho  
 Chowning, Wm. M., '01, Minneapolis  
 B.A., Johns Hopkins  
 Christenson, Chas. R., '96, Starbuck  
 Christianson, Andrew, '10, St. Paul  
 Christison, James T., '01, St. Paul  
 M.D., Long Island, Col.  
 Clark, Howard S., '97, Minneapolis  
 B.S., '95, University of Minnesota  
 Clarke, Robert, '03, Plummer  
 Claydon, Leonard E., '95, Red Wing  
 Clement, L. O., '02, Lamberton  
 B.S., '99, University of Minnesota  
 Cleveland, Hiram E., '01, Burlington,  
 Washington  
 Coffin, Samuel D., '04, Erie, N. D.  
 Cohen, H. A., '01, Minneapolis  
 Cole, Wallace, '10, St. Paul  
 Coleman, Fred B., '09, Carlos  
 Ph.B., Hamline University  
 Coleman, Harry M., '97, Barron, Wis.  
 Conant, Harriet B., '91, (Mrs. J. H. Mc-  
 Cloud), Hardwick, Vt.  
 Condit, Wm. H., '99, Minneapolis  
 B.S., '95, University of Minnesota  
 Cook, Paul B., '00, St. Paul  
 Coon, William F., '03, Coury, Kan.  
 Corbett, J. Frank, '96, Minneapolis  
 Cosgrove, Joseph H., '06, Nashwauk  
 Coria, Leon J., '04, Taft, Mont.  
 Corse, Chas. A., '97, Verndale  
 Corwin, G. P., '89, Pomona, Cal.  
 \*Cotton, Henry, '94, Prescott, Wis.  
 B.S., '90, University of Minnesota  
 Coulter, Chas. F., '02, Wadena  
 Coulter, Herbert, '03, Azusa, Cal.  
 Cowles, Danforth C., '01, Minneapolis  
 Coyngdame, E. F., '87, Borneo, Mont.  
 Craig, Russell, '11, Minneapolis  
 Crewe, John E., '96, Rochester  
 Critchfield, L. R., '09, Steele, N. D.  
 B.S., '07, University of Minnesota  
 Crommett, Herbert B., '96, Amery, Wis.  
 Crossette, Geo. D., '04, Staples  
 Cuff, Wm. S., '97, St. Paul  
 Culver, Chas. F., '99, Sioux Falls, S. D.  
 Cummings, John H., '02, St. Paul  
 Current, Earl H., '07, Spokane, Wash.  
 Cutts, George, '07, Minneapolis  
 Cutts, Geo. A. C., '00, Grove City  
 \*Cutts, Rollin E., '93, Forest City  
 B.S., '90, University of Minnesota  
 Cutts, Mrs. R. E., (Smith, '91) Yankton, S. D.  
 Dahleen, Henry E., '08, Granite Falls  
 Dahlquist, Gustav W., '93, Lancaster  
 \*Dahlstedt, Nils G., '89, Port Wing, Wis.  
 Danner, Edgar W., '95, New York City  
 Darling, Walter H., '95, Hudson, Wis.  
 Darms, Harry L., '92, Hector  
 Dart, Leslie O., '01, Minneapolis  
 Daugherty, Edwin B., '04, Pine City  
 Daugherty, Louis E., '04, Eveleth  
 Davidson, James, '92, Salt Lake City, Utah  
 Davis, Frank W., '03, Kasson  
 Davis, Frederick U., '02, Faribault  
 B.S., '98, University of Minnesota  
 Davis, Luther A., '01, Dalton  
 Dawson, Albert M., '05, Dietz, Wyo.  
 Day, Floyd McA., '01, Eugene, Ore.  
 Dean, Frank W., '90, Council Bluffs, Ia.  
 \*Dean, Sidney W., '00, Minneapolis  
 Dedolph, Karl, '11, St. Paul  
 Delmore, John Leo, '09, Roseau  
 B.S., '07, University of Minnesota  
 Dennis, Warren A., '96, St. Paul  
 B.L., University of Wisconsin  
 Deslauriers, A. A., '03, Duluth  
 Devine, John L., '04, Lansford, N. D.  
 Dickman, Lester A., '01, Lismore  
 Dickson, Thomas H., Jr., '10, St. Paul  
 B.A., Macalester College  
 Dittman, George C., '04, S. St. Paul  
 Dix, George E., '04, Marshfield, Ore.  
 Dodge, Albert A., '94, Great Falls, Mont.  
 B.S., '91, University of Minnesota  
 Dodge, Warren M., '93, Farmington  
 B.S., '90, University of Minnesota  
 Dohm, Chas. L., '96, St. Paul  
 Donovan, John Jos., '01, Eden Valley

\*Deceased.

- Doolittle, Leroy E., '09, St. Paul  
 B.A., '05, University of Minnesota  
 Doyle, John W., '01, Minneapolis  
 Drake, Charles R., '09, Minneapolis  
 Drake, Frederick A., '96, Lanesboro  
 Drechsler, Herman A., '02, St. Paul  
 Drew, George F., '00, Crary, N. D.  
 Dugan, Rollo C., '90, Eyota  
 Dunn, John T., '04, Wykoff  
 Durand, Jay I., '05, Atlantic City, N. J.  
 B.A., '02, University of Minnesota  
 Dutton, Charles E., '89, Minneapolis  
 Dyar, Burt A., '05, De Smet, S. D.  
 Earl, George A., '09, St. Paul  
 B.A., '06, University of Minnesota  
 Earl, Robert O., '96, St. Paul  
 Eberlein, Edward A., '01, Glenwood  
 Eby, Cyrus B., '93, Spring Valley  
 Eby, John R., '93, Elko, Nevada  
 Edgerton, Wm. M., '96, Faulkton, S. D.  
 \*Edholm, Edward A., '89, Minneapolis  
 Edlen, Emil A., '92, Hayes, S. D.  
 Edsall, Jos. L., '92, Bradley, S. D.  
 Edward, George, '97, Midland, S. D.  
 Egan, John M., '07, Minneapolis  
 Egge, Throned S., '93, Moorhead  
 Eisengraeber, Gustav A., '01, Granite Falls  
 Eklund, Elmer J., '07, Young America  
 Eklund, John J., '85, Duluth  
 Ellis, Benj. Jas., '00, Latah, Wash.  
 \*Ellis, Burton K., '03, Greeley, Colo.  
 Ely, Orriman S., '06, Wallace, S. D.  
 Emanuel, Henry J., '07, El Paso, Texas  
 Emmerson, William S., '04, Mayer  
 Endress, Karl J., '99, St. Paul  
 Engstrom, Fred Alonzo, '08, Cannon Falls  
 Erb, Frederick A., '02, Minneapolis  
 Erdmann, Charles A., '93, Minneapolis  
 Erickson, John G., '92, Minneapolis  
 Esser, John, '08, Perham  
 Estrem, Carl O., '07, Madison, S. D.  
 Eustermann, George Bysshe, '08, Rochester  
 Evans, Owen, '01, Bangor, Wis.  
 Ewing, C. Francis, '01, Wheaton  
 \*Fanset, John J., '96, Milbank, S. D.  
 Farmer, John C., '95, McKinley  
 Farmer, Sidney S., '01, Minneapolis  
 Farrand, Corydon, '93, Oronoco  
 Farrish, Robert C., '01, Sherburne  
 Ferguson, Jas. Cory, '01, St. Paul  
 Ferguson, William J., '99, Minneapolis  
 Field, Merton, '02, Minnesota Lake  
 Fiksdal, Mads J., '09, Bristol, S. D.  
 \*Finstad, Gustaf J., '93, Menomonie, Wis.  
 Fisher, Otto F., '97, Houston  
 Fitzgerald, Don F., '03, Minneapolis  
 Fjelde, Hermann O., '95, Abercrombie, N. D.  
 Fjelstad, Carl A., '92, Glenwood  
 Fligman, Louis H., '01, Helena, Mont.  
 \*Ford, Corydon L., '90, Ann Arbor, Mich.  
 Forrest, Charles G., '99, Bagley  
 Fortier, Edward L., '08, Little Falls  
 Foshager, Henry T., '09, St. Paul  
 B.S., '05, St. Olaf College  
 \*Foster, Alson James, '01, St. Paul  
 Foster, Bainbridge W., '07, Mandan, N. D.  
 Poster, Willard C., '02, Sunrise, Wyo.  
 Fowler, Paul H., '03, Plain, Wis.  
 Franchere, Frederick E., '90, Sioux City, Ia.  
 Frasier, George W., '05, Minneapolis  
 Freeberg, Harry M., '04, Watertown, S. D.  
 Freeman, Charles D., '04, St. Paul  
 Freeman, George H., '05, St. Peter  
 French, Edwin J., '00, Plainview  
 French, Ernest A., '03, Campbell  
 French, Leigh H., '94, New Rochelle, N. Y.  
 Frost, William S., '04, Spokane, Wash.  
 B.S., '01, University of Minnesota  
 Fullerton, Ellen C., '03, Shanghai, China  
 B.S., '00, University of Minnesota  
 Fulton, Philip R., '11, St. Paul  
 Fulton, Thos. C., '02, White Bear  
 Gaard, Rasmus R., '04, Radcliffe, Ia.  
 Gaffney, Thomas J., '97, Lakeville  
 Gaines, Everett C., '99, Buffalo Lake  
 Gallagher, Patrick J., '04, Spokane, Wash.  
 Gallup, Glenn D., '04, River Falls, Wis.  
 Gans, Edward M., '05, Eveleth  
 Garber, Lou M., '93, Jasper  
 Gardner, Ray, '09, St. Paul  
 Garrison, J. Frank, '00, Oldham, S. D.  
 Gates, Chester E., '04, Goodhue  
 Gates, Joseph A., '95, Kenyon  
 Gauger, Edward C., '05, St. Paul  
 \*Geiger, John, '96, Osceola Mills, Wis.  
 Geist, Emil S., '00, Minneapolis  
 Geist, Geo. A., '11 St. Paul  
 B.S., '09, University of Minnesota  
 George, Jas. Woodward, '02, Aitkin  
 B.S., '96, University of Minnesota  
 Germe, Chas., '95, Balaton  
 Gerrish, William A., '96, Jamestown, N. D.  
 Geyerman, Peter T., '99, Worthington  
 Gibbon, Luther L., '97, Lowry  
 \*Gibbs, Thos. C., '91, Lake City  
 Giere, Eric O., '92, Madison  
 \*Gilbertson, Julius C., '91, Minneapolis  
 Gilfillan, James S., '97, St. Paul  
 Gilkinson, Andrew J., '93, Osakis  
 Gillette, Arthur J., '03, St. Paul  
 \*Glenn, William, '93, Minneapolis  
 Glycer, Richard T., '09, Marble  
 B.A., '07, Carroll College  
 Goddard, Nathan A., '97, Sand Point, Idaho  
 \*Godfrey, Harvey B., '02, Minneapolis  
 Goehrs, Henry W., '05, Melrose  
 Goldsworthy, William, '97, Two Harbors  
 Goodman, Minerva, '02, Stockton, Cal.

\*Deceased.

- \*Goodrich, Judd U., '95, St. Paul  
 Gowenlock, Harry J., '04, Gardner, N. D.  
 \*Grafton, Guy A., '99, Hayward, Wis.  
 Grangaard, Henry O., '08, Douglas, N. D.  
 B.A., Luther College  
 Granger, Mrs. G. W., (Booker) '97, Rochester  
 Grant, Mrs. E. R., (True) '94, El Reno, Okla.  
 Grant, Mrs. Frank (Wyman) '10, Portland, Ore., B.A., '00, Carleton  
 Gray, Clyde E., '03, Rush City  
 Gray, George A., '98, Spokane, Wash.  
 B.A., '95, University of Minnesota  
 Greaves, Jay J., '09, Glencoe  
 Greeley, Liston Q., '96, Duluth  
 Green, Eugene K., '03, Minneapolis  
 B.A., '95, University of Minnesota  
 Green, George H., '06, Reardon, Wash., B.S., '99, University of Minnesota  
 Greene, Charles Lyman, '90, St. Paul  
 Griebenow, Frederick, '09, Minneapolis  
 B.A., '06, University of Minnesota  
 Griffin, Miriam E., '05, Malate, Manila, P. I., B.A., '00, University of Minnesota  
 Griswold, Frank E., '97, Hoffman  
 Grout, Samuel E., '99, Bessemer, Ala.  
 Guilford, Harry M., '98, Minneapolis  
 B.S., '95, University of Minnesota  
 Gunn, Frank H., '95, Eau Claire, Wis.  
 Gunz, A. N., '04, Center City  
 Ph.C., '99, University of Minnesota  
 Guthrie, Charles E., '02, Seattle, Wash.  
 B.A., '91, University of Minnesota  
 Guthrie, John DeMott, '97, Seattle, Wash.  
 E.E., '93, University of Minnesota  
 Haas, Chas. A., '94, St. Paul  
 Hack, Chas. W., '97, Minneapolis  
 Hagaman, George K., '03, Anoka  
 Hagen, Olaf J., '06, Moorhead  
 Haggard, George D., '93, Minneapolis  
 Halgren, Harry A., '97, Watertown  
 Hall, Charlotte C., '99, St. Paul, (Mrs. J. O. Hall)  
 Hammerel, Ambrose, '05, Glendive, Mont.  
 Hammes, Ernest M., '06, St. Paul  
 Haney, Claude L., '06, Duluth  
 B.A., '03, University of Minnesota  
 \*Hanscom, William H., '89, Minneapolis  
 Hanson, Marius, '94, Hendrum  
 Hanson, Martin O., '01, Dassel  
 Harden, Kate C., '03, Wyoming, (Mrs. F. A. Helmuth)  
 Hare, Earle R., '00, Minneapolis  
 Harrington, Charles D., '95, Minneapolis  
 Harrison, Elmer E., '97, West Concord  
 Hart, Alfred B., '03, Canton  
 Ph.M.D., '94, University of Minnesota  
 Hart, Milan J., '95, LeRoy  
 Hartshorn, Willis E., '98, New Haven, Conn.  
 B.Ph., Colorado  
 Hartzell, Thomas B., '94, Minneapolis  
 D.D.S., '93, University of Minnesota  
 Haskell, A. Dair, '00, Alexandria  
 Haugen, Gilbert, '05, Battle Lake  
 Haugseth, Enoch, '02, Twin Valley  
 Ph.M.D., '94, University of Minnesota  
 Haverfield, Addie R., '95, Minneapolis  
 Hayes, James M., '10, Browns Valley  
 B.S., '04, Carleton College  
 Hayes, Michael F., '09, Minneapolis  
 B.S., '07, University of Minnesota  
 Haynes, Frederick E., '99, Minneapolis  
 Hazeltine, Harry H., '01, Ashland, Wis.  
 Head, George D., '95, Minneapolis  
 B.S., '92, University of Minnesota  
 Healy, Raymond T., '09, Minneapolis  
 Heath, Albert C., '94, St. Paul  
 B.A., Dartmouth  
 Hebard, Sue, '03, Mondovi, Wis.  
 Hedback, Axel E., '97, Minneapolis  
 Heidekker, Arne A., '02, St. Paul  
 Heinze, Charles F., '96, Clifford, N. D.  
 Helland, John W., '05, Maynard  
 Helmut, Mrs. F. A., (Harden) '03, Wyo.  
 Hemingway, Ernest E., '08, Seattle, Wash.  
 B.A., '98, Ripon; M. A., '03, Ph.D., '04, University of Minnesota  
 Hendrickson, Hans W., '93, Kansas City, Missouri  
 Hendrickson, J. F., '05, Fertile  
 Hengstler, Howard W., '11, Willmar  
 Hennemuth, John L., '90, Waterford, Cal.  
 Henry, Anna M., '99, Pattonsburg, Mo.  
 Henry, Fannie J., '99, Kansas City, Mo.  
 Hensel, Charles N., '08, St. Paul  
 Hesselgrave, Sherman S., '94, St. Paul  
 Hielscher, Julian A., '91, Mankato  
 Higgins, Irving W., '04, Berkeley, Cal.  
 Higgins, John H., '03, Minneapolis  
 Higgins, John T., '94, Morgan Hill, Cal.  
 B.C.E., '90, University of Minnesota  
 \*Hilbert, Ferdinand, '92, Albany  
 Hilbert, Pierre A., '93, Melrose  
 Hilger, Andrew W., '05, St. Paul  
 Hilger, David D., '05, St. Paul  
 Hill, Eleanor J., '02, Minneapolis  
 Hirschfield, Adolph, '93, Minneapolis  
 Hitchings, William S., '08, Belgrade  
 Hoff, Alf., '10, St. Paul  
 B.S., '08, University of Minnesota  
 Hoff, Peder A., '00, St. Paul  
 Hoffman, Walter F., '04, Seattle, Wash.  
 Hoffman, William L., '04, Charles City, Ia.  
 Hoidale, Andrew D., '04, Tracy  
 Hoiland, Angel S., '10, Benson  
 B.S., '08, University of Minnesota  
 Holbrook, John S., '96, Mankato

\*Deceased.

- Holmes, Walter B., '94, Ada  
B.S., '88, University of Minnesota
- Holst, Claude F., '01, Little Falls
- Holst, John B., '95, Little Falls
- Holte, Halvor, '93, Crookston
- Hopkins, Mary P., '01, White Bear Lake
- Hotvedt, Ingvald, M. J., '99, Muskegon, Mich.
- Houston, Charles A., '01, Park Rapids
- Hovde, Anders G., '03, Superior, Wis.
- Howard, Seth E., '93, Robbinsdale
- Hubbard, Frederick G., '03, Cayuga, N. D.
- Hubert, R. Ignatius, '98, St. Cloud
- Hughes, Helen, '96, Mankato
- \*Huhn, Carl, '98, Minneapolis  
B.A., '95, University of Minnesota  
(M.D. post ob.)
- \*Humiston, Ray, '03, Worthington
- \*Hutchinson, Henry J., '04, Lynn, Mass.
- Huxley, Fred R., '00, Faribault
- Hyde, Mrs. W. G., (Merrill) '96, Miles City, Mont.
- Hynes, John E., '04, Minneapolis  
Ph.C., '00, University of Minnesota
- Hyslin, Evan, '00, Kindred, N. D.
- Istrup, Francis, '94, Grasston
- Istrup, Orlando, '99, Cokato
- Irish, Palmer H., '00, Walker
- Irvine, Harry G., '03, Minneapolis
- Ivers, Martin U., '02, Abercrombie, N. D.
- Iverson, Lewis U., '97, Christine, N. D.
- Jacobs, Johannes C., '05, Willmar
- Jacobson, Leonard H., '05, Seattle, Wash.
- \*James, Ralph C., '05, Mankato
- Janson, Eiliv, '92, Seattle, Wash.
- Janson, Ivar, '92, Seattle, Wash.
- Jennings, George, '07, Missoula, Mont.
- Jennison, John E., '94, DeLamar, Nev.
- Jensen, James C., '03, Hendricks
- Jenson, Charles A., '02, Searchlight, Nev.
- Jenson, Jens Marius '02, Minneapolis
- Jewell, Emory L., '02, Shoshone, Wyo.
- Johnson, Anders E., '03, Madison
- Johnson, Andrew E., '91, Cloquet
- Johnson, Asa M., '96, St. Paul
- Johnson, Carl M., '10, Pelican Rapids
- Johnson, Edwin M., '98, Albuquerque, N. M.  
B.L., '95, University of Minnesota
- Johnson, Hans, '04, Kerkhoven
- Johnson, Herman M., '01, Dawson
- Johnson, Nimrod A., '05, Minneapolis
- Johnson, Oscar V., '05, Sebeka  
B.A., '02, University of Minnesota
- Johnson, Selmer M., '09, New Richland
- Johnston, Edward James, '08, St. Cloud
- Johnston, William W., '02, Janesville
- \*Jones, Chas. H., '90, Temple, Ariz.
- Jones, Elmer M., '07, St. Paul
- Jones, Herbert W., '01, Minneapolis
- Judd, Edward S., '02, Rochester
- Judson, William E., '07, West Duluth
- Juliar, Richard O., '03, Mountain Lake
- Julien, Albert Edward, '10, Braham  
B.A., '03, Hamline University
- Justice, Oswald M., '97, Los Angeles, Cal.
- Kaess, Andrew J., '03, Fargo, N. D.
- Kane, Jos. P., '05, Delano
- Kankel, Otto Wm., '00, Upland, Cal.
- Karn, Bert R., '07, Ortonville
- Kearney, Percy F., '04, Glen Ulin, N. D.
- Keene, Ralph K., '97, Spokane, Wash.
- Kelly, Paul H., '11, St. Paul  
Ph.C., '04, University of Minnesota
- Kellogg, Paul M., '09, Fargo, N. D.
- Kelly, S. M., '05, Canby
- Kelly, Thomas C., '04, Mankato
- Kelsey, Carleton G., '07, Denver, Colo.  
B.A., '04, University of Minnesota
- Kennedy, Jane F., '00, Minneapolis
- Kibbe, Orel A., '05, Hampton, Ia.
- Kiefer, Michael A., '04, Sleepy Eye  
B.S., '01, University of Minnesota
- Kiehle, F. A., '01, Portland, Ore.  
B.A., '94, University of Minnesota
- Kirk, Geo. C., '96, East Grand Forks
- Kirkwood, Samuel M., '92, St. Paul
- Kistler, Chas. M., '93, Minneapolis
- Kittelson, Theo., '02, Fergus Falls
- Kjelland, Andrew A., '10, Rushford
- \*Kjos, Knute A., '89, Minneapolis
- Klein, Henry N., '05, Hebron, N. D.
- \*Klemer, Carl A., '04, Faribault
- Klove, Lewis, '03, Minneapolis  
B.L., '99, University of Minnesota
- Knauff, Muhlenberg K., '95, Two Harbors
- Knight, Ray R., '06, Minneapolis  
B.A., '03, University of Minnesota
- \*Koch, John C. T., '93, Minneapolis
- Koch, John C., '02, Blackduck
- Kohler, Christian H., '98, Minneapolis
- Koivupalo, Edward H., '95, Laurium, Mich.
- Koren, Finn, '01, Madison  
B.A., '98, University of Minnesota
- Kranz, Martin, '05, Mandan, N. D.
- Kremer, Walter John, '11, Minneapolis
- Krueger, Louis W., '96, Mapleton
- Kuhlmann, August, '05, Melrose
- Kurz, John W., '09, Clearwater
- Kuth, Joseph R., '04, Duluth
- Labbutt, LaRoy H., '07, Enderlin, N. D.
- Lamb, H. L., '02, Sauk Center
- Landen, F. G., '94, Stillwater
- La Rose, V. G., '01, Mandan, N. D.
- Larkin, Chandler C., '11, Huron, S. Dak.
- Larsen, Anders D., '93, Herman
- Larsen, Martin, '09, St. Paul  
B.S., '07, University of Minnesota

\*Deceased.

- Larsen, Oscar O., '07, Zumbrota  
A. B.
- \*Larson, Frank E., '02, Winthrop
- Law, Arthur Ayer, '94, Minneapolis
- Lawrence, Edward J., '08, Spokane, Wash.
- Leavitt, Frederick, '94, St. Paul
- Lee, Wm. P., '94, Northfield
- Leitch, Archibald, '11, Minneapolis
- Lees, R. B., '01, White, S. D.
- Lemstrom, Jarl F., '07, Minneapolis
- Lenfest, J. W., '03, Ambrose, N. D.
- Lenont, Chas. B., '99, Virginia
- Le Vasseur, Irma R., '00, Quebec, Can.
- \*Levinson, Archibald E., '01, Minneapolis
- Lewis, Wm. W., '02, St. Paul
- Liedloff, Adolph G., '02, Mankato
- Liland, Ragnvald, '95, Kenyon
- Limburg, Albert, '03, Bowbells, N. D.
- Lind, Alfred, '91, Minneapolis  
B.S., '89, University of Minnesota
- Lindberg, Arvid C., '08, Finlayson
- Lindstrom, Josephine, (Mrs. R. W. Stickel-  
berger), '03, Oberon, N. D.
- \*Linjer, Ole E., '89, Minneapolis
- Linneman, Nicholas L., '02, Duluth
- Linner, H. P., '09, Minneapolis  
B.A., '02, Gustavus Adolphus College
- Linton, Laura A., '00, Rochester  
B.S., '99, University of Minnesota
- Litzenberg, Jennings C., '99, Minneapolis  
B.S., '94, University of Minnesota
- Loberg, Adolph E., '01, Minneapolis
- Loe, A. O., '97, Seattle, Wash.
- Lohrbauer, Ejner, '02, Lakota, N. D.
- Lommen, Andreas P., '95, Lanesboro
- Loomis, Earl A., '07, Somers, Mont.  
B.A., '04, University of Minnesota
- Ludemann, A. H., '06, St. Michaels
- Ludtke, Gustav H., '99, Fairmont
- Lund, Axel L. B., '06, Dawson
- Lundmark, Lambert, '04, Ladysmith, Wis.
- Lyman, Fred V., '03, Thompson, N. D.
- Lynde, Roy, '05, Ellendale, N. D.
- Lyng, John, '90, Alexandria
- Lysne, Henry, '10, Minneapolis  
B.S., '06, St. Olaf's College
- McCarthy, W. F., '89, Maple Lake
- McCloud, C. Naumann, '01, St. Paul  
Phm.G., '95, University of Minnesota
- McCloud, Mrs. J. H., (Conant) '91, Hard-  
wick, Vermont
- McClung, Alberta V., '97, St. Paul
- McCreery, Chas. R., '02, Tacoma, Wash.
- McCreery, W. B., '02, Tacoma, Wash.
- MacDonald, Irving C., '02, Minneapolis
- McDonell, Wm. N., '03, Washington, D. C.
- McEwan, Samuel W., '10, Washington,  
D. C.
- McGroarty, John J., '07, Easton
- McGuigan, Henry Thomas, '01, Red Wing
- McIntyre, Philip H., '09, St. Paul
- McKibben, H. E., '04, Hector
- McKinnon, J. J., '93, Wadena
- McLaughlin, Ernest W., '96, Willmar
- McLaughlin, J. E., '06, Winchester, Idaho
- McMahon, Chas. G., '06, Copper Hill, Tenn.
- McMillan, Mary A., '07, Spokane, Wash.
- McNerthney, J. B., '99, Tacoma, Wash.
- Mackel, Bertha K., '99, Ada
- Maertz, Will Francis, '08, New Prague
- Magnusson, Gustav A., '08, Minneapolis  
B.A., University of New Mexico
- Magnusson, Herman V., '03, Battle Lake
- Makinson, H. A., '03, Oakland, Cal.
- Maland, Clarence, '07, Minneapolis  
B.A., '04, University of Minnesota
- Maloney, Thos. J., '01, St. Paul
- Manley, James R., '08, Niagara, N. D.
- Manson, F. M., '99, Worthington  
B.S., '94, University of Minnesota
- Marshall, Nelson H., '92, Chaska
- Martin, Thomas R., '07, Duluth  
B.A., '04, University of Minnesota
- Maschger, Albert P., '05, St. Paul
- Mathiesen, George B., '01, Evansville
- Matthews, Justus A., '05, Rochester
- Matthieu, A. L., '05, South Bend, Wash.
- Mattson, John A., '04, Carver
- Maurer, Edward L., '04, Brownton
- Maxeiner, Stanley R., '09, Minneapolis
- Mayer, L. P., '00, Hudson, Wis.
- Mayland, Louis L., '96, Ryder, N. D.
- Mayland, Martin L., '92, Faribault
- Meckstroth, Chas. W., '95, Brandon
- Meckstroth, Louis W., '93, Wahpeton, N. D.  
D.D.S., '91, University of Minnesota
- Mee, Patrick H., '03, Gaylord
- Meighen, J. W., '96, Ulen
- Melby, Benedik, '03, Blooming Prairie
- Merrill, James E., '96, Amboy
- Merrill, Rose M., (Mrs. W. G. Hyde), '96,  
Miles City, Mont.
- Mesker, Geo. H., '96, Olivia
- Metcalf, James N., '06, Monticello
- Meyer, E. L., '05, Minneapolis
- Meyerding, Edward A., '02, St. Paul
- Meyerding, Henry W., '09, St. Paul  
B.S., '07, University of Minnesota
- Midford, Gunlauger, '04, Port Townsend,  
Wash.
- Miller, Arthur W., '97, St. Paul
- Miller, H. W., '06, Jamestown, N. D.
- Millet, Josiah L., '02, Seattle, Wash.
- \*Millet, Melvin C., '95, Rochester
- Milner, Augustus F., '09, Berlin, Germany
- Miner, Clarence J., Manila, P. I.
- Mitchell, Whiting B., '11, Chehalis, Wash.
- Moen, Johannes K., '93, Minneapolis

\*Deceased.

- Mohn, Frederick V., '92, San Diego, Cal.  
 Moir, W. W., '06, Minneapolis  
 Moore, Albert H., '97, New Rochelle, N. Y.  
 B.S., '95, University of Minnesota  
 Moore, Charles Ulysses, '10, Staples,  
 B.A., University of Texas  
 Moore, George W., '92, Hopkins  
 Moren, Edward, '06, Minneapolis  
 Morrill, Robert A., '05, Sidney, Mont.  
 Mortensen, Nels G., '09, St. Paul  
 Movius, Arthur J., '04, Billings, Mont.  
 Muir, Edwin S., '94, Winona  
 Munns, John F., '03, Seattle, Wash.  
 Munro, Alonzo T., '97, Kalispell, Mont.  
 Murphy, Ignatius J., '09, Duluth  
 B.S., '07, University of Minnesota  
 Nelson, Henry S., '93, Minneapolis  
 Nelson, Kent, '00, Whipple Barracks, Ariz.  
 Nelson, Louis A., '96, St. Paul  
 Nelson, Melvin S., '08, Dawson  
 B.S., '06, University of Minnesota  
 Nessa, N. J., '05, Chicago, Ill.  
 Nevitt, Orme R., '00, Raymond, Wash.  
 Newgard, Julius G., '03, Roslyn, Wash.  
 Newman, Gustavus A., '95, New London  
 Nicholson, Daniel A., '97, Seattle, Wash.  
 Nicholson, Elmer, '05, Minneapolis  
 Nicholson, Joseph, '03, Brainerd  
 Nickerson, Bernard S., '03, Glencoe  
 B.S., '99, University of Minnesota  
 Nickerson, Margaret L., '04, Minneapolis  
 Nickerson, Winfield S., '05, Hoffman  
 Nielson, Niels, '06, Denmark  
 Ph.C., '02, University of Minnesota  
 Nordon, Charles G., '10, Brainerd, Minn.  
 B.S., '08, University of Minnesota  
 \*Norred, William A., '02, Chicago  
 Norton, Harvey G., '00, St. Paul  
 Noth, Henry W., '93, Minneapolis  
 Nuzum, Helen B., '95, St. Louis, Mo.  
 Nyquist, Jacob E., '05, Cloquet  
 O'Brien, Henry B., '06, Tacoma, Wash.  
 \*O'Connor, Dennis F., '90, Maxbass, N. D.  
 O'Connor, John V., '95, St. Paul  
 \*O'Connor, Timothy, '90, Annandale  
 Ohage, Justus Jr., '10, Rochester  
 Olander, J. Edwin E., '04, St. Paul  
 \*Old, Herbert W., '03, St. Paul  
 Olsen, Sterling H., '01, Milaca  
 Olson, Chas. A., '11, St. Paul  
 Olson, George, '04, U. S. S. Galveston  
 Olson, John W., '00, Troy, Idaho  
 Olson, Olaf A., '02, Minneapolis  
 Olson, William P., '09, St. Paul  
 O'Malley, William P., '02, St. Paul  
 Oppegard, Manford, '10, Madison  
 B.S., '08, University of Minnesota  
 Opplinger, Gottlieb, '95, Warroad  
 Osborn, Anna Lida, '00, Mankato  
 Ostergren, Edward W., '09, St. Paul  
 Owen, George B., '00, Butte, Mont.  
 Oyen, Martin, '09, Ellsworth, Wis.  
 \*Palmquist, John E., '96, Princeton, Ill.  
 Papez, James W., '11, Atlanta, Ga.  
 Parker, Harvey G., '01, Portland, Ore.  
 Parker, Owen W., '00, Ely  
 Parrott, Byron W., '97, Long Prairie  
 Parsons, George E., '05, Elk River  
 Parsons, Joseph G., '98, Sioux Falls, S. D.  
 Patton, Frederick J., '99, Duluth  
 Paulsen, Edward L., '09, Hanska  
 B.S., '07, University of Minnesota  
 Peabody, Percy D., '02, Webster, S. D.  
 Pearce, Nay O., '05, Hibbing  
 Pederson, Harold, '07, Twin Valley  
 Pederson, Reuben M., '06, Minneapolis  
 Perkins, George A., '97, Dickinson, N. D.  
 Perry, Clarence G., '09, St. Paul  
 B.S., '07, University of Minnesota  
 Perry, Gentz, '97, Amery, Wis.  
 Peterson, John R., '97, Willmar  
 Peterson, Olaus L., '05, Cokato  
 Peterson, Victor, '06, Cokato  
 Pettit, Charles W., '03, Minneapolis  
 \*Pettit, Loretta J., '94, Minneapolis  
 Phelan, Richard J., '03, Minneapolis  
 Phillips, George W., '89, Butte, Mont.  
 Phillips, Wm. H., '94, Jordan  
 Pineo, William B., '85, Minneapolis  
 Piper, Monte C., '10, Sanborn  
 \*Pitblado, John D., '96, Minneapolis  
 Platt, John J., '95, St. Paul  
 Poehler, Franklin T., '96, Minneapolis  
 B.S., '93, University of Minnesota  
 Poppe, Frederick H., '07, Minneapolis  
 B.A., '04, University of Minnesota  
 Porter, Oliver M., '05, Atwater  
 Ph.C., '02, University of Minnesota  
 Powell, Charles B., '94, Madison  
 Pratt, Chelsea C., '06, Mankato  
 Pratt, Mrs. W. J., (Campbell), '00, Gard-  
 ner, N. D.  
 Preine, Irving A., '10, Minneapolis  
 Preisinger, Joseph W., '04, Renville  
 Pretlow, Clotilde L., '95, Fairmount, Ind.  
 Prim, Joseph A., '99, Comfrey  
 Prinzing, Jacob, '01, Ontario, Ore.  
 Putnam, Catherine E., '01, St. Paul  
 Quain, Eric P., '98, Bismarck, N. D.  
 Quist, Henry W., '07, Minneapolis  
 Ramaley, Louis, '05, St. Paul  
 Ramsey, Walter R., '96, St. Paul  
 Ramstad, Niles O., '99, Bismarck, N. D.  
 Rankin, Arthur A., '00, South Haven  
 Ransom, Edward M., '04, Minot, N. D.  
 \*Ranson, George, '95, Dodge Center  
 Ranson, Ma ry E., (Mrs. Frank Strickler)  
 '98, Sleepy Eye

\*Deceased.



- Read, Harry K., '99, Hibbing  
 Reed, Chas. A., '98, Minneapolis  
   B.S., '95, University of Minnesota  
 Rees, Soren P., '97, Minneapolis  
   B.S., '95, University of Minnesota  
 Regner, J. A., '89, Minneapolis  
 Reilly, James J., '86, Milton, N. D.  
 Reimstad, Christian S., '96, Brainerd  
 \*Reimstad, Sven S., '95, Minneapolis  
 Reiter, Henry W., '93, Shakopee  
 Reynolds, James S., '05, Minneapolis  
 Ribble, George B., '04, La Moure, N. D.  
   B.A., '01, University of Minnesota  
 Rice, C. P., '06, Breckenridge  
 Rice, Geo. D., '03, Pipestone  
 Richards, Henry Raoul, '00, Waterville,  
   Wash.  
 Richards, Wm. G., '04, Hardin, Mont.  
 Richmond, Chas. D., '05, Windom  
 Ridgway, Alfred M., '90, Annandale  
 Ringnell, Carl J., '91, Minneapolis  
 Ringnell, Frank O., '95, Moline, Ill.  
 Ritchie, Harry P., '96, St. Paul  
   Ph.B., Yale  
 Roadman, Ira McC., '98, Onamia  
 Roan, Carl Martin, '08, Minneapolis  
   B.A., Augsburg  
 \*Robbins, Ray P., '04, Portland, Ore.  
 Robertson, A. W., '09, Litchfield  
 Robitshek, Emil, '03, Minneapolis  
 Rodgers, Charles L., '07, Minneapolis  
 Rogers, James L., '05, Newport, Wash.  
 Rogers, J. T., '91, St. Paul  
 Rose, Frank R., '01, Spokane, Wash.  
 Rose, Mrs. C. L. (Turner '95), Spokane,  
   Wash.  
 Rosen, Samuel, '04, Minneapolis  
 Rosenthal, Ignatius P., '07, Canal Zone,  
   Panama  
 Rothschild, Harold J., '05, St. Paul  
 Rothwell, William P., '92, Pawtucket, R. I.  
 Rousseau, Victor, '03, Maple Lake  
 Rowe, Olin W., '03, Duluth  
 Rudell, Gustaf L., '06, Plaza, N. D.  
   B.A., '03, University of Minnesota  
 Rulien, Frank W., '97, Joliet, Ill.  
 Rumreich, Erhard A., '11, Pisek, N. D.  
 Russell, Clarence W., '03, Denver, Colo.  
 Ruud, Magnus B., '11, Fosston  
   B.A., University of North Dakota  
 Ryan, Dennis E., '08, Shakopee  
   B.A., St. Thomas College  
 Ryley, Marie J., '95, Minneapolis  
 Sanborn, Courtland R., '07, Alexandria  
 Sanford, James A., '01, Farmington  
 Satersmoen, Theodore, '10, Lac qui Parle  
 Savage, Francis J., '01, St. Paul  
 Sawyer, Herbert P., '95, Goodhue  
 Scace, Lee A., '07, Centralia, Wash.  
 \*Schacht, Fred E., '03, Seattle, Wash.  
 Schaleben, Henry O., '03, Lake Benton  
 Schmidt, Henry A., '09, Westbrook  
 Schmidt, Walter R., '03, Chisholm  
 Schneider, Edwin H., '10, Rochester  
 Schneider, Henry A., '01, Jordan  
 Schneider, John P., '06, Greene Isle  
 Schoonmaker, Edward P., '99, Mercedes,  
   Tex.  
 Schuldt, Fred C., '03, St. Paul  
 Schulze, Albert G., '04, Duluth  
 Schutt, John P., '06, Bremerton, Wash.  
 Seaberg, Simon P., '06, Spokane, Wash.  
 Seashore, David E., '02, Duluth  
 Seashore, Gilbert, '02, Minneapolis  
 Seham, Max, '10, Minneapolis  
 Senkler, George E., '92, St. Paul  
 Serkland, John C., '00, Rothsay  
 \*Setnan, John M., '99  
 Sewall, Ralph J., '95, Crosby  
 Shaleen, Arthur W., '02, Hallock  
 Shaw, Albert Wm., '99, Buhl  
 Shellman, John L., '03, Nashwauk  
 Sheppard, Fred, '95, Hutchinson  
 Sheppard, Prosper E., '91, Hutchinson  
 Sherwood, George E., '94, Kimball  
 Siemens, Abram, '90, Mountain Lake  
 Simons, Jalmar H., '10, Waseca  
   B.S., '08, University of Minnesota  
 Simpson, James Kidd, '84, Juneau, Alaska  
 Slippert, Halfdan, '95, Fosston  
 Smith, Arthur E., '05, Minneapolis  
 Smith, Clarke S., '08, Kalispell, Mont.  
 Smith, Ernest V., '07, Adams  
 Smith, Frank Dale, '05, Stratford, S. D.  
 Smith, Fred L., '06, Chatfield  
   B.A., '03, University of Minnesota  
 Smith, Hiram W., '97, Crookston  
 Smith, Leon G., '10, Buffalo  
 Smith, Martha J. (Mrs. R. E. Cutts), '91,  
   Yankton, S. D.  
 Smith, Margaret Isabel, '06, Freeport, Ill.  
 Smith, Oscar Mendelson, '09, Tacoma,  
   Wash.  
   B.A., '05, University of Minnesota  
 \*Smith, William S., '92, Waseca  
 Soderlind, Andrew, '90, Minneapolis  
 Sogge, Louis, '05, Jackson  
 Soper, John E., '96, Norwood  
 \*Sorenson, Anthony N., '99, Minneapolis  
 \*Sorg, John A., '96, Hastings  
 Sorkness, P. R., '95, Fargo, N. D.  
 Souba, Frederick J., '10, Hopkins  
   B.S., '08, University of Minnesota  
 South, J. R., '89, Ouray, Colo.  
 Spear, Albert E., '11, Belfield, N. Dak.  
   Ph.B., '05, Hamline University  
 Speier, Hugo, '84, Missoula, Mont.  
 Spottswood, Edward W., '93, Missoula, Mont.

\*Deceased.

- Stack, George F., '96, Independence, Wis.  
B.A., '93, University of Minnesota
- Stahl, Harriet S., '97, Harmony
- Staley, John C., '03, St. Paul
- \*Stebbins, Albert M., '94, Glenwood
- Stebbins, Eugene B., '08, Hurley, Wis.
- \*Steel, Edwin D., '89, Mankato
- Stemsrud, Arne A., '01, Dawson
- Stephan, Ernest L., '93, Hinckley
- Stephenson, John L., '95, Monango, N. D.
- Sterner, Otto, '03, Cambridge
- Stevens, Charles S., '07, Farmington  
B.A., '04, University of Minnesota
- Stevens, John Jr., '97, Belfast, Me.
- Stewart, Allen B., '91, Owatonna
- Stewart, Elsie G., '09, Cheney, Wash.
- Stewart, Malcolm A., '02, Omamee, N. D.
- Stierle, Adolph, '01, St. Paul  
Ph.G., New York
- Stimpson, Edward W., '03, Roslyn, Wash.
- Stockman, Bert G., '96, Woodville, Wis.
- Stolpestad, Harold L., '01, St. Paul
- Stowell, Joab, Jr., '90, North Amherst, Mass.
- Strachauer, Arthur C., '08, Minneapolis
- Strang, David M., '07, Northfield
- Strathern, Fred P., '99, St. Peter  
B.S., '94, University of Minnesota
- Strathern, Moses Lane, '07, Coleraine  
B.A., '04, University of Minnesota
- Stricklebergers, Mrs. R. W., (Lindstrom),  
'03, Oberon, N. D.
- Strout, George E., '01, Winthrop
- Stuhr, Henry C., '00, Argyle
- Sundt, Mathias, '09, Hanska  
B.A., '06, University of Minnesota
- Sutton, Charles S., '09, Minneapolis
- B.A., '06, University of Minnesota
- Swanson, Cephas, '07, St. Hilaire  
B.A., Gustavus Adolphus College
- \*Swartz, West J., '00, Forest Lake
- Sweitzer, Samuel E., '01, Minneapolis
- Swenson, George B., '00, Baldwin, Wis.
- Taylor, Wm. W., '00, Kalispell, Mont.
- Tebbitt, R. L., '04, Laramie, Wyo.
- Teisberg, Carl B., '06, Pine City
- Tennant, Russell W., '99, Spokane, Wash.
- Tenney, Jacob S., '95, Alma, Wis.
- Tennyson, Falk, '93, Minneapolis
- Thabes, John A., '96, Brainerd
- Thelen, Wm. P., '02, Wilton, N. D.
- Thomas, George E., '04, Minneapolis  
B.L., '01, University of Minnesota
- Thompson, Albert, '05, St. James
- Thomson, Arthur M., '04, South Park, Wash.
- Thordalsen, Torfin, '02, Cottonwood
- Thorpe, Arthur C., '97, Los Angeles, Cal.
- Thrane, Marcus, '94, Madison
- Thyng, Date K., '96, Willow City, N. D.
- Tilderquist, David L., '03, Duluth
- Tirrell, John M., '00, Portal, N. D.  
B.A., '97, University of Minnesota
- Titus, William S., '04, Mora
- Todd, Frank C., '92, Minneapolis  
D.D.S., '91, University of Minnesota
- Todd, Gilbert D., '03, Medina, N. D.
- Towers, Mary E., (Mrs. F. E. Towers), '98,  
Minneapolis
- Tripp, George A., '99, South Bend, Wash.
- Trowbridge, E. H., '09, St. Joseph, Mo.
- True, Augusta Isabella, (Mrs. E. R. Grant)  
'94, El Reno, Okla.
- Truscott, Joseph R., '01, Binford, N. D.
- Trutna, Thomas J., '05, Silver Lake
- Tuohy, Edward L., '05, Duluth  
B.A., '02, University of Minnesota
- Tupper, Eugene L., '97, Ottawa, Ohio
- Turnacliff, Dale D., '11, Osakis
- \*Turner, Arthur L., '94, Faribault
- Turner, Mrs. Frances E., (Mrs. C. L. Rose)  
'95, Spokane, Wash.
- Tyler, Frank A., '06, Molson, Wash.
- Tyrrrell, Clinton C., '06, Minneapolis
- Valentine, Walter H., '00, Tracy
- Valley, Rose V., '01, Minneapolis
- Van Damme, Wm. C., '86, Minneapolis
- Van Slyke, Charles A., '91, St. Paul
- Van Valkenburg, B. F., '93, Long Prairie
- Varco, Albert R., '07, Miles City, Mont.  
B.A., '04, University of Minnesota
- Verne, Victor E., '06, Parkers Prairie
- Vigen, Jorgen G., '94, Fergus Falls
- Vinje, Syver, '02, Henning
- Vistaunet, Peder S., '06, Shelly
- Vistaunet, Peter L., '02, Thief River Falls
- Voges, Adolph, '04, Hanover
- Wagar, Wm. D., '98, Michigan City,  
N. D.
- Walker, George H., '08, Fairfax  
B.S., University of Nebraska
- Walker, James D., '09, Wykoff  
B.A., University of North Dakota
- Walker, John Frank, '08, Bison, S. D.
- Wallace, Charles J., '04, Chippewa Falls,  
Wis.
- Walter, Guy F., '06, Minneapolis
- \*Walters, Eugene, '95, Bakewell, Eng.
- Wangelin, Hugo E., '91, Belleville, Ill.
- Wanous, Ernest Z., '97, Minneapolis
- Ward, Austin, '00, Boulder, Mont.
- Warner, Eugene F., '04, Duluth  
H. '02, University of Minnesota
- Warren, Frank S., '96, Faribault
- Watkins, Frank A., '89, Wilkesbarre, Pa.
- Watson, Earl M., '10, Crawfordsville, Ind.  
B.A., '03, Wabash College
- Watson, Thomas R., '95, Clariassa
- Watson, Tolbert, '08, Albany  
B.A., Macalester

\*Deceased.

- Webster, Albert M., '04, Portland, Ore.  
 B.A., '91, University of Minnesota
- Weishaar, Charles, '05, Britton, S. D.
- Welles, H. Journey, '01, Minneapolis
- Wells, Horace R., '98, North Yakima, Wash.
- Westeen, Anders A., '92, Grand Forks, N. D.
- Wethall, Anton G., '03, Minneapolis
- Weyrens, Joseph P., '07, Taylor, N. D.  
 B.S., '05, University of Minnesota
- Weyrens, Peter J., '00, Red Wing
- \*Wheeler, Frederick L., '04, Minneapolis  
 B.S., '01, University of Minnesota
- Wheeler, Merritt W., '10, Iowa City, Ia.  
 B.A., M.S., University of Iowa
- Wheelon, Frank E., '00, Minot, N. D.
- Whipple, Clarence D., '03, Minneapolis
- Whitacre, John C., '01, St. Paul
- White, James B., '91, Montgomery
- Wiger, Nicholas N., '03, Seattle, Wash.
- Wiik, Johan C., '07, Minneapolis
- Wilcox, M. Russell, '97, Minneapolis
- Wilcox, Van H., '02, Minneapolis
- Wilkinson, Stella L., '03, Duluth
- Will, Wm. W., '05, Bertha
- Williams, Ulysses G., '89, Minneapolis
- Williams, Archie E., '00, Havre, Mont.  
 B.A., '94, University of Minnesota
- Williams, Stephen E., '04, Chippewa Falls, Wis.
- Wilson, Hugh S., '04, Crystal, N. D.
- Wilson, Louis B., '96, Rochester
- Winberg, Osten K., '92, Lake Park
- Wiseman, Robert L., '97, Pine City
- Witham, Carl A., '06, Minneapolis
- Wolner, Oscar H., '02, St. Cloud  
 Ph.D., '98, University of Minnesota
- Woods, Ernest A., '99, Clear Lake
- Wright, Charles O., '90, Luverne
- Wright, Franklin R., '94, Minneapolis  
 D.D.S., '90, University of Minnesota
- Wunder, Henry E., '92, Proctor Knott
- Wylie, Arthur R. T., '06, Grafton, N. D.
- Wyman, Kate, '10, Portland, Ore. (Mrs. Frank Grant)  
 B.A., '00, Carleton College
- Yoerg, Otto W., '10, Winthrop
- Yoseph, Yoseph D., '94, Minneapolis
- Youngs, Alfred H., '07, Pierre, S. D.
- Zander, Chas. H., '09, St. Paul  
 Ph.C., '02, University of Minnesota
- Ziskin, Thomas, '11, Minneapolis

\*Deceased.

# The University of Minnesota

## THE SCHOOL OF AGRICULTURE

1912-1913



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VOL. XV, NO. 6. JUNE 1912

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THE REGISTRAR,

The University of Minnesota,

Minneapolis, Minnesota

1912							1913															
<b>JULY</b>							<b>JANUARY</b>							<b>JULY</b>								
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa		
..	1	2	3	4	5	6	..	..	..	1	2	3	4	..	..	1	2	3	4	5		
7	8	9	10	11	12	13	5	6	7	8	9	10	11	6	7	8	9	10	11	12		
14	15	16	17	18	19	20	12	13	14	15	16	17	18	13	14	15	16	17	18	19		
21	22	23	24	25	26	27	19	20	21	22	23	24	25	20	21	22	23	24	25	26		
28	29	30	31	..	..	..	26	27	28	29	30	31	..	27	28	29	30	31	..	..		
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		
<b>AUGUST</b>							<b>FEBRUARY</b>							<b>AUGUST</b>								
..	..	..	..	1	2	3	..	2	3	4	5	6	7	8	1	..	..	..	..	1	2	3
4	5	6	7	8	9	10	..	9	10	11	12	13	14	15	3	4	5	6	7	8	9	
11	12	13	14	15	16	17	16	17	18	19	20	21	22	10	11	12	13	14	15	16		
18	19	20	21	22	23	24	23	24	25	26	27	28	..	17	18	19	20	21	22	23		
25	26	27	28	29	30	31	..	..	..	..	..	..	..	24	25	26	27	28	29	30		
..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	..	..	..	..	..	..		
<b>SEPTEMBER</b>							<b>MARCH</b>							<b>SEPTEMBER</b>								
1	2	3	4	5	6	7	..	..	..	..	..	..	1	..	1	2	3	4	5	6		
8	9	10	11	12	13	14	2	3	4	5	6	7	8	7	8	9	10	11	12	13		
15	16	17	18	19	20	21	9	10	11	12	13	14	15	14	15	16	17	18	19	20		
22	23	24	25	26	27	28	16	17	18	19	20	21	22	21	22	23	24	25	26	27		
29	30	..	..	..	..	..	23	24	25	26	27	28	29	28	29	30	..	..	..	..		
..	..	..	..	..	..	..	30	31	..	..	..	..	..	..	..	..	..	..	..	..		
<b>OCTOBER</b>							<b>APRIL</b>							<b>OCTOBER</b>								
..	..	1	2	3	4	5	..	..	1	2	3	4	5	..	..	..	1	2	3	4		
6	7	8	9	10	11	12	6	7	8	9	10	11	12	5	6	7	8	9	10	11		
13	14	15	16	17	18	19	13	14	15	16	17	18	19	12	13	14	15	16	17	18		
20	21	22	23	24	25	26	20	21	22	23	24	25	26	19	20	21	22	23	24	25		
27	28	29	30	31	..	..	27	28	29	30	..	..	..	26	27	28	29	30	31	..		
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		
<b>NOVEMBER</b>							<b>MAY</b>							<b>NOVEMBER</b>								
..	..	..	..	1	2	..	..	..	..	..	1	2	3	..	..	..	..	..	..	1		
3	4	5	6	7	8	9	4	5	6	7	8	9	10	2	3	4	5	6	7	8		
10	11	12	13	14	15	16	11	12	13	14	15	16	17	9	10	11	12	13	14	15		
17	18	19	20	21	22	23	18	19	20	21	22	23	24	16	17	18	19	20	21	22		
24	25	26	27	28	29	30	25	26	27	28	29	30	31	23	24	25	26	27	28	29		
..	..	..	..	..	..	..	..	..	..	..	..	..	..	30	..	..	..	..	..	..		
<b>DECEMBER</b>							<b>JUNE</b>							<b>DECEMBER</b>								
1	2	3	4	5	6	7	1	2	3	4	5	6	7	..	1	2	3	4	5	6		
8	9	10	11	12	13	14	8	9	10	11	12	13	14	7	8	9	10	11	12	13		
15	16	17	18	19	20	21	15	16	17	18	19	20	21	14	15	16	17	18	19	20		
22	23	24	25	26	27	28	22	23	24	25	26	27	28	21	22	23	24	25	26	27		
29	30	31	..	..	..	..	29	30	..	..	..	..	..	28	29	30	31	..	..	..		

## THE UNIVERSITY

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 COLLEGE OF FORESTRY, including—

FOREST EXPERIMENT STATIONS AT ITASCA AND CLOQUET

THE SCHOOL OF AGRICULTURE, including—

THE DAIRY SCHOOL

THE SHORT COURSE FOR FARMERS

TEACHERS' SUMMER TRAINING SCHOOL

THE SCHOOL OF TRACTION ENGINEERING

THE SCHOOL OF AGRICULTURE, CROOKSTON

THE SCHOOL OF AGRICULTURE, MORRIS

THE EXPERIMENT STATIONS, including—

THE MAIN STATION AT ST. ANTHONY PARK

THE SUB-STATION AT CROOKSTON

THE SUB-STATION AT GRAND RAPIDS

THE SUB-STATION AT DULUTH

THE SUB-STATION AT WASECA

THE SUB-STATION AT ZUMBRA HEIGHTS

AGRICULTURAL EXTENSION

BUREAU OF RESEARCH IN AGRICULTURAL ECONOMICS

THE LAW SCHOOL

THE COLLEGE OF MEDICINE AND SURGERY, including—

THE SCHOOL FOR NURSES

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE SCHOOL OF MINES, including—

MINNESOTA SCHOOL OF MINES EXPERIMENT STATION

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

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THE GEOLOGICAL AND NATURAL HISTORY SURVEY

## THE BOARD OF REGENTS

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# SCHOOL OF AGRICULTURE

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1005 5th St. S. E., Minneapolis

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519 10th Ave. S. E., Minneapolis

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1199 Raymond Ave., St. Paul

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University Farm, St. Paul

JAMES M. DREW, Registrar  
1307 Chelmsford St., St. Paul

FANNIE C. BOUTELLE, Preceptress  
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1485 Cleveland Ave., St. Paul

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1443 Raymond Ave., St. Paul

COATES P. BULL, B.Agr., Associate in Agronomy  
2137 Commonwealth Ave., St. Paul

LOUIS B. BASSETT, Assistant in Farm Management  
2095 Dudley Ave., St. Paul

ALBERT C. ARNY, B.S. in Agr., Assistant in Farm Management  
2115 Dudley Ave., St. Paul

MARK J. THOMPSON, B.S. in Agr., Assistant in Agronomy  
University Farm, St. Paul

LILLIAN HOLLINSHEAD, Assistant in Farm Accounts  
2219 Doswell Ave., St. Paul

### AGRICULTURAL CHEMISTRY AND SOILS

RALPH HOAGLAND, B.Agr., Agricultural Chemistry and Soils  
2080 Commonwealth Ave., St. Paul

WILLIAM H. FRAZIER, B.S., Assistant in Soils  
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RODNEY M. WEST, B.A., Assistant in Agricultural Chemistry  
2128 Knapp St., St. Paul

ALICE MERSEN, B.A., Assistant in Agricultural Chemistry  
2111 Commonwealth Ave., St. Paul

DE FOREST HUNGERFORD, B.S., Assistant in Chemistry and Soils  
University Farm, St. Paul

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ADDISON L. EWING, M.S., School Physics	2342 Langford Ave., St. Paul
ALLEN D. JOHNSTON, Blacksmithing	2111 Knapp St., St. Paul
JASON L. MOWRY, Mechanics	1057 13th Ave. S. E., Minneapolis
HARRY B. ROE, B.S. in Eng., Mathematics	2105 Scudder Ave., St. Paul
HALL B. WHITE, B.S. in Agr., Carpentry	University Farm, St. Paul
JENNESS B. FREAR, M.E., Assistant in Mechanics and Mathematics	1319 7th St. S. E., Minneapolis
LLOYD R. WHITSON, E.M., Drawing	1125 8th St. S. E., Minneapolis
WALTER C. ANDERSON, E.M., Assistant in Drawing	2366 Ellis St., St. Paul
GEORGE F. KROGH, Assistant in Mechanics	1502 Hythe St., St. Paul

## DAIRY AND ANIMAL HUSBANDRY

THEOPHILUS L. HAECKER, Dairy and Animal Husbandry	1205 Raymond Ave., St. Paul
HOWARD R. SMITH, B.S., In Charge of Animal Husbandry	University Farm, St. Paul
FREDERICK H. STONEBURN, B.S., In Charge of Poultry Husbandry	
ROBERT M. WASHBURN, B.S. in Agr., M.S.A., Associate in Dairy Husbandry	2122 Knapp St., St. Paul
JOSEPH S. MONTGOMERY, B.S. in Agr., Lecturer in Animal Husbandry	1391 Raymond Ave., St. Paul
WILLIAM H. TOMHAVE, B.S. in Agr., Lecturer in Animal Husbandry	2121 Langford Ave., St. Paul
FRANK W. WHITE, B.S. in Agr., Assistant in Animal Husbandry	2089 Carter Ave., St. Paul
ALBERT L. HUTCHINGS, Assistant in Animal Husbandry	University Farm, St. Paul
WILLIAM F. HAGERMAN, Assistant in Animal Husbandry	2089 Carter Ave., St. Paul
DWIGHT J. LANE, Poultryman	1485 Cleveland Ave., St. Paul
CHARLES H. MATTHEWS, Assistant in Poultry	1485 Cleveland Ave., St. Paul
EDWIN O. HANSON, Assistant in Dairy Husbandry	1475 Hythe St., St. Paul

## DOMESTIC ART

MARGARET J. BLAIR, Sewing, Household Art	1403 Cleveland Ave., St. Paul
GRETA E. SMITH, Assistant in Sewing	1070 14th Ave. S. E., Minneapolis
ELIZABETH F. BROOKS, B.S. in H.E., Assistant in Sewing	1212 Raymond Ave., St. Paul

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2095 Commonwealth Ave., St. Paul  
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907 7th St. S. E., Minneapolis  
PHYLLIS FRYE, Assistant in Sewing 1617 4th St. S. E., Minneapolis  
OLIVE MACCOMBER, Assistant in Sewing 1393 Cleveland Ave., St. Paul

## DOMESTIC SCIENCE

JUNIATA L. SHEPPERD, M.A., Cooking, Laundering, Home Economics  
1385 Raymond Ave., St. Paul  
LOLA McCLURE, Assistant 2116 Carter Ave., St. Paul  
GURID LAATE, B.S. in H.E., Assistant 1472 Raymond Ave., St. Paul  
CLARA L. AUST, B.S. in H.E., Assistant 320 17th Ave. S. E., Minneapolis  
IDA SLETTA, Assistant University Farm, St. Paul

## ENGLISH

ROBERT C. LANSING, M.A., English 2237 Knapp St., St. Paul  
ESTELLE COOK, Assistant in English, Supervisor of Literary Societies  
University Farm, St. Paul  
ELIZABETH B. HAUSE, B.A., Assistant in English  
2174 Commonwealth Ave., St. Paul  
ELEANOR EATON, B.A., Assistant in English 1891 Dayton Ave., St. Paul

## ENTOMOLOGY AND ZOOLOGY

FREDERIC L. WASHBURN, M.A., Zoology, Entomology  
1112 6th St. S. E., Minneapolis  
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1465 Raymond Ave., St. Paul  
CHARLES S. SPOONER, B.A., Assistant in Entomology  
1465 Raymond Ave., St. Paul

## HORTICULTURE

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ALFRED R. KOHLER, B.S.A., Assistant in Horticulture  
2130 Carter Ave., St. Paul

## AGRICULTURAL BOTANY

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2196 Carter Ave., St. Paul  
WIELAND L. OSWALD, Assistant in Agricultural Botany  
1268 County Road, St. Paul

## FORESTRY

EDWARD G. CHEYNEY, B.A., Forestry 2116 Knapp St., St. Paul  
JOHN P. WENTLING, M.A., Assistant in Forestry  
2160 Carter Ave., St. Paul

## VETERINARY SCIENCE

- MYRON H. REYNOLDS, M.D., D.V.M., Veterinary Science  
2145 Knapp St., St. Paul
- CHARLES C. LIPP, D.V.M., Comparative Physiology  
1460 Raymond Ave., St. Paul
- WILLARD L. BOYD, D.V.S., Veterinary Science  
2221 Langford Ave., St. Paul
- LOUIS E. WILLEY, D.V.M., Comparative Physiology  
2089 Carter Ave., St. Paul

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GRACE DENNY, B.S., Physical Training, Social Culture  
1836 Dayton Ave., St. Paul
- D. C. MITCHELL, B.Sc. in C.E., History, Director of Gymnasium  
2132 Carter Ave., St. Paul
- EARL L. FINNEY, Mathematics University Farm, St. Paul
- EDMUND L. BUTTS, Major 25th U. S. Infantry, Military Science and  
Tactics Plaza Hotel, Minneapolis
- MARTHA B. MOORHEAD, M.D., Lecturer in Domestic Hygiene  
914 2nd Ave. S., Minneapolis
- MARY L. COFFIN, Music 2914 Portland Ave., Minneapolis
- DELILAH L. PEARCE, Home Nursing University Farm, St. Paul
- INGA PEDERSON, Assistant in Library 2120 Carter Ave., St. Paul
- RUTH TAYLOR, Assistant in Library 1325 5th St. S. E., Minneapolis

## COMMITTEES, SCHOOL OF AGRICULTURE

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- Demonstration and Exhibit.*—C. P. BULL, WILSON, FRAZIER, BLAIR, SHEP-  
PERD, R. M. WASHBURN

## GENERAL INFORMATION

### LOCATION

The School of Agriculture is located on University Farm, St. Paul, Minnesota, about midway between the business portions of the cities of St. Paul and Minneapolis. The School of Agriculture is a part of the University of Minnesota, and is governed by the University Board of Regents.

#### *How to Get to the School*

Check all baggage to Minneapolis or St. Paul, and bring checks to the School.

A charge of 25 cents is made by the school teams for transporting trunks at the opening of the School. No charge is made for the return of the baggage at the close of school, provided it is ready to go on the days assigned.

Monday and Tuesday, October 7th and 8th, members of the Y. M. C. A., wearing lettered badges will be at the Union Station in St. Paul, and at the Union, Milwaukee, Soo, and St. Louis Stations in Minneapolis to meet and direct new students. Take the Como-Harriet or Como-Hopkins car from either St. Paul or Minneapolis, and get off at Commonwealth Avenue.

### TIME OF OPENING

The School of Agriculture will open Monday, October 7, 1912, and close March 26, 1913. The fall term will close at 4:30 p. m., Friday, December 20th, and the winter term will begin Tuesday, January 7, 1913.

All cadets of the B class and all of the A class who elect drill for next year will report to the Commandant of cadets at Fort Snelling on Thursday, October 3rd, at 10 o'clock a. m., and remain there until Tuesday morning, October 8th, when they will return to the School to take up the regular school work.

Instruction begins promptly at the opening of each term, and students should be present the first day and remain until the close of the term.

### PURPOSE

The School of Agriculture was organized in 1888, with the object of giving a practical education to young men and women. It offers a practical course of study designed to fit young men and young women

for successful farm life, and aims to give to its students the necessary preparation for useful citizenship; but does not aim to prepare students for college.

### ADMISSION

Students should correspond with the Registrar of the School, J. M. Drew, University Farm, St. Paul, Minnesota, prior to coming to the institution, to make the necessary preliminary arrangements for registration.

All male students are required to have had six months' farm practice before entrance. No student under seventeen years of age will be admitted.

Students who have completed eighth grade work or its equivalent in the common schools, and who are seventeen years of age or older, are admitted without examination. All applicants for admission should send to the Registrar for certificates of admission which, when properly filled out by former teachers or superintendents, will be accepted in place of entrance examinations. Diplomas should not be sent.

Applicants whose home schools do not afford complete instruction in the common branches may be admitted with not more than two conditions which must be removed according to instructions given the student upon admission.

Students from city or grade schools will not be admitted before finishing eighth grade work, nor until their former school records have been passed upon by the Registrar. These records must be presented at least three weeks prior to the opening of the school.

State High School Board certificates are accepted for work in English, Physiology, Algebra, Geometry, and Civics, or credits of 75 per cent. or more received on State teacher's examinations.

Students who have finished agricultural subjects in the high schools of the State, or other schools under the Putnam or Benson-Lee acts may receive full credit for such subjects as are pursued an equivalent length of time, with proper facilities for instruction. Students are advised to review, while here, such subjects as the enlarged facilities of this School render advantageous.

### COURSE OF STUDY

The course of study offered covers a wide range of subjects, and is largely technical in character; but provision is made for some instruction in English and Mathematics. The course is briefly outlined on pages 21 and 22. Instruction is given in the work shop, laboratories, barns, and fields, as well as in the classroom. The course requires three winters of six months each for completion, and is co-educational. Much of the work is taken in common by the young men and the young women. Some of the subjects, such as blacksmithing, carpentry, field work, handling grain and machinery, are taken by the young men, while the young women pursue cooking, sewing, laundering, and household art. The methods of

instruction tend to educate students toward the farm instead of away from it and to develop in them a love for farm life by showing them its possibilities. In this respect the school has been very successful, as over 80 per cent. of its graduates continue agricultural pursuits.

### CLASSIFICATION OF STUDENTS

The Students' Work Committee shall report to the Faculty at the end of the first term, the names of all candidates for graduation, and no student shall be considered a senior whose name does not appear on the list furnished by the Students' Work Committee.

No student with incomplete preparatory work, or more than one incomplete C subject, excepting high school graduates, will be classified as a B.

No student with incomplete C or preparatory work will be made a commissioned military officer.

### REQUIREMENTS FOR GRADUATION

First.—The completion of the prescribed course of study, with an honorable standing in department.

Second.—An essay of not less than one thousand words, upon a topic connected with Agriculture or Home Economics, typewritten on paper of approved size for binding and filing in the library.

Third.—For young men, a practical experience in field work at the University Farm or elsewhere, as shall appear in reports received from responsible sources.

Young women will be required to spend their vacations in practical work in the home under the supervision of the Sections of Domestic Science and Domestic Art.

It is essential that the student should do some work of a practical nature during the vacations following the first and second school years respectively. Students will be given a credit for this work just the same as for other school work. Blanks giving an outline of the work in detail, and blanks for certification are furnished to all students.

It is expected that all the boys in the School will devote their vacations to actual farm work, or to some form of agricultural work, and the girls to some line or lines of work, such as making bread for the family, canning fruits, vegetables, etc.

### EXPENSES

The necessary expenses for the year do not exceed \$100. This amount does not include the cost of the required military suit for the young men, traveling and personal expense.

Residents of Minnesota are charged an entrance fee of \$5 per school year; non-residents of the state, \$10.

The cost to the student for board, heat, light, and laundry is the actual cost of maintaining the table (including management), and caring for the buildings. This has not exceeded \$3 per week. Each term's board is paid in advance. The buildings are all lighted by electric lights and warmed by steam. The sleeping rooms are each furnished with a bedstead, mattress, dressing bureau, chairs and table.

No deduction in charge is made for any absence of less than five days. If students are compelled to be absent for that length of time, they are allowed half rates, if they make arrangements before leaving.

Text-books are furnished at a rental of \$2.50 per year through the Students' Co-operative Store to students who do not desire to purchase. A gymnasium fee of 25 cents is charged each student.

The average cost to students of the first year for drawing instruments and material, note books, and all necessary stationery and supplies is between \$12 and \$15. For students in the second and third years the cost is slightly less.

Each student is required to pay for breakage of apparatus used in practical work.

A competent nurse is kept on the ground to care for the sick. To meet this expense each student pays \$1 per term.

For the purpose of supplying, calcimining, and painting the sleeping rooms, a reserve fund is created by assessing each one occupying them \$2.00 for the school year.

A deposit of \$5 is required of each student as a guaranty for the return of all books and other articles borrowed. This deposit is not returned until the student severs his connection with the school.

On entering the school the student, if he is a resident of Minnesota and is to room and board at the institution, makes a payment of \$5 entrance fee; \$30 board; \$1.25 book rent; 25 cents gymnasium fee; \$1 maintaining nurse; \$2 reserve fund; \$5 deposit; total \$44.50.

All male students are required to provide themselves with the prescribed uniform, which consists of cadet gray blouse, trousers, and cap, and is as neat and economical a dress as the student can obtain. The suit complete, to measure, is furnished under special contract for \$15.50.

Each girl is required to provide herself with at least two large white aprons with bibs and two pairs of half over-sleeves to wear while at work in the Domestic Science laboratory.

Each student provides four sheets, one pair of blankets, one quilt, one bed spread, one pillow, three pillow cases, towels, napkins, comb and brushes, one glass tumbler, and one teaspoon.

Students who do not room in the dormitories will be required to rent a post-office box in the Main Building in order that notices, etc., may reach them promptly.

Each student in attendance at the School who expects to return the following year and who desires to room in the dormitory will, before going home, make a deposit of \$2 with the Cashier as evidence of good faith that he expects to return on the opening day of the following school year. Dormitory rooms will be assigned to new students in the order in which



their applications are received. Each prospective student who desires to room in the dormitory will be required to send a deposit of \$2, which will be returned in case the application is received after all dormitory rooms are spoken for.

In the case of either a former student or a prospective student, this two dollar deposit will be forfeited if the student does not appear for registration on the opening day of the school year, unless he has signified in writing to the Registrar at least ten days before the opening that he does not intend to return. All money orders or checks should be made payable to Harriet Matthews, Cashier.

### HOSPITAL FUND

The Hospital Fund will be expended under the general direction of the Health Committee.

This fund insures, for those contributing to it, the care of regular nurses and such medicines and materials as the regular nurses may use.

It does not provide medical treatment by physician.

It does not provide hospital expenses of students rooming off the campus or away from the institution. Students rooming off the campus are not expected to contribute to this fund. They may, if they so desire, purchase hospital service cards for one dollar per term which will entitle them to office consultation and treatment by the nurse and, if they live within reasonable distance from the grounds, may have the privilege of nurse calls at fifty cents per call, when nurses can be spared from regular duties on the grounds.

It does not provide for special nurses, if such be required by reason of serious or long continued illness, except as provided for in the following rule:

#### *Rule*

Adopted by the Health Committee, March 9, 1909.

"After usual and necessary running expenses connected with the Hospital Fund have been taken care of, any available balance may be used for paying special nurses or other extraordinary expenses. Any balance still due such special nurses shall be paid by students requiring such extra help and pro-rated according to the number of days attendance for each.

"A dispensary fee of \$.25 for each office service by nurses will be collected from those who have not contributed to the hospital fund.

"The regular hospital fee is collected from dining-room help the same as from students, and this help is then entitled to nurse-care on the same basis as students."

### STUDENTS' TRUST FUND

The class of 1902 left with the School a fund of \$100 "to assist by temporary loans, at a reasonable rate of interest, deserving students needing such help, who are not below the B class in the School of Agri-

culture." This fund is in charge of a committee consisting of the Dean, the Principal, the Preceptress, and the President of the A class.

### THE LUDDEN TRUST

The late Honorable John D. Ludden, of St. Paul, gave the University of Minnesota \$5,000, to be held, invested and re-invested by the University through its Board of Regents, and the income thereof to be collected, received, and applied by said Board of Regents to the financial assistance of students of either sex in the School of Agriculture. Mr. Ludden delivered into the hands of the Regents, for the principal sum, one Northern Pacific registered prior lien railway land-grant gold bond of the denomination of \$5,000, payable to the University of Minnesota and its assigns in gold coin, on the first day of January, 1997, with interest at 4 per cent per annum, payable quarter-yearly in like gold coin, the fund to remain so invested until the bond matures, unless by reason of changed conditions a reinvestment shall be sooner deemed judicious by the Board of Regents for the safety, conservation, or continued productiveness of the fund. The premium on the purchase of this first grade security was \$212.50, and was paid by Mr. Ludden, thus enlarging his donation by that amount.

Mr. Ludden afterward donated an additional sum of \$5,000 for a like purpose, so that the yearly income is now \$400.

Mr. Ludden imposed the following conditions: "The beneficiaries must be youths who are residents of the state of Minnesota; they must be and continue of unblemished moral character, and of temperate and industrious habits; and they must be such as by examination and trial shall evince and maintain a taste, habit, and aptitude for study and improvement; and any student who shall fail to come, or shall cease to be, within the above conditions shall forfeit all claims to the benefit of such fund. Subject to these conditions the administration of such income is entrusted to the said board of regents, which may make such rules therefor as they may deem judicious."

This fund produces \$400 a year. Those wishing to avail themselves of its benefits should apply to the Executive Committee of the Board of Regents of the University of Minnesota.

### ASSEMBLY

On each school day, at 11:40 a. m., excepting Monday and Wednesday, the students assemble in the chapel. After the opening exercises, brief talks are given by the Principal, members of the Faculty, or invited guests.

During the year the list of speakers will include prominent state and national officials, business men, particularly those connected with the agricultural industries, professional men, prominent clergymen of all denominations, educators from other institutions, and successful farmers.

It has been found that this plan gives to the students an opportunity to hear men of prominence discuss a wide range of topics, many of which relate to rural and agricultural problems.

### HOLIDAYS

On Thanksgiving Day no classes will be held, but school will continue as usual on the Friday and Saturday following.

Lincoln's birthday, February 12th, and Washington's birthday, February 22d, will be observed by appropriate exercises.

### HOME LIFE ON THE CAMPUS

The life of the students while attending the School of Agriculture is subject to supervision. The home life of each student is carefully guarded, and everything done to promote a healthful and moral atmosphere. The use of tobacco and spirituous liquors of all kinds is strictly forbidden. No person will be admitted as a student who is known to have the cigarette habit.

Any one not in accord with these restrictions and not willing to lend a hand toward a strong moral growth, should not come to the School of Agriculture.

### STUDENTS IN DORMITORIES

The Principal of the School of Agriculture has charge of the boys in their dormitory and social life, and the Preceptress has charge of the girls in their dormitories and social life, under such regulations as may be approved by the Dean.

From 8:00 a. m. to 4:30 p. m. and also after 7 p. m., students not at recitation or chapel are expected to be in their rooms or in the library studying or reading.

The rooms shall at all times be quiet, especially in the evening, so no student may be disturbed.

The cadet officers shall make daily inspection of the boys' dormitories, under proper supervision of the instructors.

### LECTURE COURSE

During the school year, a lecture and entertainment course, usually consisting of six lectures and concerts, is given in the chapel. These entertainments are strictly high grade, and furnish a pleasant relaxation from school work, as well as mental stimulus.

The following program, which was provided during the past year, shows the general character of the entertainments.

October 25th	Music	The Tyroleans
November 15th	Lecture	Caleb Powers
November 28th	Magician	Edwin Brush

December 16th	Entertainer	Emerson Winters
January 29th	Music	John Eberly Concert Company
March 2nd	Lecture	Sylvester A. Long

## ORGANIZATIONS AND PUBLICATIONS

### *Students' Debating Societies*

Students are urged to unite with one of the ten literary societies of the School for both pleasure and profit. The work is under the supervision of one of the instructors in the English Department. It affords training in parliamentary practice, public speaking, debating, and dramatic work.

All student organizations making use of any of the college buildings must file a statement with the Registrar, giving names of president, secretary, and treasurer, and all organizations collecting fees must deposit the fees with the department Cashier and turn in their books at least once a term to be audited by the department auditing committee to whose rules all such organizations must conform. Before any new student organization is formed, permission must be obtained from the chairman of the Entertainment Committee.

### *Students' Christian Associations*

The Young Men's and the Young Women's Christian Associations have for their objects social fellowship and moral and spiritual development. To this end, two receptions are held each year, and Bible classes are held Sunday mornings at 8:30. A general religious service is held each Sunday at 5:30 p. m., and a mid-week prayer-meeting each Thursday at 6:30 p. m. The associations are non-sectarian, so that all students may find in them an opportunity for Christian activity and mutual helpfulness.

### *Farmers' Clubs*

Farmers' Clubs, as now organized in Minnesota, are local organizations of farmers. Each club usually represents a small territory, as a rural school district or township. The Agricultural Extension Division aids in organizing these clubs, and in helping them to continue effectively. Extension Bulletin No. 1 describes the work of these clubs and the methods of organization. Speakers are sent from the Extension Division and Institute force as often as practicable to help with the local program. A list of timely topics is sent by the Division to each club each month, and also blanks on which the clubs may report. At least 150 such clubs are organized in the State, and many more are needed. Students of the School of Agriculture can be very helpful in this work, by acting as leaders in their local communities.

### *The Minnesota Farm Review*

The Minnesota Farm Review is a monthly agricultural paper owned and published by the Alumni Association of the School of Agriculture. The paper is intended to be a medium by which the former students of

this institution shall be kept in touch with each other, and also with the School and Experiment Station. It also endeavors to bring the farmers of the State into closer connection with the institution, and to this end it strives to present the latest progress in experimental work at the various stations. It is the official organ of the Alumni Association and of the Farmers' Club.

#### *The University Farm Press News*

One of the instruments used by the Extension Division for the purpose of keeping the public informed of the work done at the Department of Agriculture of the University of Minnesota, as well as of keeping the public posted on new developments in agriculture, is a small sheet of information published semi-monthly, known as the *University Farm Press News*. This sheet is mailed to all of the papers in the State.

#### *The Minnesota Farm Library*

The Extension Division of the Department of Agriculture will publish monthly a small popular bulletin, under the caption, *Minnesota Farm Library*. Each one of these bulletins will deal, in a popular and interesting way, with some phase of farm life. Most of them will be extracts from technical bulletins published by the Minnesota Experiment Station or other agricultural institutions. The attempt will be to present the technical matter from these publications in a more simple and interesting manner than is done in the ordinary station bulletin. The *Minnesota Farm Library* will be mailed free, monthly, to any citizen in Minnesota so desiring.

### LIBRARY

The Agricultural Library is well equipped for supplying the needs of both undergraduate and graduate students. It contains nearly 19,000 volumes of general and technical literature, government reports, etc., besides 50,000 unbound pamphlets, bulletins, and reports. The general subject and author card index, and the index of publications of the state experiment stations are always at the disposal of all students, to aid them in locating the various sources of information which the library affords.

There are complete sets of all the standard encyclopedias and dictionaries, and files of over 225 popular and technical magazines and periodicals.

The librarian and her assistants are always ready and glad to give whatever assistance they can, both to those interested in special research work and to those doing regular reference work in connection with their classes. All those wishing to read or study are made welcome, and are given whatever privileges the library can provide.

## ZOOLOGICAL MUSEUM

This is in the third story of the Main Building and connecting with the entomology lecture room. It contains one of the finest collections of birds in the Northwest, a large series of mammals, shells, anatomical models, etc., all used in class instruction. One case is given up to models of injurious insects and a collection of spray pumps, nozzles, etc., showing the various makes on the market. Another case is devoted to a beautiful series of Minnesota fishes, reptiles, and amphibians, and on two sides of the large room devoted to museum purposes are cases containing thousands of pinned insects. Friends of the institution who are inclined to donate zoological specimens may rest assured that they will be properly installed and given the best of care.

## MINNESOTA FARMERS' INSTITUTES

Farmers' Institutes in Minnesota are under the direction of a Board, composed of three members of the Board of Regents, and the Presidents of the State Dairymen's Association, Minnesota Horticultural Society, and Minnesota Agricultural Society. The direct supervision of Institute work is given to a Superintendent, chosen by this Board, who has his offices at the School of Agriculture.

Institutes are held in rural schools, town halls, and in cities and villages wherever sufficient interest is shown to warrant. For information regarding Institutes, and to secure dates, address the Secretary of the Farmers' Institutes, University Farm, St. Paul.

## OTHER SCHOOLS OF AGRICULTURE IN THE STATE

*School of Agriculture at Crookston*

The School of Agriculture at Crookston, Minnesota, established by the Legislature of 1905, is in active operation and offers to the young men and young women of the Red River Valley a three years' course in practical farming and home-making. The school year for 1912-13 will open October 1, 1912 and close March 28, 1913. For further information address School of Agriculture, Crookston, Minnesota.

*School of Agriculture at Morris*

The 1909 session of the Minnesota Legislature accepted from the National Government the gift of the Morris Indian School and appropriated funds for its maintenance as an agricultural school. The control of the institution was placed in the hands of the Board of Regents of the University of Minnesota. The school opened October 3, 1910, with a large enrollment totalling 104 for the year. The courses of instruction are made to conform as closely as possible with those of the school at St. Anthony Park. During the summer arrangements will be completed for considerable enlargement of facilities, making it possible to accommodate more students and offer better instruction. The 1912-13 term will open September 30, 1912 and close March 19, 1913.

## COURSE OF STUDY

Figures in brackets indicate the number of periods per week in which the subject pursued.

### FIRST (C) YEAR

#### *First Term*

Agricultural Botany [4]

Music [2]

Farm Mathematics [5]

English [5]

or

Physiology [5]

}

- \*Drawing [2]
- \*Blacksmithing [2]
- \*Carpentry [2]
- Military Drill [3]
- Agronomy [5]
- Gymnasium [2]
- †\*Practicums [2]

or

}

- \*Cooking [2]
- Physical Training [2]
- \*Sewing [2]
- Social Training [1]
- Field Agriculture [3]
- \*Home Nursing [2]

#### *Second Term*

Agricultural Botany [4]

English [5]

or

Comparative Physiology [5]

Study of Breeds [5]

Music [2]

}

- \*Carpentry [2]
- \*Drawing (farm buildings) [2]
- \*Blacksmithing [2]
- Military Drill [3]
- Gymnasium [2]
- \*Practicums [2]

or

}

- \*Laundering [2]
- \*Sewing [2]
- Physical Training [2]
- \*Farm Accounts [2]

### SECOND (B) YEAR

#### *First Term*

English [2]

Agricultural Physics [5]

Elementary Chemistry [7]

}

- \*Dairy Husbandry [2½] { Dairy Lectures
- Dairy Practice
- Dairy Breeds

Fruit Growing [3]

Music [2] (optional)

}

- \*Farm Accounts [4]
- \*Stock Judging [2]
- Breeding [2]
- Military Drill [3]
- Gymnasium [1]

or

}

- \*Farm Accounts [2]
- \*Cooking [2]
- Household Art [1]
- Physical Training [2]
- \*Sewing [2]

#### *Second Term*

English [2]

Agricultural Chemistry [5]

}

- \*Dairy Husbandry [2½] { Dairy Stock Lectures
- Dairy Practice
- Dairy Feeding

†See page 26

\*Subject extends through double time in the daily program.

## COURSES OF INSTRUCTION

	Music [2] optional Agricultural Physics [5] Vegetable Gardening [3]	
Farm Management [5] *Dressing and Curing Meats [1] Military Drill [2] Gymnasium [1]	or	*Meats [1] *Cooking [2] Home Management [1] Physical Training [2] *Sewing [2]
<b>THIRD (A) YEAR</b>		
	<i>First Term</i>	
	Forestry [3] Zoology [3] Poultry [3] ‡Algebra [5] Chorus [1] optional	
Soils and Fertilizers [5] *Farm Implements [1] *Veterinary Science [2½] Gymnasium [1] Music or Military Drill [2]	or	*Cooking [3] *Sewing [2] Music [2]
	<i>Second Term</i>	
	Civics [4] English [4] Plant Propagation [3] Entomology and Insect Collection [3] ‡Algebra [5] Chorus [1] optional Dairy Chemistry [2]	
*Farm Implements [1] *Grain Judging [1] *Stock Judging [1] Feeding [3] *Veterinary Science [2½] *Dairy Stock Judging [1]	or	Home Economy [1] *Cooking [3] Domestic Chemistry [3] *Sewing [3] Domestic Hygiene [1]

\*Subject extends through double time in the daily program.

‡Required of those expecting to enter the College of Agriculture.



## DEPARTMENTAL STATEMENTS

### AGRICULTURAL BOTANY

This course consists principally of a study of the flowering plants. The practical side of the subject is emphasized by the study of the plants usually found on the farm. Some work is done in the greenhouse, which enables the students to see more clearly the functions and different parts of the plant. This course includes a botanical study of weeds found on the farm, and the botanical features concerned in methods of eradication. Determination of weed seeds found in grain and grass mixtures is also a part of this course. Plant diseases, such as rusts, smuts, potato diseases, etc., are studied and the best preventive methods are discussed. Some instruction is given in the use of the compound microscope.

### AGRICULTURAL CHEMISTRY

In Agricultural Chemistry, one term is given to a study of the elements and compounds which are of the most importance in agriculture. This work is planned to prepare the student for intelligent study 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 everyday life. Laboratory practice forms a prominent feature of the work. In the chemistry of foods, the composition of plant and animal bodies, the chemistry of plant growth, the chemistry of animal nutrition, the 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.

### AGRICULTURAL PHYSICS

In this department it is the aim to enlist the student's interest in a more keen appreciation of the principles that underlie the practices of his vocation. To this end, the facts with which he is already somewhat familiar are used to reach the fundamental law. For example, from his knowledge of the relation of weight to bulk in grains, soils, and water, he is led to a knowledge of volume, mass, density, weight, force, draft, specific gravity, and fluid pressure. So far as possible the work is carried on by experimental demonstrations before the class. Likewise, the somewhat vague and indefinite notions the young people have from their use of pulleys, eveners, and other farm machinery form fitting stepping-stones to definite mathematical results, readily reached by them under proper guidance.

The varied questions of soil physics, soil formation, the movements of water and air through soil, soil temperatures, soil grains and granules, and pore space are matters studied from the practical side and used as avenues to far-reaching laws.

### AGRONOMY

A general consideration is given of soil formation; soil moisture and its control; the principles and effects of tillage and rotation of crops; farm crops, including history; uses, selection, storing, and testing of seeds; preparation of seed-bed and planting; cultivation; harvesting; meadows and pastures; methods in plant improvement; practice in judging grains and corn.

### ELEMENTARY ALGEBRA

Beginning Algebra is offered throughout the senior year, required of all students intending to enter college, and optional for others. This work covers Wells' New Higher Algebra, or equivalent texts, through simple equations of one unknown quantity. Special attention is given to literal notation, negative numbers, factoring, fractions, and the simple equation.

### BLACKSMITHING

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, tongs, cold-chisels, punches; in short, 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.

### BREEDING

Students receive instruction in the principles that govern breeding, on 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.

### CARPENTRY

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 in 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.

### CIVICS

During the last term of the course, students receive instruction in this science and graduate with a good understanding of the origin, necessity, nature, and various forms of government, and of the machinery employed to carry on public works, establish justice, and provide for the common defense; of the organization and management of local institutions, the town, the village, the city, and the county; the manner in which states are created and affairs administered; the three departments, legislative, judicial, and executive, and the functions of each; the interdependence of the state and its citizens, as well as the powers and obligations of each, by due attention to which the state may be strengthened and the condition of its citizens ameliorated.

The relations of the state to the general government, the constitution and the power it confers, and the provisions for amendments are taught. The more important principles of commercial law, including contracts, agency, partnership, corporations, and commercial paper, receive attention. Instruction is also given in the United States method of surveying public lands.

### COMPARATIVE PHYSIOLOGY

During the first year, students take one term of applied physiology. This is an effort to connect technical physiology with the necessities of every-day life. The work includes a study of the general plan and structure of the body and the various individual tissues of which it is composed; also of the sources of heat and energy, digestion, and the relation of food materials to the various tissues of the body. Considerable attention is given to diseased and innutritious foods, food adulteration, and narcotics. The circulation is studied with special reference to the relation of the blood and lymph to tissue nutrition and tissue waste.

Accidents, including poisoning, are studied for the purpose of giving a practical knowledge of what to do in emergencies. Considerable attention is given to the subject of clothing, the various materials in use being considered with reference to fitness for special purposes. Some time is also given to the study of common physiology, of the organs of circulation, digestion, respiration, the nervous system, and the relations of bacteria to the common diseases, especially such diseases as consumption, typhoid fever, etc. A brief study is also given to the subject of digestion in the lower animals.

The class-work is illustrated by means of large charts, skeletons, manikins, and dissection. Important points of difference between human and animal physiology are pointed out, in preparation for the third year's work in the veterinary class. Matters of home and personal hygiene are interwoven with the physiology work.

### COOKING

Cooking extends through five terms of the curriculum. The subjects covered in each term are as stated below:

First term, C year: Furniture and equipment needed in a home kitchen; best methods of managing kitchen work, caring for kitchen and dining room utensils, furniture, etc.; the place of measuring and weighing in cookery; the preparation and serving of vegetables, cereals, and bread.

First term, B year: Cooking is again taken up; the special topics being the preservation of fruits and vegetables by canning, preserving, pickling, and jelly-making. The selection, preparation, and serving of meats of all kinds is also considered. A sufficient amount of practical work is given in each case to illustrate the principles brought out. A special study of table service is begun during this term and extends through the year, a practice dinner being given by a portion of the class in the class dining-room each month.

Second term, B year: Eggs are considered as to selection, preservation, food value, different ways of cooking and serving. The preparation and serving of soups and beverages is considered, together with their food value. The subject of salads is considered in a similar way.

First term, A year: This is devoted to the marketing and care of food. The preparation and serving of dairy foods, and made-over dishes and dishes for invalids receive special attention.

Second term, A year: This is devoted to the preparation and serving of desserts, and to the study of food rations, dietaries, bills of fare, confections, etc. A free use is made of the U. S. Bulletins during the year, in the hope of arousing a greater interest in the food question and encouraging home reading along this line.

### 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.

### DAIRY HUSBANDRY

*Farm Dairy Lectures.*—A course of lectures is given in farm dairying, giving instruction in the care of milk and utensils, explaining the principles involved in creaming milk by the gravity and centrifugal processes, and

giving full instruction in regard to running farm separators and the manufacture of butter and cheese in the farm dairy.

During the last half of the first term, students receive instruction in regard to the characteristics of the various breeds of dairy cattle, their origin and comparative adaptability for the dairy. Lectures are given upon the points desirable in animals intended for the dairy. The students have practice work in judging dairy stock.

During the second term lectures are given covering both the scientific and practical phases underlying the principles of feeding. Practice work is given in compounding rations and estimating the comparative value of food stuffs.

Commencing the first Tuesday in February, lectures in bacteriology are given the girls in place of dairy feeding. This work treats in an elementary way the subjects of bacteria, yeasts, and moulds in the home. It is the purpose of this course to familiarize the young women with the growth and character of fungi commonly met in household and dairy management. A microscopic examination and study of the more common forms of fungi is made and special stress is laid on the practical application of the subject to the home.

*Dairy Practice.*—Students receive instruction in the most advanced methods of creaming milk, ripening cream, churning, working and packing butter, the manufacture of sweet curd cheese, and measuring the value of milk by the Babcock test and lactometer. This practice-work begins the second week of the first term and continues throughout the school year.

## DOMESTIC CHEMISTRY

The composition of human foods and their combination to form balanced rations; dietary studies of families; cost and value of foods; chemical changes and losses in the cooking and preparation of foods; cereal food products; animal food products; fruits; adulterations of foods and their detection; fuels, soaps, disinfectants, dye stuffs and colors; the 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, spices, flavors, extracts, etc.; the grading and testing of wheat flour; the chemistry of bread making, and household sanitation form the essential parts of this work.

Laboratory practice is given in the study of the composition of foods and in detecting adulterations of different foods, such as milk, cream, butter, oleomargarine, lard, cheese, coffee, tea, vinegar, catsups, jellies, flavors and extracts, baking powders, cereal breakfast foods, and flour. The aim of this work is to give students an idea of the composition, uses, and value of food materials, and the part chemistry takes in sanitation and household affairs.

## DOMESTIC HYGIENE

Instruction is given concerning the causes and nature of infectious diseases, their modes of spreading and means to be taken to limit their spread. The common preventable diseases, typhoid fever and tuberculosis, are discussed and special stress is laid upon the importance of personal hygiene in limiting the transmission of these diseases.

Hygienic requirements as to food, clothing, rest, and exercise are considered, and suggestions are given in regard to personal hygiene during the periods of childhood, girlhood, and motherhood.

## DRAWING

The drawing course is so arranged as to prepare the student to make working drawings of broken parts of machinery, to design out-buildings, and to read and interpret intelligently plans and specifications made by contractors. In view of this the first term is devoted to working drawings of castings; the second term, to simple architectural design.

## DRESSING AND CURING MEATS

The instruction given the boys consists of demonstration lectures on the preparation of meat for farm use. They are required, in addition, to take two weeks' practice in dressing, cutting, and curing such meat as is likely to be used on the farm. Work is also given them in selecting and judging fat stock, and in judging dressed meats.

## ENGLISH

Applicants for admission to the School, who are deficient in the knowledge of the inflections of the parts of speech, the classification of phrases and clauses and case constructions are required to make up the deficiency by a course in grammar, for which no school credit will be given.

C Class. In the first year, English is studied five hours a week for one term. Three hours are given to constructive work with almost daily practice in writing short exercises based on Mayne's Modern Business English. Two hours are given to the interpretation and analysis of literature.

B Class. In the second year, English is studied two hours a week for two terms. The writing of weekly themes and the study of the forms of discourse constitute the work.

A Class. In the second term of the third year a course in Rhetoric is given covering four hours a week. The object of the training is fluency and correctness in written and oral English. The writing of the graduating thesis is a part of the course.

## ENTOMOLOGY AND ZOOLOGY

The class receives instruction of a practical nature. The course is divided as follows:

Classification of insects; habits and life histories of injurious forms, with special attention to insect pests found in Minnesota. The nature of the different insecticides and methods of application are discussed. The student spends some time in becoming acquainted with the appearance and habits of beneficial insects. About four lectures on bee keeping are also given. Each student must collect fifty insects, representing at least twenty-five different kinds.

The four-footed pests of the farm, rabbits, gophers, squirrels, etc., as well as injurious and beneficial birds, are also studied.

## FARM ACCOUNTS

The work in Accounts is applied to the transactions which the student meets in the various duties of the farm and household. He is taught to keep his accounts, that he may know at any time the profit or loss in any department of his business, and is thus enabled to plan intelligently.

## FARM IMPLEMENTS

In the study of Farm Implements different types and makes of the various classes of farm machines are brought together in the classroom. Here ample opportunity is given for a comparative study, including adaptability and efficiency of each type, the aim being to make students familiar with construction and working parts of all the classes. Special attention is given to convenience, durability, and adaptability, cost of machinery equipment for different types of farms, life, depreciation, and care of same.

## FARM MANAGEMENT

Systems of farming; selection of farms; rotation of crops and the planning of rotations suitable to the students' home farms and to farms operated under different systems; the cost of producing farm crops; marketing farm products; business methods applied to the farm, and a statement of the farm business are given.

An accurate plan of the home farm, showing fields with crops raised on each and yields, and the location of farmstead and buildings, is required upon entering this course. Before leaving for home at the close of the first year, students should consult with the instructor on this subject and obtain from him directions and blanks, so that the work required upon entering may be performed at home during the summer, where it may be easily and accurately completed.

## FARM MATHEMATICS

Instruction in this subject consists of drill for accuracy and speed in the simple processes of mathematics and the application of principles to problems where measurements of material, extension, capacity, etc., are required. Students are prepared also to handle with ease the mathematics of the technical courses in the School.

Students deficient in Arithmetic will be given special work to prepare them for Farm Mathematics.

## FEEDING

The principles of feeding as applied to the growing of horses, beef 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. Practical lessons in feeding are given at the barns under the supervision of an experienced feeder. Each student thus learns the requirements of each class of stock.

## FIELD AGRICULTURE

This work consists of a study of those portions of geology relating to soil formation; effect of the glaciers on the soils of Minnesota; origin of soils in the various agricultural regions of Minnesota; classification of soils; soil moisture and soil tillage; land areas and the planning of fields and farms; the classes of field crops, as grains, grass, and cultivated crops; the relation of these crops to each other in a systematic rotation and in their relation to soil fertility; the origin, distribution, and uses of cereal crops and other field crops.

## FORESTRY

Forestry includes the consideration of the formation and care of windbreaks and shelter-belts; the laying out and planting of home grounds; discussion of the hardiness, habits, and value of our native and introduced trees, and the methods of propagating them.

## FRUIT GROWING

Fruit-growing is taught with reference to raising fruit for market and in the home garden.



## GRAIN AND CORN JUDGING

This course consists of a discussion of the use and value of the score-card; a study of the structure of each of the classes of seeds; a brief history and study of the characteristics in detail of each of the varieties considered; the adaptability of varieties to different localities; the conditions affecting yield; score-card practice and comparative judging, to impress upon the mind of each student the details to hold in mind in the selection of good seed grain.

## GYMNASIUM WORK

The gymnasium is a large, well-lighted, two-story brick building. It is well supplied with heavy apparatus for general gymnastic and athletic exercises, together with such appliances as are necessary for the development of a symmetrical body. Besides being fitted up with the finest apparatus, it possesses space and equipment for sprinting, pole vaulting, hurdling, high and broad jumping, shot-putting, etc.

Class work in physical training is required of all undergraduate young men not excused on account of physical disability. Courses are offered on the heavy apparatus, in corrective work, class drills, and athletic training. In addition to the regular class drill, a certain part of which consists of training in athletic sports, the School is represented by a strong basket-ball team, a track athletic team, and hand-ball team.

## HOME ECONOMY

The lectures in Home Economy are a study, not only of the just proportion between expenditure and income, but of definite proportion in the expenditures made for existence, comfort, culture, and philanthropy. A study is made of the sources of income; especially of the income from the farm in the form of house, food, and luxuries; the purchase of necessities, such as household stores and furnishings, is considered from the standpoint of the suitable; and desirability shown of saving something to be used in securing things which promote culture and comfort. The relation of cash and credit to cost is also considered. Attention is given to saving and forms of investment, a bank account, and the use of a check book. Students are required to submit an account setting forth in detail the use of a certain named income expended in the support of a family for one year, embracing not only every item of necessary home expense, but also an outlay made for travel, luxuries, accident, sickness, or other emergencies. The habit of keeping a household account is calculated to strengthen the judgment in the wise use of money.

## HOME MANAGEMENT

This subject includes both housekeeping and home-making; and the instruction is based on the belief that housekeeping is a business as impor-

tant as it is difficult, and that home-making is the noblest form of human endeavor. The care of the house and household belongings, of the food, utensils, plumbing, etc., as well as the general ordering of family life, are considered in their relation to an adequate plan for home management. The end sought is to start the student in the right way of becoming mistress of the business of housekeeping and home-making. The practical benefit to be derived from the knowledge students gain in the cookery, sewing, dairy, laundry, and other classes is emphasized and shown in its relation to an adequate plan for the daily program for the home.

### HOME NURSING

A course of lectures will be given on the subjects of contagion and the care of contagious diseases; how to treat snake bites and other poisonous wounds; how to apply splints to all kinds of fractures, and how to stop the flow of blood in case of hemorrhage. Practical demonstrations will be given in the making of bandages and applying the tourniquet. A bed will be placed before the class and the students taught to make it up with the patient in it. Stretcher drill will be given. The common poisons and their antidotes will be taught, and what to do while awaiting the arrival of the doctor.

### 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 which will provide a "place for everything" required in housekeeping operations and family life; 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.

### LAUNDERING

Second term, C year: The aim is to give the students a knowledge of the best means of cleansing all fabrics, with little injury to the cloth or color. Approved methods of cleansing by the use of chemicals, as in removing grease spots, stains, etc., are given.

### LITERARY SOCIETY WORK

Any student belonging to a recognized literary society of the School may receive credit in the course of study for the work done therein, by registering at the beginning of the term, and submitting to the teacher

in English all essays to be read by such student before the literary society, and rehearsing to said instructor all essays, readings, or recitations, with a view to correct pronunciation, expression, etc.

### MEATS

The instruction given to the girls in the subject of meats pertains to the selection and value of different classes of meat, and to the best methods of curing and preserving.

### MILITARY DRILL

Under the provisions of the Act of Congress of 1862, establishing the "Land Grant Colleges" of the United States, instruction in Military Science and Tactics is required to be given at all colleges which are its beneficiaries. For this purpose the United States Government furnishes the Department of Agriculture with the necessary arms and equipment, and details an officer of the regular army to take charge of military science and tactics.

All male students of classes B and C, not physically unfit, are required to attend military drill. For the A class, drill is an elective.

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 battalion manoeuvres, guards, and the theoretical and practical use of firearms.

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 A class; sergeants and corporals from the B class.

### MUSIC

Instruction in this department takes in elementary theory, sight singing, and music history. The course is planned to give the students a basis for musical appreciation and culture, as well as a practical knowledge of musical forms and terms. Special attention is given to habits of breath control and the enunciation of words, and a thorough system of solfeggio is employed.

For students whose voices and training will admit them, there is offered a chorus class, consisting of a mixed chorus, a women's chorus, and a male chorus. This offers special advantages for musical development and experience.

A student orchestra is maintained which assists in public exercises given by the School.

A band is organized with military regulations, under the direction of the instructor in music. Boys owning instruments and having band experience are urged to make application for this work.

### PHYSICAL TRAINING

The work done in this department aims at symmetry, co-ordination, and control, rather than mere physical strength. It is planned to improve the functional activity of the body and to counteract and correct tendencies toward incorrect development, especially those resulting from the artificial life of civilization. The work of the beginning class is free-hand, based upon Swedish principles, and directed especially to deep breathing, correct carriage and posture. The work of the advanced class includes the use of light apparatus and aesthetic movements looking to grace and suppleness in action. Games and folk dances are part of the work of both classes.

### PLANT PROPAGATION

In this subject the principles underlying the development of cultivated varieties of plants are taught; also the propagation of plants by seed, cuttings, grafting, and budding. The work of the classroom is illustrated by the orchards, nurseries, forest plantations, gardens, and greenhouses on the grounds of the Experiment Station, and by visits to commercial nurseries and greenhouses near by.

### POULTRY

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, incubator-cellar, work-room, etc., has been provided, where experimental work and practical instruction are carried on.

### PRACTICUMS

Instruction and practice are given in doing practical things about the fields and barns; fence-building; road-making; water supply; planning daily program on farm; land descriptions and measurements; soldering; pipe-fitting; rope-splicing; making rope halters; cement work; gasoline engines, etc.

### SEWING

Instruction is given in the principles and use of healthful and appropriate clothing, and in the needlework of the home. The course provides

for six terms' work. During the first term, instruction is given in the elements of sewing, including different stitches, seams, hems, and the various kinds of mending, and the cutting and making of a cooking outfit; also practical talks on the use and care of the sewing-basket, touching the history of the various implements, and upon the textiles used—cotton, wool, linen, and silk.

In the second year, instruction is given in cutting and making plain garments, drafting underwear, shirt waists, and cotton dresses—taught by a simple method in which only a tape line and square are used.

In the third year the more difficult work of dressmaking is taken up, including pattern-drafting, designing, cutting and fitting dresses. A practical aid to the work in this subject is offered by a museum of exhibits. These exhibits are kept in classrooms, and include primitive and modern sewing implements, weaving processes, and the various cloth fibres.

Lectures are given on the utilitarian and art values of various textiles, and attention is paid to harmony in color.

### SOCIAL TRAINING

A course of lectures is given on the usages of society, including manners, behavior, the voice, conversation, forms of address, invitations, etc. Suggestions are made in reference to reading, literary taste, and the choice of books. Special stress is given to the thought that the family life ought to be the highest expression of good society, and that next to the power of thinking correctly is the power of approaching others with ease, and of speaking with tactful directness.

### SOILS AND FERTILIZERS

Some of the topics studied are: The formation of soils; adaptability of crops to different kinds of soil; chemical composition of soil; physical analysis of soils; interpretation of soil analyses, the judging, rating, and scaling of soils, alkali soils, acid soils; humus and its 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 classroom work is supplemented by laboratory practice.

### STOCK JUDGING

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 breeds and for breeding purposes. 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.

### STUDY OF BREEDS

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 University Farm for this purpose.

### VEGETABLE GARDENING

Vegetable gardening embraces the study of garden tillage irrigation and rotation of crops; transplanting; formation and care of hotbeds; study of garden insects; and the growth of various vegetable crops.

### VETERINARY SCIENCE

During the A year the student takes up a course of study in Veterinary Medicine, the purpose of which is to fit him for intelligent care of his farm stock. In this course the teaching is done by means of lectures and reviews and clinical work at the hospital maintained for this purpose. Lectures are illustrated by means of stereopticon charts, manikin of horse, skeleton of horse, 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 effect, uses, and doses. At the hospital clinics, students are enabled to examine and care for a variety of cases and to learn the elements of diagnosis for the more common diseases and forms of lameness.

## INTERMEDIATE YEAR

For Graduates of the School of Agriculture Who Wish to Enter the  
College of Agriculture

This course will not be offered after the school year 1912-13, but it is proposed to offer two years of advanced work along agricultural lines, to graduates of the school course only, who desire to spend further time in study. Those who complete this course with proper grades may, if they so desire, enter the College of Agriculture on equal footing with graduates from accredited high schools.

The course of study in the School of Agriculture extends over three years, and the school year is six months long. This is not designed to prepare for college work. For those who wish to enter the College it is necessary to supplement the course offered in the School of Agriculture by an additional year's work of nine months in general academic branches. The subjects offered in the intermediate year can be taken elsewhere, in any accredited high school, before entering the College of Agriculture. This intermediate year enables graduates of the School of Agriculture to enter the College of Agriculture on the same basis of preparation as that of students entering other departments of the University. English and Mathematics are given prominence in the intermediate year.

The following prescribed course, or its equivalent taken in some other school, is required of graduates of the School of Agriculture who desire to gain admission to the College of Agriculture:

<i>First Semester</i>	<i>Second Semester</i>
Elementary Algebra [5]	Higher Algebra [5]
Plane Geometry [5]	Plane and Solid Geometry [5]
English [5]	English [5]
General History [4]	General History [4]

The course in Algebra for the intermediate year covers Downey's Complete Higher Algebra, through logarithms, except chapter 14, Part I, and chapter 18 and parts of 19 and 20, Part II, covering subjects not specially pertinent to the work of this College. The course in Geometry covers Gore's Geometry, from Book I to VIII, or equivalent texts except the work in symmetry, maxima and minima.

Special attention is given in both above courses to practical problems, short methods of computation, and a good foundation for Plane Trigonometry. These courses are open to all who have completed the work in Algebra in the third year of the School of Agriculture, and are required of all students entering college courses, except that the second term Algebra is not required for the course in Home Economics. Regular high school graduates will be required to take the work of the second semester in Higher Algebra unless they can furnish regular high school record in same.

The work preliminary to these courses is done by the student in the A year in the School of Agriculture.

Intermediate English is required of those who intend to enter any of the colleges. It consists of a study of masterpieces necessary for college entrance, the history of English literature, and considerable writing on subjects in connection. It is given five hours a week for two terms.



## SHORT COURSES

### THE SHORT COURSE IN TRACTION ENGINEERING

The growing use of traction engines in general farm work has made it advisable to offer a special course in the use of power machinery as one of the Short Courses in the Department of Agriculture of the University of Minnesota.

The course is complete in itself, covering four weeks of study and practice. The mornings are devoted to lectures and classroom work, and the afternoons to actual practice in the various departments, under the supervision of the instructors of the School.

Such a course opens a great opportunity to the young man interested in mechanics, who has had some practical experience in the handling of engines, enabling him to acquire in a short time valuable training in the theory and practice of engineering.

The entire equipment and the staff of the Division of Agricultural Engineering are at the disposal of this course, and provide a splendid opportunity for pursuing the work.

A special circular giving full particulars regarding this course will be sent upon application to the Registrar, University Farm, St. Paul.

### STATE TEACHERS' TRAINING SCHOOL

A State Teachers' Training School will be held at University Farm, beginning June 17th, and closing July 27th.

This school has been organized by authority of the Department of Public Instruction, and will be conducted under its supervision. Through the special courses offered, it is expected to serve the teachers of the entire state, and at the same time to afford special advantages to teachers of near-by counties, in which training schools are not held.

The general aim of this school is to offer suggestive and practical methods and aids to teachers of rural schools. It has a two-fold purpose. One is to offer a review of the elementary studies, together with training in methods, and a consideration of the questions relating to organization and conduct of rural schools. The second is to meet the present general demand for industrial training. Courses will be offered in Elementary Agriculture, Home Economics, and some simple Manual Training work. Work will be taken up in all the academic subjects that are required for the first and second grade state teachers' certificates.

A circular describing this course may be obtained by addressing the Registrar, University Farm, St. Paul.

### DAIRY SCHOOL

This course is designed to furnish persons who are actually engaged in the manufacture of butter and cheese, in creameries and cheese factories,

an opportunity to become more skilled in their work, and also to study the many problems which have a direct bearing upon the dairy industry. Recognizing the fact that such persons cannot be away from business for a long period, the term has been so arranged that the time of each student is fully occupied by lectures and actual work in the creamery training-room every hour of every working day of the term.

The next session of the Dairy School will open Monday, November 11, 1912, and continue four weeks.

A special circular giving full information concerning this course will be mailed to prospective students who request it.

*Requirements for Admission.*—Experience has shown that students who have had some practical training in the creamery or cheese factory before coming to the Dairy School are, as a rule, the ones who are able to make the most of the course; it is therefore required that persons who intend to take this course shall have had at least one season's experience before coming to the school. No entrance examination is required.

### SHORT COURSE FOR FARMERS

The Short Course for Farmers was established by the University of Minnesota to meet the needs of the large class of enterprising farmers who are unable to avail themselves of the regular courses in Agriculture. It has been offered for eleven years, and, as it now stands, is the result of meeting the problems of the practical, progressive farmer.

The time devoted to this course is so limited that the selection of topics has been made with great care, in order to give the largest amount of information and training possible. The daily work will be given in lecture form and by demonstrations, covering the important branches of Agriculture, Horticulture, and Live Stock Growing. Special attention will be given to the judging of grains, soils, and animals.

This course offers exceptional opportunities for the study of the latest investigations in Agriculture and their application to work on the farm. It should appeal to the man of mature years, who is ambitious to become familiar with the best agricultural thought and practice.

A special circular describing this course will be ready for distribution early in the Autumn of 1912.

*Requirements for Admission.*—There is no entrance examination, and no age limit is prescribed. Any man or woman interested in farming and the betterment of farm life is eligible.

*Time of Session.*—The Short Course for Farmers opens the third week in January, and continues for four weeks.

*Expense of Course.*—There will be a registration fee of \$5 for the entire course or any part of it. This charge covers the whole course, and no deduction is made for those who desire to take but a special part of the work, or who for any reason are absent from regular lectures.

## THE AGRICULTURAL EXPERIMENT STATION

The Agricultural Experiment Station of the University of Minnesota was established by National and State Legislation in 1887. The function of the Experiment Station as set forth in the Hatch Act is "to aid in acquiring and diffusing among the people the useful and practical information on the subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science." The funds provided by the National Government have been supplemented recently by the Adams Act which will ultimately provide \$15,000 annually, and appropriations for special lines of experimental work have also been made by the State Legislature.

The Experiment Station is located at University Farm, St. Paul, and is one of the Divisions of the Department of Agriculture of the University of Minnesota, and the officers of the Station are also professors and instructors in the School and College of Agriculture. The chief executive officer of the Station is the Director, who is also Dean of the College of Agriculture. Affiliated with the main station are a score or more of trial stations maintained by the State Horticultural Society. The Experiment Station also carries on co-operative tests and investigations with the U. S. Department of Agriculture and with farmers in various parts of the State.

Experiments are conducted in the following lines of work: Agronomy, Farm Management, Agricultural Chemistry, Entomology, Horticulture, Veterinary Science, Dairying, Plant Pathology, and Agricultural Engineering.

### NORTHWEST EXPERIMENT FARM

To give special consideration to local conditions in the northwestern part of the State an experiment farm was established at Crookston in 1895. The farm contains 450 acres and is one mile north of the city. It has a well-equipped poultry plant from which much good breeding stock is being distributed among the farmers. With aid from the U. S. Office of Experiment Stations the farm is taking an active part in testing surface and tile drainage for the Red River Valley region. It is also encouraging a more extensive growing of clover. The School of Agriculture at Crookston is operated in connection with the farm.

### EXPERIMENT FARM AT GRAND RAPIDS

The Legislature of 1895 also provided for a second experiment farm to make possible a more thorough study of the agricultural conditions of the northeastern portions of the State. This farm was located at Grand Rapids, April 6, 1896, and lies two miles east of the village. It contains approximately 375 acres of land, with the necessary farm equipment consisting of dwelling house, barns, machinery, live stock, etc.

**LIST OF BULLETINS PUBLISHED DURING THE FISCAL  
YEAR ENDING JUNE 30, 1911**

Bulletin No. 121. Orchard and Garden Spraying.

Bulletin No. 122. The Smuts of Grain Crops.

Bulletin No. 123. Cut Worms, Army Worms, and Grasshoppers.

Bulletin No. 124. The Cost of Minnesota Dairy Products.

The bulletins of this Station are mailed free to all residents of this State who make application for them.

# SUMMARY OF ATTENDANCE

## DEPARTMENT OF AGRICULTURE 1911-12

College of Agriculture—	Men	Women	Total	
Graduate Students.....	14	2	16	
Special Students.....	6	6	12	
Normal Students.....	..	65	65	
Agricultural Course:				
Senior Class.....	8	..	8	
Junior Class.....	21	..	21	
Sophomore Class.....	41	..	41	
Freshman Class.....	51	..	51	
Forestry Course:				
Senior Class.....	14	..	14	
Junior Class.....	8	..	8	
Sophomore Class.....	23	..	23	
Freshman Class.....	19	..	19	
Home Economics Course:				
Senior Class.....	..	14	14	
Junior Class.....	..	10	10	
Sophomore Class.....	..	32	32	
Freshman Class.....	..	83	83	
	<hr/>	<hr/>	<hr/>	<hr/>
The School of Agriculture—	205	212	417	417
Intermediate Year.....	18	7	25	
A Class.....	106	42	148	
B Class.....	227	98	325	
C Class.....	247	135	382	
	<hr/>	<hr/>	<hr/>	<hr/>
Dairy School.....	598	282	880	880
Farmers' Short Course.....	96	..	96	
Junior Short Course.....	122	5	127	
Junior Short Course.....	203	107	310	
Traction Engineering Course.....	38	..	38	
Teachers' Training School.....	51	838	889	
College Summer School.....	25	45	70	
	<hr/>	<hr/>	<hr/>	<hr/>
	535	995	1530	1530
School of Agriculture at Crookston.....	122	37	159	
School of Agriculture at Morris.....	67	24	91	
	<hr/>	<hr/>	<hr/>	<hr/>
	189	61	250	250
Total in Department of Agriculture.....				3077
Less Duplicates.....				21
Total.....				3056

## STUDENTS

### INTERMEDIATE YEAR—25

Aamodt, Arne W., 857 Albemarle St., St. Paul	Lathrop, Leslie T., Hugo
Anderson, Arthur L., 1485 Cleveland Ave., St. Paul	Mattice, Norman L., 1365 Waverly Place, Minneapolis
Bahls, Ernest J., 1946 Iglehart St., St. Paul	Melin, Robert, Monticello
Baker, Ernest C., Monticello	Nelson, Dan M., 2800 Plymouth Ave. N., Minneapolis
Barsness, Tilda B., Glenwood	Peterson, Fred O., Olivia
Berg, Alma, 3610 Vincent Ave., Minneapolis	Samuelson, Ruth V., Lafayette
Brann, Alonza S., 1015 Mary Place, Minneapolis	Snell, Ruth E., 403 Dewey Ave., St. Paul
Edwards, Irene, 806 4th St. S. E., Minneapolis	Sorensen, John A., Clinton
Elsberg, Ellen, 1617 9th Ave. S., Minneapolis	Steffens, Bonnie R., Racine
Friedman, David T., St. Charles, Ill.	Villars, Wendell D., 18 Barton Ave. S. E., Minneapolis
Gill, James N., Northfield	*Weium, Olaf M., Mabel
Hamilton, Vida L., Osseo, R. 1	Winters, Lawrence M., Mazeppa
Jones, Laurence G., 2315 Polk St. N. E., Minneapolis	

### A CLASS—148

Aamodt, Carl Grachus, 857 Albemarle St., St. Paul	Day, William E., Granite Falls
Aamodt, Olaf Sever, 857 Albemarle St., St. Paul	DeMerell, George Stephen, White Bear
Anderson, Clara Alida, 2701 University Ave. S. E., Minneapolis	Devine, Florence Avellia, New Brighton
Anderson, George Harold, Ortonville	Enright, Agnes B., Rose Creek
Anderson, Minnie, Hopkins	Flaten, Alice Leone, Granite Falls
Arneson, Clarence, Shelly	Fletcher, Ralph Olmstead, St. Louis Park
Arnold, Christian Lucius, Watkins	Frost, Ruth Miriam, 420 Dewey Ave., St. Paul
Avery, Wilbur Lee, Austin	Gehl, Anna Henrietta, Kinbrae
Bede, Russell, Pine City	Gillett, Newton M., Blue Earth
Benrud, Ole C., Goodhue, R. 3	Gilman, Percy Clay, Medford
Berg, Jesse Fred, Dundas	Gold, Glenn W., Redwood Falls
Berge, Elizabeth, 2117 Langford Ave., St. Paul	Gould, Orrin Everett, Fairmont
Berge, Inga Marie, 2117 Langford Ave., St. Paul	Griffith, Benjamin, Ottawa
Bergland, Clifford T., Clearbrook	Halverson, Emil W., New Ulm, R. 3
Borgeson, Carl Stevens, LeSueur	Hansen, Harry J., Rockville
Bostad, Lawrence S., Fosston	Haverstock, J. Louise, 3424 5th Ave. S., Minneapolis
Bremer, Henry Carl, Lake City, R. 1	Hecht, Erwin B., Waseca
Brueshoff, Rose Dorothy, Norwood	Hibbard, John Culver, Northfield, R. 8
Bryan, Harold Edwin, Red Wing, R. 2	Hilden, Ellen A., Watson
Burau, Edna Ruth, Breckenridge	Hilgers, Frank H., Barnesville
Burquest, Arden Enoch, Robbinsdale	Hoel, Ruth A., 713 Chamber of Commerce, Minneapolis
Carlson, Carl Joseph, Brookfield	Holen, Thomas, Lowry
Carr, Eugene Dickenson, Excelsior, R. 3	Holzgraf, Wesley Albright, Blue Earth
Carson, Foster, Pipestone	Hopkins, William Lloyd, Sta. F., R. 1, Minneapolis
Cass, Lucilla, Brainerd	Howe, Charlotte B., Robbinsdale, R. 3
Comaford, Harold Coupland, Monticello	Howie, Fred Robert, Dennison
Crowther, Earl Lindon, Fairmont	Hulbert, Howard Horace, Excelsior, R. 3
Darling, Lela, 327 19th Ave. S. E., Minneapolis	Hulbert, Karl E., Excelsior, R. 3
	Jacobson, Cecile Louise, Madison
	Jarshaw, Olga A., Madison

\*Died November 6, 1911.

- Jenkins, Hugh L., Amboy  
 Johansen, Mads Erik, Tyler, R. 1, Box 55  
 Johnson, Arthur Wilbur, 4405 Pleasant Ave.,  
 Minneapolis  
 Johnson, Joseph T., Kasota  
 Johnson, Oscar Ruthford, Center City  
 Kelley, Marie Pauline, 836 E. 4th St., St.  
 Paul  
 Keogh, Paul Lucus, Deer Creek  
 Kinsey, Grace Marian, Ottawa  
 Knutson, Albert A., Adams  
 Knutson, Albert Rudolph, Pelican Rapids,  
 R. 3  
 Kobler, Fred L., Deer Creek  
 Kottke, Lillian, Hutchinson  
 Krebs, Thomas G., 1217 4th St. S. E., Minne-  
 apolis  
 Kyle, Cecil F., 2647 Taylor St. N. E., Minne-  
 apolis  
 Labbitt, Raymond Walter, 1488 Capitol Ave.,  
 St. Paul  
 LaPlant, Dorothy Ellen, Elk River, R. 3  
 LaPlant, Guy Alfred, Elk River, R. 3  
 Larson, Minnie, Pipestone  
 Lee, Severine Anette, Kenyon  
 Lewis, Percy Eugene, Lewisville  
 Lillejord, Hans Claus, Bellingham  
 Lincoln, Guy E., Pipestone  
 Long, Walter C., White Bear  
 Lord, Clarence Bertrand, Hugo  
 Lundell, Leon N., 707 Penn Ave., Minneapolis  
 McKenney, Robert Lynn, 1403 21st Ave.  
 N., Minneapolis  
 Mahlum, Howard Jerome, 722 S. 6th St.,  
 Brainerd  
 Martenson, Alfred C., Granite Falls  
 Mellan, Tessie F., 14 Atty St., St. Paul  
 Merrill, William Charles, Jr., 2107 Com-  
 monwealth Ave., St. Paul  
 Montgomery, Lynn Vernom, Weaver  
 Mosman, Sidney A., Monticello  
 Nelson, Albert Marinus, Grove City, R. 3,  
 Box 43  
 Nelson, Harold Bernard, Afton  
 Nelson, Jennie, Delano  
 Nelson, Lillian Marie, Cor. Langford and  
 Snelling Ave., St. Paul  
 Nelson, Walter Otto, Wahpeton, N. D.  
 Ness, Lumen E., Lanesboro  
 Nettleton, Gertrude Eunice, Stockton  
 Olson, Alice Emelia, Copas  
 Olson, Eva Elizabeth, 3128 Park Ave., Minne-  
 apolis  
 Olson, Oscar Albert, Truman  
 Ouren, John B., Hanska  
 Pauley, George Charles, St. Bonifacius  
 Peters, William Harrison, Litchfield, R. 3  
 Peterson, Edward W., Ruthton  
 Peterson, Elmer Lewis, Sleepy Eye  
 Peterson, James M., 3754 Portland Ave.,  
 Minneapolis  
 Quanrud, Lillie, Spring Grove  
 Raudenbush, Inez, 2382 Doswell Ave., St.  
 Paul  
 Runk, Frederick William, Springfield  
 St. Martin, Carrie R., Sta. F., R. 1, Minne-  
 apolis  
 Sandvig, Edwin O., Kerkhoven, R. 2  
 Sandvig, Julius N., Kerkhoven, R. 2  
 Sargent, Lee W., Red Wing, R. 3, Box 3  
 Schattenberg, Adolph Gustave, Boerne,  
 Texas  
 Schroeder, William H., White Bear  
 Selthun, Enns Alvina, Rolette, N. D.  
 Seward, Arthur Hillis, Farmington  
 Sheets, Russell S., Gary  
 Skrivseth, Clarence J., Turtle River  
 Stay, Henrietta, Glenderado  
 Stensrud, Martin L., Martin  
 Stoddard, Mildred, 1247 Laurel Ave., St.  
 Paul  
 Swanson, Carl Victor, Red Wing  
 Swanson, Elmer Gideon, 813 25th Ave.  
 N. E., Minneapolis  
 Teigen, Rudolph C., Watson  
 Thomas, William Arthur, Spartanburg, S. C.  
 Thompson, Cleve Charles, Badger  
 Thotland, Jessie May, Robbinsdale, R. 2  
 Tongen, Ole O., Hazel Run  
 Torgerson, Ingvald C., Whalan  
 Tosterud, Martin, Caledonia  
 Turner, Herman Maynard, St. Peter  
 Tvedt, Palmer O., Ada  
 Utley, Florence, 818 Edmond St., St Paul  
 Utter, B. Adolph, Ceylon  
 Voxland, Lena Josephine, Kenyon  
 Warde, George A., Robbinsdale  
 Weeber, Philip H., New Brighton  
 Wells, Hugh Harold, Rush City  
 Willey, Grace Darling, Holmen, Wis.  
 Willey, Stephen L., Holmen, Wis.  
 Wilson, Bessie Mathilda, Ihlen  
 Wilson, Hugh Robert, Pipestone  
 Youngberg, Alfred Grover, Howard Lake  
 Youngberg, Gustavus Benson, Howard Lake  
 Ziebarth, Arthur W., Osseo  
 Ziebarth, Fritz W., Herman  
 Zignego, John Francis, 2304 14th Ave. S.,  
 Minneapolis

## B CLASS—325

Albrant, William M., Rushford  
 Anderson, A. Ferdinand, Neving

Anderson, Elmer H., Braham  
 Anderson, Elvin W., Hills

- Anderson, Engdena B., Afton  
 Anderson, Mae F., 2408 Elliott Ave., Minneapolis  
 Anderson, Marvin A., Hopkins  
 Anderson, Robert J., Cologne  
 Archibald, Leemon A., Long Lake  
 Atkinson, Lawrence H., 1916 60th Ave. E., Duluth  
 Austin, Fannie I., New York Mills  
 Ayers, Harold Y., 1120 Palace St., St. Paul  
 Bahls, Benjamin J., St. Paul Park  
 Bahls, John C., St. Paul Park  
 Baillif, Allen E., Sta. F., R. 4, Box 47, Minneapolis  
 Baldwin, John M., Frazee  
 Barton, Emily, Silver Lake  
 Benrud, Kenneth G., Goodhue, R. 3  
 Benson, Benora S., Jackson, R. 4  
 Berge, Thelma [J.], 2117 Langford Ave., St. Paul  
 Blehrud, Millie, Caledonia  
 Blehrud, Nora J., Spring Grove  
 Bloom, Anna C., Center City  
 Bloom, Arlene L., Chisago City  
 Boehme, Sidonie G., 2215 Lyndale Ave. N., Minneapolis  
 Boerner, Pearl A. M., Buffalo  
 Bollman, Edward W., Wilson  
 Bollum, Bendick C., Goodhue  
 Boom, Charles L., Wheaton  
 Boyer, Harry L., Rochester  
 Boyle, Edward F., Adrian  
 Boyum, Benjamin, Rushford  
 Brietenbauch, Lawrence L., Battle Lake  
 Brothers, Harold G., 3408 Columbus Ave., Minneapolis  
 Brown, John C., 3027 Pleasant Ave., Minneapolis  
 Brown, Joseph E., 122 Arthur Ave. S. E., Minneapolis  
 Brownell, Tracy G., Grand Meadow  
 Brusse, William, Baldwin, Wis.  
 Buckbee, Catherine, 965 14th Ave. S. E., Minneapolis  
 Buggy, Bernard E., Blue Earth  
 Burner, Ruth D., 3446 Pleasant Ave. S., Minneapolis  
 Busse, Helen M., Merriam Park, R. 3  
 Bye, Lewis, Emmons  
 Calvert, Luella A., Eyota, Box 78  
 Canton, Inga M., Watson  
 Carlson, Alma C., Monticello  
 Caswell, Mildred A., Anoka  
 Chappell, Herbert H., Hugo, R. 29, Box 53  
 Chatwood, Frederick G., Campbell  
 Chidester, Marion L., 436 Dewey Ave., St. Paul  
 Cleland, Elliot H., Northfield  
 Collin, Charles, Swea City, Iowa  
 Collin, Henry T., Sacred Heart  
 Combs, Clara F., 954 St. Anthony Ave., St. Paul  
 Covart, Florence B., 1394 Grand Ave., St. Paul  
 Crane, Lucas M., Garden City  
 Currie, Lester T., Seaforth  
 Danielson, Edna L., Hendricks  
 Danielson, Roy I., Hendricks  
 Danielson, Ruth C., 416 West Laurel St., Stillwater  
 Dean, James T., Jr., 61 S. Victoria St., St. Paul  
 Denissoff, Basil, 1480 Raymond Ave., St. Paul  
 Denissoff, Mrs. Mary, 1480 Raymond Ave., St. Paul  
 Doran, Lester S., 234 Prescott St., St. Paul  
 Draheim, Edward R., Hammond  
 Dresser, Eugene L., New Auburn  
 Dubbels, Elsie M., Viola  
 Dudley, Paul R., 3017 Stevens Ave., Minneapolis  
 Dunn, David S., Lakeville  
 Eastman, Marion O., 822 6th St. S. E., Minneapolis  
 Edman, Robert, Alvarado  
 Edman, Victor M., Alvarado  
 Eisert, Emery R., Morristown  
 Eisert, Jesse J., Morristown  
 Erickson, Christine, Minneapolis, R. 3, Sta. F  
 Erickson, Edwin H., Olivia  
 Erickson, Elmer J., Battle Lake, R. 3  
 Ericson, Laura M., Hector  
 Ericson, Palmer E. N., Goodhue, R. 6  
 Failing, George S., Lake City  
 Farmer, William P., Airlie  
 Farnham, Ethel I., Brickton  
 Fitzgerald, Francis C., 923 Summit Ave., St. Paul  
 Poltz, Charles M., Princeton  
 Possum, Cornell, Moose Lake  
 Freberg, Oscar F., Hector  
 Freeman, Edith G., 302 S. 11th St. Flat 8, Minneapolis  
 Friedl, Florence, 1163 Laurel Ave., St. Paul  
 Frizzell, John W., Odessa  
 Froberg, Helen, 1907 Lincoln Ave., St. Paul  
 Gaarder, Christian A., Morris  
 Gamble, Elsie E., Eden Prairie  
 Gehl, Martha L., Kinbrae  
 Geiken, John J., Mankato  
 George, Grover C., Goodhue, R. 3  
 Gibbs, Alice C., Merriam Park, R. 3  
 Gilliland, Millard S., Pipestone  
 Gilman, Florence, Rosemount  
 Girschbach, George, Jr., 2311 Dupont Ave. N., Minneapolis  
 Graves, David W., Excelsior  
 Gregoire, Arthur C., Goodhue, R. 1



- Griswold, Clinton E., 3021 Knox Ave. S., Minneapolis  
 Hall, Lynn B., Fairmont  
 Hammargren, Florence A., Harris  
 Hancock, William R., 2720 Garfield Ave. S. Minneapolis  
 Hansen, Leona L., 563 Carroll St., St. Paul  
 Hanson, Hazel G. M., Windom  
 Hanson, Herman C., Ortonville  
 Hanson, Roy, Clarkfield  
 Harrison, William T., Sta. F., R. 1, Minneapolis  
 Haug, Odean E., Sacred Heart  
 Haugland, Arthur, Watson  
 Hegerle, Joseph L., St. Bonifacius  
 Hegnes, Arthur J., Medford  
 Helgeson, Griffith H., Hills  
 Hengeveld, Celia M., 719 Sherburne Ave., St. Paul  
 Henry, Bertha M., 3137 Oakland Ave., Minneapolis  
 Herrick, Clinton W., Hendricks  
 Hilgren, Rudolph J., Parkers Prairie  
 Hoffman, George E., Long Lake  
 Hokans, Aina, 1726 3rd St. N., Minneapolis  
 Holbrook, Adeline O., Brownsdale  
 Holmes, Mabel F., Morristown  
 Holtan, Martin I., Dawson  
 Huntsinger, Lillian H., Oronoco  
 Hurdelbrink, George E., Brownsville  
 Illescas, Octavio F., Callao, Peru  
 Ingberg, Benhard, Hendrum  
 Jensen, Margrethe, Milaca  
 Jensen, Mary, Milaca  
 Johnson, Hamlet E., Robbinsdale  
 Johnson, Christine E., Milltown, Wis.  
 Johnson, Elvin J., Litchfield  
 Johnson, Grace H., 793 Magnolia St., St. Paul  
 Johnson, Harriet C., 3709 Pleasant Ave., Minneapolis  
 Johnson, Hjalmer E., Hopkins  
 Johnson, Ida C., Lafayette  
 Johnson, Emily, 1459 Gibbs Ave. N., St. Paul  
 Johnson, Raymond C., New Ulm  
 Johnston, Frederick G., Long Lake  
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 Sandager, Karen, Tyler  
 Sandager, Katherine E., Belview  
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 Schak, Ethel V., Hugo  
 Schak, George B., Hugo  
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 Purmort, Reith, Cedar, R. 2  
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 Forsberg, Delphin A., Farewell  
 Giles, C. J., Holland  
 Goellong, L. J., Erhard  
 Gross, Stephen J., Pierz  
 Goltz, Adam, Gilman  
 Hansen, Helmer P., Hartland  
 Herrell, Dudley, Augusta, Wis.  
 Hair, Leon B., Byron  
 Hullstrand, Oscar B., Parkers Prairie  
 Hanson, Clarence, Berner  
 Hansen, John, Albert Lea, R. 2., Box 84  
 Imsdahl, Harold, Brooten, R. 3  
 Irej, George F., Erhard  
 Johnson, Clarence L., Clayton, Wis., R. 2,  
 Box 122  
 Jones, William L., 203 W. 5th St., St. Paul  
 Jensen, Hans J., Nelson  
 Johnson, Clarence C., New Richland  
 Johnsen, John, Evan  
 Janning, Herman, Pierz  
 Knutson, Abraham, Santiago  
 Kristofferson, Hans, Brandan  
 Kuhnley, Charley H., 322 Central Ave.,  
 Minneapolis  
 Livingston, Russell A., St. Peter  
 Lundgren, Harry, Gibbon  
 Leiter, John, Holdingford  
 Laudon, Albert G., Dover  
 Luebke, John C., Waconia  
 Lehmberg, Fred, J., Hutchinson  
 Linander, Harry, Richardson, Wis.  
 Leyfold, Ole M., Clarissa  
 Lundberg, John, Brooks  
 Molmen, Ole, Wadena  
 Meyers, Mike, Owatonna  
 Martinson, Oscar, Burtrum  
 Mieseler, George, Cologne  
 Moe, Edward, Barrett  
 Markus, Frank, Wahpeton, N. D.  
 Mischke, August, Thielman  
 Nogel, William P., New Ulm  
 Nelson, John G., Olivia  
 Nelson, Carl A., Wood Lake  
 Norberg, Andrew, Cokato  
 Olson, Arthur R., Cokato  
 Olson, Julius E., Rice Lake, Wis.  
 Olson, Charles R., Ellendale  
 Oman, Emil G., Little Falls  
 Oman, Castrus, Atwater  
 Peterson, Oscar C., St. Hilaree  
 Peterson, Edwin, Hallock  
 Peterson, George W., Chisago City, Box 86  
 Peterson, Otto H., Chisago City  
 Prange, Herman, Wells  
 Reinke, Frank, New Salem, N. D.  
 Rose, Oliver, Princeton  
 Roberts, Jesse T., Annandale  
 Rusley, Sever, Lake Mills, Iowa  
 Stannes, Oscar, Newfolden  
 Skoglund, Gust, Eagle Bend  
 Shaw, Samuel S., Princeton  
 Schultz, Fred, Bertha  
 Swanberg, Andrew J., Grantsburg, Wis.  
 Stratton, George, Good Thunder  
 Schlosser, Frank C., Carlos, Box 73 R. 2  
 Stenberg, Hilmer L., Minneapolis, 2717 Penn.  
 Ave. N.  
 Vigen, John, Marietta  
 Wass, Gunnar, Lancaster  
 Willie, Frank, Battle Lake  
 Wennberg, O. A., Clearbrook  
 Wenzel, William C., Bitzen  
 Wittnebel, Richard, Garfield  
 Weis, Donald C., Pine Island  
 Zierke, Charles O., Glencoe

## FARMERS' SHORT COURSE—127

- Ahlman, Gustave, Morristown  
 Allickson, Allick, Montivedo  
 Alsaker, Clarence, Benson  
 Anderson, James A., 1221 W. 33rd St. Min-  
 neapolis  
 Anderson, William I., Belgrade  
 Barnard, Charles D., 2532 Chicago Ave.,  
 Minneapolis  
 Beaven, Arthur H., 2435 Harriet Ave., Minne-  
 apolis

- Boese, Arthur, Atwater  
 Boland, Andrew, Elk Mound, Wis.  
 Brown, John J., Madison Lake  
 Burtman, Edward A., Lester Prairie  
 Campbell, Dennis E., Winsted  
 Cochrane, R. L., Little Falls  
 Cochrane, Mrs. R. L., Little Falls  
 Colbjorson, Henry, Rushford, R. 3  
 Cole, Mrs. Janet M., Fort Pierre, S. D.  
 Crawford, Charles A., 2409 5th Ave. S., Minneapolis  
 Dahlman, Eben D., Grandy  
 Davis, Isaac, Amiret  
 DeLong, Scott H., 1139 Johnson St. N. E., Minneapolis  
 Derby, George E., 820 9th Ave. S. E., Minneapolis  
 Duncanson, Charles L., Stewartville  
 Enander, Paul, Pennock  
 Engelman, Herman, Correll  
 Erickson, Erick, B., Pelican Rapids  
 Fabian, Arthur E., Campbell  
 Filskov, Peter N., Roseau  
 Fois, Robert S., St. Bonifacius  
 Gallagher, George, Waseca  
 Gammalson, Matthew, Battle Lake  
 Gerhardt, Harvey N., Odessa  
 Gongoll, Clarence A., Mayer  
 Gruenhagen, Henry Jr., Glencoe  
 Gudmundson, Julius, Ivanhoe  
 Haag, Charles Jr., Eden Valley  
 Hanson, Chester, Dalton  
 Hatledal, Richard, Benson  
 Hecht, Charles, Alpha  
 Hicks, Tracy M., Tracy  
 Highmark, Joseph, Proctor, Box 66  
 Hoefer, Alfred, Gibbon  
 Hoehm, Fred, Princeton  
 Ilstrup, Leif T., Wright  
 Ingalls, Boyd, Newport  
 Jansen, John Jr., Milbank, S. D.  
 Johnson, Alvin, New York Mills  
 Johnson, Arthur A., Carver  
 Johnson, David E., Madison Lake  
 Johnson, Francis, Carver  
 Johnson, Harry L. L., 2715 Lyndale Ave. N. Minneapolis  
 Johnson, Joseph, Fridley  
 Jurisch, Reynolds G., Hastings  
 Kaemmer, Bert, Albert Lea  
 Kajer, Stanley, New Prague  
 Kohls, Charles, Rosemount  
 Kramer, Edward, Gibbon  
 Krampe, Elmer, Clinton  
 Kranz, Henry C., Nicollet  
 Langan, Matthew, Danvers  
 Larson, Simon, Pipestone  
 Leedstrom, Edward A., Hastings  
 Lilienthal, Ferdinand, Glencoe  
 Lockerby, Mrs. W. E., 510 12th Ave. S. E., Minneapolis  
 Loftness, Gregor, Hector  
 Long, Charles, L. 1929 Kenwood Parkway, Minneapolis  
 Longfellow, Albert R., Little Falls  
 Lourmen, Lothard, Maddock, N. D.  
 Low, Charles, Crookston  
 McConnell, Mrs. Cora, Griswold, Iowa  
 McDuffee, Herbert, 2540 3rd Ave. S., Minneapolis  
 McNeill, Walter D., Delavan  
 Maher, William, South St. Paul  
 Melligan, Edwin, Walnut Grove  
 Melligan, John, Walnut Grove  
 Miller, Joseph, Center City  
 Mitchell, Moses, Ruthton  
 Molkenbur, Arthur, Inver Grove  
 Nelson, Robert, Tracy  
 Nelson, Victor C., Grove City, R. 3  
 Neutson, Earl, 3037 S. Fremont Ave., Minneapolis  
 Olsen, Hulbert, 551 Westminster St., St. Paul  
 Olson, John N., Walnut Grove  
 Olson, Oscar, Tracy  
 Olson, Simon, Waterville  
 Pagenkopf, Anton, Mapleton  
 Peterson, Alfred, Erhards  
 Peterson, Henry, Ruthton  
 Peterson, Knute, Osseo, R. 6  
 Randall, John R., 116 Oak Grove St., Minneapolis  
 Ranney, Harold F., Benson  
 Rasmussen, Christian, Garland  
 Reese, John, Clarkfield  
 Reimhardt, Arthur, Waseca  
 Reimhardt, Elmer, Waseca  
 Reins, Walter, Ruthton  
 Roberts, James R., 3309 Harriet Ave., Minneapolis  
 Robinson, C. W., 1644 Capitol Ave., St. Paul  
 Rollins, J. P., 1002 Como Ave. S. E., Minneapolis  
 Rossa, Frank, Roberts, Wis.  
 Ruble, Albert, Albert Lea  
 Ruebke, Benjamin A., Ada  
 Schoeppler, Harvey P., New Germany  
 Schreiber, Bert, 1429 Marshall St. N. E., Minneapolis  
 Smith, Peter, Jr., Ferris  
 Smith, Randall W., 2447 Colfax Ave. S., Minneapolis  
 Smith, Mrs. R. W., 2447 Colfax Ave. S., Minneapolis  
 Stake, David M., Grandy  
 Stake, Philip, Grandy  
 Stendal, Astor M., Brainerd  
 Stendal, Rudolph A., Brainerd  
 Sterritt, Mrs. J. P., 1514 Freemont Ave. N. Minneapolis



Stockman, Edward, Plato  
 Stolpestad, Oscar, Fosston  
 Strandness, George, Glenwood  
 Streich, Robert E. C., Howard Lake  
 Tanton, Alfred R., Champlin  
 Thelen, Harry A., Cold Springs  
 Thompson, Edwin H., Wayzata  
 Tighe, Laurence G., 314 Dayton Ave., St.  
 Paul

Tomhave, John C., Fergus Falls  
 Trafton, Gilbert H., Mankato  
 Truedson, Albert, Walnut Grove  
 Waller, Francis, Stacy  
 Weigelt, Paul, Mapleton  
 West, Hal R., Blakeley  
 Westberg, Leonard, Warren  
 Wenz, Frank, Osseo

## JUNIOR SHORT COURSE—310

Abrahamson, Olaf C., Princeton  
 Alland, Emma, Waseca  
 Alland, Esther, Waseca  
 Almquist, Aurora E., Chisago City  
 Altenweg, Clement, Anoka  
 Altnow, Gustaf W. H., Arlington  
 Anderson, Carl A., Hutchinson  
 Anderson, Floyd V., Hutchinson  
 Anderson, Harold F., Hutchinson  
 Anderson, Wilhelm, Red Wing, R. 6  
 Angstman, Forrest, Zimmerman  
 Ayers, Charles, Merriam Park, R. 3, Box 88  
 Ayers, Frank, Merriam Park, R. 3, Box 88  
 Ayers, Myrtle, Merriam Park, R. 3, Box 88  
 Bagley, Blanche, Blooming Prairie  
 Bagley, Maude, Blooming Prairie  
 Bailey, A. C., Elk River  
 Bartling, Emma, Brainerd  
 Baker, Fay, Excelsior  
 Berglund, Adele, Maple Plain, R. 2  
 Berglund, Astrid, Belle Plaine  
 Beck, William E., Brownsdale  
 Biersdorf, Oscar, St. Bonifacius  
 Biery, Lonnie, Mantorville  
 Blair, John E., Princeton  
 Blair, Vernon L., Princeton  
 Block, Myrtle, Mayer  
 Bohlman, John, Hamberg  
 Bowman, Claude, Merriam Park  
 Boyle, James, Gaylord  
 Briggs, Maude J., 1502 Summit Ave., Min-  
 neapolis  
 Brooks, Kendrick, Eureka  
 Brown, Chester, Osseo  
 Brown, Helen, Osseo  
 Buchanan, Rollin E., Excelsior  
 Butterfield, Gertrude, Long Lake  
 Carlin, Ella, St. Cloud  
 Carlson, Carl, Taylors Falls  
 Carlson, Elvira, Mille Lacs  
 Carlson, Emil T., Mille Lacs  
 Carlson, M. Frances, Chisago City  
 Carroll, Harold J., Brownsdale  
 Chalfant, Shirley, Waltham  
 Chambers, Ernest, Big Lake, R. 1  
 Christensen, Victor, St. Francis  
 Christgan, Anetta M., Dexter  
 Conroy, Helen, Anoka  
 Cox, Michael C., Kellogg, R. 2

Dahners, Mary, Merriam Park, R. 3  
 Davis, Laurel, Elk River  
 Day, John M. V., Jr., Lake Elmo  
 Derby, Walter C., Mantorville  
 Des Lauriers, Earl, Merriam Park  
 Dobberstein, Henry F., Buffalo Lake  
 Donlin, Marcella, Excelsior  
 Dorsey, Edward, Pillager  
 Doyle, Joseph, Rosemount  
 Doyle, Rose L., Goodhue  
 Dunn, Hollis, Long Lake  
 Dunn, Morey, Long Lake  
 Eastman, Ambrose A. C., Merriam Park  
 Eastman, Josephine A., Merriam Park  
 Eastman, May B., Merriam Park  
 Effertz, Fred, Norwood  
 Einum, Clara, White Bear  
 Ekman, Gertrude, New Brighton, R. 2  
 Elsner, Erich, Princeton  
 Emery, Emmett, Champlin  
 Engbretson, Anna, Waseca  
 Engelen, Jerry H., Cologne  
 Engstrom, Edward, Elk River  
 Enright, Winnifred, Rose Creek  
 Erickson, Myrtle D., Goodhue  
 Erickson, Viola J., Excelsior  
 Evans, Willis, Osseo  
 Fabel, Margaret, Norwood  
 Fanslow, Elmer, Red Wing  
 Farnham, Harold L., Brickton  
 Felker, Marguerite J., Excelsior  
 Fiegel, Elmer F., Kasson  
 Field, Danforth, 1532 Spruce Place,  
 Minneapolis  
 Fischer, Charles, Gladstone  
 Flom, Alfred P., Dennison  
 Flom, Clarence, Dennison  
 Fowler, Clara V., Osseo  
 Froemming, Alfred, Hutchinson  
 Gantzer, Wilfred, Merriam Park, R. 3, Box 80  
 Geppert, Elmer C., Millville  
 Gilbert, Clara, Lake City  
 Gilbert, Silas C., Lake City  
 Grams, Alice R., Hutchinson  
 Greenberg, Earl N., Hutchinson  
 Gremms, Vicella, Dodge Center  
 Grimm, John O., Waconia  
 Grow, Lawrence H., Princeton  
 Grow, Neil P., Princeton

- Gulby, Ernest A., Zimmerman  
 Hall, Ethel, Hutchinson  
 Halvorson, Oscar, Georgeville  
 Hamilton, Laura M., Lake Elmo  
 Hansen, Henius R., Hutchinson  
 Hanson, Harry, Santiago  
 Hanson, Nettie C., Dennison  
 Harrison, James L., Excelsior  
 Hartlieb, Edward, Merriam Park, Box 61, R. 3  
 Hasselquist, Harry, Sunrise  
 Hauck, Ernest, Lake Elmo  
 Haugen, Irwin B., Goodhue  
 Hawlik, Henry I. W., Silver Lake  
 Heath, Harold E., Janesville  
 Heinbocker, Charles C., Norwood  
 Hinrichs, Arnold F. J., Red Wing  
 Hill, Harland, Elk River  
 Hoeffken, Fred, Waconia  
 Hoese, Arthur, Mayer  
 Hofflander, Gunnar, Princeton  
 Hoffman, Henry, White Bear  
 Hogan, Elizabeth, Merriam Park, R. 3  
 Hogan, Thomas J., Jr., Merriam Park, R. 3  
 Holbrook, Howard A., Brownsdale  
 Holm, Edwin, Sunrise  
 Hurtt, Louise, Zimmerman  
 Ickler, Elva, North St. Paul  
 Iiff, Lyle, Zimmerman  
 Iiff, Myrtle, Zimmerman  
 Jacobson, Andrew, Lyle  
 Jackson, Alma G., Waseca  
 Jaenicke, Herbert Ed., Princeton  
 Johnson, Alfred J., Hutchinson, Box 176  
 Johnson, Ole, Princeton  
 Jones, Murray, Mazepa  
 Jangquist Marie, Maple Plain, R. 3  
 Jorgensen, Sophia, Ormsby  
 Kennedy, Charles D., Zumbro Falls  
 Kenyon, Marion G., Osseo  
 Kern, Elizabeth, Brainerd  
 Klein, Ernest, Kellogg  
 Klein, Ralph M., Kellogg  
 Kloth, Adelaide, Norwood  
 Knutson, Martha, Hutchinson  
 Kohler, Clement, Norwood  
 Kunde, Edward, Goodhue  
 Kusske, Clara, Mayer  
 Laurence, A. F., Norwood  
 Lamb, Chester, Mazepa  
 Lamb, Gertrude, Mazepa  
 Lamport, Leonard, Brownsdale  
 Lally, Marie, Cannon Falls  
 Lapham, Grant, Caledonia  
 Larson, Annie, Brainerd, R. 2  
 Larson, Emily, 3121 17th Ave. S., Minne-  
 apolis  
 Larson, Frederick, Brainerd, R. 2  
 Leng, Leo, Truman  
 Leng, Selma, Truman  
 Levik, Ella, Truman  
 Lilleskov, Oscar, Stanton  
 Lindert, Herbert, Norwood  
 Lindstrom, John, Lindstrom  
 Linehan, Tressa, Waseca  
 Livingston, George A., Excelsior  
 Loudon, William, Excelsior  
 Loven, Elizabeth, Cannon Falls  
 Loven, Minnie S., Cannon Falls  
 Ludvigson, Theodore, Truman  
 Lundberg, Floyd R., Maple Plain  
 Lynch, Leander, Alma City  
 McClymont, Ruth, Excelsior  
 McFarlane, Gordon, Alma City  
 McPadden, William M., Waconia  
 Madden, Genevieve, Waseca  
 Madden, Sylvester, Waseca  
 Maughan, Harriet F., Excelsior  
 Manuel, Hale, 1731 Marshall Ave., St. Paul  
 Mau, George, Truman  
 Mayer, Katherine I., Merriam Park  
 Mayer, Thomas E., Merriam Park  
 Metelak, Katherine E., Brownton  
 Metelak, Martha J., Stewart  
 Meyer, Clarence, Goodhue  
 Meyer, Hazel C., Lake Elmo  
 Meyer, Lorena, Goodhue  
 Meyer, Serena, Lake City  
 Meyer, Serenus, Lake City  
 Mielke, Robert, Young America  
 Miller, Harry, Osseo  
 Miller, Selma, Osseo  
 Moline, Ruth, Excelsior  
 Murray, Russell, Brainerd  
 Neller-moe, Platt M., Buffalo Lake  
 Nelson, Earl E., Hayfield  
 Nelson, Louis, Brainerd  
 Nielsen, Lenora, Merriam Park  
 Nielsen, Leonard, Merriam Park, R. 3, Box  
 116  
 Nystrom, Elvira, Big Lake  
 Nystrom, Harry W., Big Lake  
 Odegard, Odin, Santiago  
 Odland, Paul, Lake Elmo  
 Oestreich, Christ, Hutchinson  
 Olmstead, Eugene, Excelsior  
 Olson, Edward A., Maple Plain  
 Olson, Sidney M., Hutchinson  
 O'Reilly, Agnes, Goodhue  
 O'Reilly, Eleanor, Goodhue  
 Oswald, Theodore J., Osseo, R. 4  
 Otterness, Arthur H., Dennison  
 Pagel, Fred, Buffalo Lake  
 Palmer, James, Excelsior  
 Patten, Edith, Long Lake  
 Peterson, August, Chisago City  
 Peterson, Bertha, Hutchinson  
 Peterson, Carl A., Anoka  
 Peterson, Eli, Truman  
 Peterson, Harry, Clear Lake  
 Petrick, Henry, Appleton

- Phillips, William, Lake City, R. 3  
 Plein, Elvin P., Smithfield  
 Plein, Ralph J., Plainview  
 Podlasek, Mary, New Brighton  
 Poole, Gladys, Truman  
 Poole, Lois, Truman  
 Poole, William, Truman  
 Powers, Ethel, Excelsior  
 Raether, Frank, St. Bonifacius  
 Rank, Olive M., Lansing  
 Rasmussen, Esther M., Merriam Park  
 Reilly, William, Goodhue  
 Reimringer, Joseph, Merriam Park, R. 3,  
 Box 87  
 Reinking, Louis W., Osseo, R. 4  
 Rietman, Benjamin, Red Wing  
 Riley, Edward J., Goodhue  
 Roberts, Amy R., Osseo  
 Roberts, Leon, Osseo  
 Robideau, Ralph F., Princeton  
 Robideau, Real, Princeton  
 Rocheford, Albert L., Princeton  
 Ronningen, Mabel G., Wanamingo  
 Rose, Delbert, New Brighton  
 Rose, Nettie, Excelsior  
 Rosenwald, Oswald, Norwood  
 Ross, Helen, Maple Plain, R. 3  
 Saussele, Leslie R., Osseo  
 Schacht, Mabel O. G., Merriam Park  
 Schacht, Raymond, Merriam Park, R. 3,  
 Box 91  
 Schafer, Elmer L., Lake City  
 Scharber, Otto J., Rogers  
 Scheel, Edward A. H., Stillwater  
 Schennemann, Minnie, White Bear  
 Schiltgen, Clara, North St. Paul  
 Schimmelpfennig, Bruno, Norwood  
 Schlasner, Clarence C., Mazeppa  
 Schlegel, Gustav C., Osseo  
 Schmidt, Edwin V., Buffalo Lake  
 Scholer, Robert A., Zumbro Falls  
 Sellman, Hjalmer, Sunrise  
 Sidnam, Vernon F., Long Lake  
 Siefert, Edward, Mazeppa  
 Sjostedt, Meldon, 715 2nd Ave. S. E., Minne-  
 apolis  
 Sjostedt, Ruiz, 715 2nd Ave. S. E., Minne-  
 apolis  
 Slawson, Raymond A., Kellogg  
 Smart, Lillie, Zimmerman  
 Smith, Robert, Norwood  
 Smith, Ruth, Excelsior  
 Sobeslavsky, Mary, Hutchinson  
 Spilker, Fred, Anoka  
 Steele, Myrtle A. L., Merriam Park  
 Stoddart, Harold, North St. Paul, R. 1  
 Stoddart, Hugh, North St. Paul, R. 1  
 Steller, Carl, Excelsior  
 Steller, Roy, Excelsior  
 Sund, Archie, Elk River  
 Sundeen, Joseph, St. Francis  
 Sundeen, Paul E., St. Francis  
 Swan, Florence, Stewart  
 Swanson, Edwin, Anoka  
 Swanson, Ray L., Becker  
 Teig, Julia, Truman  
 Thede, Hattie, Claremont  
 Thomas, Martha E., 943 Forest St., St. Paul  
 Thompson, Selmer E., Lansing  
 Torkelson, Inger O., Excelsior  
 Trumble, Julius G., Excelsior  
 Trunk, William A., Princeton  
 Truwe, Clarence W., Waconia  
 Truwe, George, Young America  
 Truwe, Laura, Hamberg  
 Tryon, Elizabeth, G., 2115 Gerard Ave. S.,  
 Minneapolis  
 Uglem, Oscar, Princeton  
 Urback, Kate, Excelsior  
 Valker, Raymond, Hutchinson, R. 3  
 Vangen, Iver, Cannon Falls  
 Vogler, Fred, Young America  
 Wanous, Reuben, Silver Lake  
 Warnberg, Selma D., Rush City  
 Warrington, Ralph A., Austin  
 Wehking, George, Buffalo Lake  
 Weise, Ezra, Matawan  
 Weise, Wesley, Matawan  
 Welch, Blanche, Hutchinson  
 Welch, Tressa, Hutchinson  
 White, Emery M., Maple Plain  
 Wienholz, Alfreda M., Excelsior  
 Wilson, Murray M., Excelsior  
 Wituski, Frank, Silver Lake  
 Wold, Alma S., Blooming Prairie  
 Wright, George, Mazeppa  
 Zipf, Frederick G., Hutchinson  
 Zuercher, Ruth, Excelsior  
 Zumach, Earl, Hutchinson  
 Zumberge, Edwin F., Norwood  
 Zumberge, Herbert, Norwood

## TRACTION ENGINEERS—38

- Ahlberg, John H., Sebeka  
 Anderson, Arthur W., Dassell  
 Anderson, Vernon, Vesta  
 Benson, Arthur G., 1054 W. Central, St. Paul  
 Buhler, Ernest O., St. Anthony Park  
 Coughlan, Richard J., Austin  
 Decker, Leonard R., 305 Water St., Austin  
 Falconer, George B., 813 Oak St., Brainerd

- Felling, Alfred A., Browns Valley  
 Folsom, Edgar P., 401 7th St. S. E., Minneapolis  
 Gaumnitz, Fred, 1031 16th Ave. S. E., Minneapolis  
 Halverson, Alfred M., Marengo, Iowa  
 Hample, Paul G., Oakes, N. D.  
 Hardie, Robert A., Vesta  
 Kjeldergaard, Erick O., Fairfax  
 Krause, William C., Summit, S. D.  
 Kunze, George, Sleepy Eye  
 Lafky, Walter H., Wilson  
 Lang, Harvey A., Lake City  
 Lerversee, John U., 1057 13th Ave. S. E., Minneapolis  
 Mahlum, Bert A., Brainerd  
 Matson, Emil, Willmar  
 Nelson, Harry W., Hector  
 Olesen, Nels S., Luck, Wis.  
 Olson, Ole K., Benson  
 Patterson, Clarence D., Cloquet  
 Paulson, Paul A., 3409 Pillsbury Ave., Minneapolis  
 Pearson, Perry, Monterey  
 Russell, James H., Waterville, Iowa  
 Stephenson, John E., 2724 Oakland Ave., Minneapolis  
 Strand, Oscar W., Benson  
 Sutter, Charles J., Wadena  
 Tomandel, James J., Stangelville, Wis.  
 Trano, George H., Zumbrota, R. 5  
 Tuttle, Robert H., 4650 Fremont Ave. S., Minneapolis  
 Werner, John, Long Prairie  
 Westbloom, Andrew Jr., Olivia  
 Wold, Ole P., Fessenden, N. D.

# The University of Minnesota

## THE SCHOOL OF MINES

1912-1913



BULLETIN OF THE UNIVERSITY OF MINNESOTA  
VOL. XV, NO. 7. JUNE 1912

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MINNEAPOLIS, MINN.

1912							1913													
<b>JULY</b>							<b>JANUARY</b>							<b>JULY</b>						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
..	1	2	3	4	5	6	..	..	1	2	3	4	..	..	1	2	3	4	5	
7	8	9	10	11	12	13	5	6	7	8	9	10	11	6	7	8	9	10	11	12
14	15	16	17	18	19	20	12	13	14	15	16	17	18	13	14	15	16	17	18	19
21	22	23	24	25	26	27	19	20	21	22	23	24	25	20	21	22	23	24	25	26
28	29	30	31	..	..	..	26	27	28	29	30	31	..	27	28	29	30	31	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
<b>AUGUST</b>							<b>FEBRUARY</b>							<b>AUGUST</b>						
..	..	..	..	1	2	3	..	..	..	..	..	1	..	..	..	..	..	..	1	2
4	5	6	7	8	9	10	2	3	4	5	6	7	8	3	4	5	6	7	8	9
11	12	13	14	15	16	17	9	10	11	12	13	14	15	10	11	12	13	14	15	16
18	19	20	21	22	23	24	16	17	18	19	20	21	22	17	18	19	20	21	22	23
25	26	27	28	29	30	31	23	24	25	26	27	28	..	24	25	26	27	28	29	30
..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	..	..	..	..	..	..
<b>SEPTEMBER</b>							<b>MARCH</b>							<b>SEPTEMBER</b>						
1	2	3	4	5	6	7	..	..	..	..	..	1	..	..	1	2	3	4	5	6
8	9	10	11	12	13	14	2	3	4	5	6	7	8	7	8	9	10	11	12	13
15	16	17	18	19	20	21	9	10	11	12	13	14	15	14	15	16	17	18	19	20
22	23	24	25	26	27	28	16	17	18	19	20	21	22	21	22	23	24	25	26	27
29	30	..	..	..	..	..	23	24	25	26	27	28	29	28	29	30	..	..	..	..
..	..	..	..	..	..	..	30	31	..	..	..	..	..	..	..	..	..	..	..	..
<b>OCTOBER</b>							<b>APRIL</b>							<b>OCTOBER</b>						
..	..	1	2	3	4	5	..	..	1	2	3	4	5	..	..	1	2	3	4	
6	7	8	9	10	11	12	6	7	8	9	10	11	12	5	6	7	8	9	10	11
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20	21	22	23	24	25	26	20	21	22	23	24	25	26	19	20	21	22	23	24	25
27	28	29	30	31	..	..	27	28	29	30	..	..	..	26	27	28	29	30	31	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
<b>NOVEMBER</b>							<b>MAY</b>							<b>NOVEMBER</b>						
..	..	..	..	..	1	2	..	..	..	1	2	3	..	..	..	..	..	1		
3	4	5	6	7	8	9	4	5	6	7	8	9	10	2	3	4	5	6	7	8
10	11	12	13	14	15	16	11	12	13	14	15	16	17	9	10	11	12	13	14	15
17	18	19	20	21	22	23	18	19	20	21	22	23	24	16	17	18	19	20	21	22
24	25	26	27	28	29	30	25	26	27	28	29	30	31	23	24	25	26	27	28	29
..	..	..	..	..	..	..	..	..	..	..	..	..	..	30	..	..	..	..	..	..
<b>DECEMBER</b>							<b>JUNE</b>							<b>DECEMBER</b>						
1	2	3	4	5	6	7	1	2	3	4	5	6	7	7	1	2	3	4	5	6
8	9	10	11	12	13	14	8	9	10	11	12	13	14	8	9	10	11	12	13	
15	16	17	18	19	20	21	15	16	17	18	19	20	21	14	15	16	17	18	19	20
22	23	24	25	26	27	28	22	23	24	25	26	27	28	21	22	23	24	25	26	27
29	30	31	..	..	..	..	29	30	..	..	..	..	..	28	29	30	31	..	..	..

# UNIVERSITY CALENDAR

1912-1913

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.

1912

September	3	Tuesday	Registration closes except for new students
September	3-10	Week	Fees payable except for new students
September	10-16	Week	Entrance examinations, registration of new students, and payment of fees
September	11-17	Week	Military encampment of cadets
September	18	Wednesday	First semester begins
November	27	Wednesday	Thanksgiving recess begins 6:00 p. m.
December	2	Monday	Thanksgiving recess ends 8:00 a. m.
December	20	Friday	Christmas vacation begins 6:00 p. m.

1913

January	7	Tuesday	Christmas vacation ends 8:00 a. m.
January	21	Tuesday	Registration for second semester closes
January	27	Monday	Final examinations begin
January	28	Tuesday	Payment of fees for second semester closes
February	5	Wednesday	Second semester begins
February	12	Wednesday	Lincoln's Birthday: a holiday
February	13	Thursday	First semester class reports due
February	22	Saturday	Washington's Birthday: a holiday
March	19	Wednesday	Easter recess begins 6:00 p. m.
March	27	Thursday	Easter recess ends 8:00 a. m.
May	30	Friday	Decoration Day: a holiday
June	2	Monday	Final examinations begin
June	7	Saturday	Second semester closes
June	8	Sunday	Baccalaureate service
June	9	Monday	Senior class day exercises
June	11	Wednesday	Alumni Day
June	12	Thursday	Forty-first Annual Commencement
June	13	Friday	Summer vacation begins

The University year for 1913-14 will begin Tuesday, September 9.

*Program of Entrance Examinations 1912-13*

When entrance examinations are required this schedule will be followed:

Tuesday,	Sept. 10	9 a. m.	Astronomy, Botany, Geology, Chemistry, Physiography, Zoology
		2 p. m.	American Government, History, Physics, Economics, Commercial Geography
Wednesday,	Sept. 11	9 a. m.	English
		2 p. m.	German, French, Latin, Scandinavian
Thursday,	Sept. 12	9 a. m.	Elementary Algebra
		2 p. m.	Higher Algebra
Friday,	Sept. 13	9 a. m.	Plane Geometry
		2 p. m.	Solid Geometry
Thursday,	June 5, 1913	9 a. m.	Elementary Algebra
		2 p. m.	Higher Algebra
Friday,	June 6, 1913	9 a. m.	Plane Geometry
		2 p. m.	Solid Geometry

All candidates for examinations should report at the scheduled time in Room 205, Library Building, except in the case of Mathematics.

Examinations in Mathematics are held in Room 24, School of Mines Building.

*Program of Supplementary Examinations*

Tuesday,	Sept. 10	9-12 a. m.	Mechanics and Mathematics
		2-5 p. m.	Mining Engineering Subjects
Wednesday,	Sept. 11	9-12 a. m.	Chemistry
		2-5 p. m.	Drawing and Descriptive Geometry
		2-5 p. m.	Mechanical Engineering Subjects
Thursday,	Sept. 12	9-12 a. m.	Metallurgical Subjects
		2-5 p. m.	Physics
Friday,	Sept. 13	9-12 a. m.	Electrical Engineering Subjects
		2-5 p. m.	Geology and Mineralogy



## THE UNIVERSITY

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 COLLEGE OF FORESTRY, including—

FOREST EXPERIMENT STATIONS AT ITASCA AND CLOQUET

THE SCHOOL OF AGRICULTURE, including—

THE DAIRY SCHOOL

THE SHORT COURSE FOR FARMERS

TEACHERS' SUMMER TRAINING SCHOOL

THE SCHOOL OF TRACTION ENGINEERING

THE SCHOOL OF AGRICULTURE, CROOKSTON

THE SCHOOL OF AGRICULTURE, MORRIS

THE EXPERIMENT STATIONS, including—

THE MAIN STATION AT ST. ANTHONY PARK

THE SUB-STATION AT CROOKSTON

THE SUB-STATION AT GRAND RAPIDS

THE SUB-STATION AT DULUTH

THE SUB-STATION AT WASECA

THE SUB-STATION AT ZUMBRA HEIGHTS

AGRICULTURAL EXTENSION

BUREAU OF RESEARCH IN AGRICULTURAL ECONOMICS

THE LAW SCHOOL

THE COLLEGE OF MEDICINE AND SURGERY, including—

THE SCHOOL FOR NURSES

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE SCHOOL OF MINES, including—

MINNESOTA SCHOOL OF MINES EXPERIMENT STATION

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

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THE GEOLOGICAL AND NATURAL HISTORY SURVEY

## THE BOARD OF REGENTS

The Hon. JOHN LIND, Minneapolis, President of the Board	-	-	1914
GEORGE EDGAR VINCENT, Ph.D., LL.D., Minneapolis The President of the University	-	-	<i>Ex-Officio</i>
The Hon. ADOLPH O. EBERHART, Mankato The Governor of the State	-	-	<i>Ex-Officio</i>
The Hon. C. G. SCHULZ, St. Paul The State Superintendent of Public Instruction	-	-	<i>Ex-Officio</i>
The Hon. W. J. MAYO, Rochester	-	-	1913
The Hon. MILTON M. WILLIAMS, Little Falls	-	-	1913
The Hon. HENRY B. HOVLAND, Duluth	-	-	1914
The Hon. A. E. RICE, Willmar	-	-	1915
The Hon. CHARLES L. SOMMERS, St. Paul	-	-	1915
The Hon. B. F. NELSON, Minneapolis	-	-	1916
The Hon. PIERCE BUTLER, St. Paul	-	-	1916
The Hon. CHARLES A. SMITH, Minneapolis	-	-	1916

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## EXECUTIVE OFFICERS

GEORGE EDGAR VINCENT, Ph.D., LL.D., President  
 ERNEST B. PIERCE, B.A., Registrar  
 GEORGE H. HAYES, University Comptroller and Secretary of the Board  
 of Regents  
 JAMES T. GEROULD, B.A., Librarian  
 JOHN F. DOWNEY, M.A., C.E., Dean of the College of Science, Literature,  
 and the Arts  
 FRANCIS C. SHENEHON, C.E., Dean of the College of Engineering and  
 Mechanic Arts  
 ALBERT F. WOODS, M.A., Dean and Director of the Department of  
 Agriculture  
 WILLIAM R. VANCE, Ph.D., LL.B., Dean of the Law School  
 FRANK FAIRCHILD WESBROOK, M.A., M.D., C.M., Dean of the College of  
 Medicine and Surgery  
 ALFRED OWRE, B.A., M.D., C.M., D.M.D., Dean of the College of Den-  
 tistry  
 FREDERICK J. WULLING, Ph.D., LL.M., Dean of the College of Pharmacy  
 WILLIAM R. APPELBY, M.A., Dean of the School of Mines  
 GEORGE B. FRANKFORTER, M.A., Ph.D., Dean of the School of Chemistry  
 GEORGE F. JAMES, Ph.D., Dean of the College of Education  
 HENRY T. EDDY, C.E., Ph.D., LL.D., Dean of the Graduate School  
 ADA L. COMSTOCK, M.A., Dean of Women

# THE SCHOOL OF MINES

## FACULTY

GEORGE EDGAR VINCENT, Ph.D., LL.D., President 1005 5th St. S. E.  
CYRUS NORTHROP, LL.D., President Emeritus 519 10th Ave. S. E.  
WILLIAM R. APPLEBY, M.A., Dean and Professor of Metallurgy  
911 5th St. S. E.  
CHARLES E. VAN BARNEVELD, B.A.Sc., E.M., Professor of Mining Engineering  
2110 Aldrich Ave. S.  
CHARLES W. BENTON, Litt.D., Professor of Romance Languages  
516 9th Ave. S. E.  
PETER CHRISTIANSON, B.S., E.M., Professor of Metallurgy  
208 Beacon St. S. E.  
ELTING H. COMSTOCK, M.S., Professor of Mechanics and Mathematics  
1416 7th St. S. E.  
WILLIAM H. EMMONS, Ph.D., Professor of Mineralogy and Geology  
JOHN J. FLATHER, Ph.B., M.M.E., Professor of Mechanical Engineering  
315 11th Ave. S. E.  
GEORGE B. FRANKFORTER, Ph.D., Professor of Chemistry  
525 E. River Road  
WILLIAM H. KAVANAUGH, M.E., Professor of Experimental Engineering  
118 State St. S. E.  
WILLIAM H. KIRCHNER, B.S., Professor of Drawing and Descriptive  
Geometry 217 Beacon St. S. E.  
EDWARD P. MCCARTY, E.M., Professor of Mining 428 8th St. S.  
JOHN G. MOORE, B.A., Professor of German  
2810 University Ave. S. E.  
LEVI B. PEASE, M.S., Professor of Metallurgy 1070 16th Ave. S. E.  
GEORGE D. SHEPARDSON, M.A., M.E., Professor of Electrical Engineering  
717 E. River Road  
CHARLES F. SIDENER, B.S., Professor of Chemistry 1320 5th St. S. E.  
JOSEPH M. THOMAS, Ph.D., Professor of Rhetoric  
623 14th Ave. S. E.  
JOHN ZELENY, Ph.D., Professor of Physics 712 10th Ave. S. E.  
FRANCIS C. FRARY, Ph.D., Assistant Professor of Chemistry  
1307 6th St. S. E.  
JULES T. FRELIN, B.A., Assistant Professor of Romance Languages  
112 Church St. S. E.  
FRANK F. GROUT, M.S., Assistant Professor of Geology and Mineralogy  
1202 7th St. S. E.

- MERTON S. KINGSTON, E.M., Assistant Professor of Mining  
1206 7th St. S. E.
- EDWIN M. LAMBERT, M.E., Assistant Professor of Mechanics and Mathematics
- WILLIAM T. RYAN, E.E., Assistant Professor of Electrical Engineering  
3228 4th St. S. E.
- FREDERICK W. SARDESON, Ph.D., Assistant Professor of Paleontology  
414 Harvard St. S. E.
- S. CARL SHIPLEY, B.S., M.E., Assistant Professor of Machine Construction  
1517 E. River Road
- CHARLES F. SHOOP, B.S., Assistant Professor of Experimental Engineering  
108 Beacon St. S. E.

## INSTRUCTORS

- OLIVER BOWLES, M.A., Instructor in Mineralogy and Geology  
321 19th Ave. S. E.
- PAUL H. M.-P. BRINTON, Instructor in Chemistry 608 13th Ave. S. E.
- LILLIAN COHEN, M.S., Instructor in Chemistry 415 E. 14th St.
- ROBERT W. FRENCH, B.S., Instructor in Drawing  
1035 13th Ave. S. E.
- ERVIN W. McCULLOUGH, E.M., Instructor in Mining  
90 Malcolm Ave. S. E.
- FRANKLIN R. McMILLAN, C.E., Instructor in Experimental Engineering  
321 Oak St. S. E.
- EDMUND NEWTON, E.M., Instructor in Metallurgy  
1005 University Ave. S. E.
- PETER E. PETERSON, Instructor in Foundry Practice  
3709 Clinton Ave.
- WARREN T. POWELL, M.A., Instructor in Rhetoric 517 Essex St. S. E.
- EDWARD P. QUIGLEY, Instructor in Forge Work 2442 15th Ave. S.
- WILLIAM H. RICHARDS, Instructor in Carpentry 1423 W. 27th St.
- FRANK B. ROWLEY, B.S., M.E., Instructor in Drawing  
414 Oak St. S. E.
- JAMES COXE SANDERSON, Ph.D., Instructor in Physics  
710 13th Ave. S. E.
- JULIUS H. SANTO, E.M., Instructor in Mechanics and Mathematics  
1406 7th St. S. E.
- EDGAR K. SOPER, B.A., Instructor in Economic Geology  
417 Union St. S. E.

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WINIFRED GREGORY, Librarian

## ADMISSION

The courses leading to the degrees of Engineer of Mines and Metallurgical Engineer may be completed in either four or five years. The course leading to the degree of Engineer of Mines (in Geology) may be completed in five years.

Students may enter the School of Mines without preparation in Higher Algebra and Solid Geometry. Such students must enter the five-year courses.

Students who enter the four-year courses with Higher Algebra and Solid Geometry must pass the entrance examinations in Mathematics given by the School. State High School Board certificates will be accepted for all subjects except Mathematics.

It is recommended that students who come poorly prepared in Mathematics enter the five-year courses.

Examinations for admission in subjects other than Mathematics will be held at the beginning of the year. Examinations in Mathematics are held in June and September. See calendar and program of examinations.

No senior will be registered for first semester's work after September 10, 1912.

**No other students will be registered for the first semester's work after September 28, 1912, nor any student for the second semester's work after February 15, 1913.**

All applicants should present themselves to the Dean of the School of Mines, Room 27, School of Mines Building, who will furnish them with application blanks and directions covering examinations and registration.

Women will not be admitted to any course offered in the School of Mines.

### GENERAL REGULATIONS GOVERNING ADMISSION

- I. Students will be admitted to the freshman class on passing the regular entrance examinations.
- II. No student will be admitted if conditioned in more than three half-year subjects, or their equivalent. No conditions, however, in entrance Mathematics shall be allowed except upon special permission of the Department of Mathematics.
- III. Graduates of any Minnesota State High School will be admitted to the five-year courses without examination, or to the four-year courses with examination in Mathematics, provided:
  - (1) That the school maintain a full four-year course of high school work.
  - (2) That the applicant present to the Registrar the principal's certificate showing the satisfactory completion of all studies required for admission to the desired University course.

- IV. Graduates of Minnesota State High Schools who are deficient in not more than three half-year subjects or their equivalent, may be excused from entrance examinations in such subjects as the Enrollment Committee may decide upon; such candidates should present themselves to the Committee not later than Tuesday of examination week.
- V. Graduates of Minnesota State High Schools whose principal's certificate shows them to be deficient in more than three half-year subjects or their equivalent, even though they have made such additional preparation as they deem necessary, must take, nevertheless, the regular entrance examination in all subjects, as provided in Sections I and II, unless excused by vote of the Faculty; and persons wishing to present reasons for such excuse should report to the Enrollment Committee not later than Tuesday of examination week.
- VI. Graduates of the Advanced Courses of Minnesota Normal Schools will be admitted upon the same terms as graduates of State High Schools.
- VII. Any Minnesota High School or Academy not under supervision of the State High School Board, but requiring for graduation a four years' course, exclusive of the common school branches, conforming essentially in distribution of time to the entrance requirements of at least one of the University courses, will, upon application, be inspected by a committee, and, after favorable recommendation, may be accredited by the Faculty in all respects as are the State High Schools, provided:
- (1) That the school be open to inspection at any time by the University.
  - (2) That it take such supplementary examinations as may be prescribed from time to time.
- VIII. Graduates from schools in other states, whose diplomas admit to reputable colleges in the state in which the school is located, will be received subject to the regulations that apply to graduates of Minnesota State High Schools.
- IX. Applicants coming from schools not included in any of the above classes must take the regular entrance examinations or present State High School Board certificates.

In all cases the Faculty reserves the right to require a student to take supplementary examinations if he does not sustain himself creditably in his course.

The Enrollment Committee will meet every day during the week commencing Tuesday, September 10th, in School of Mines Building, Room 27, at 9 o'clock, a. m.

#### REQUIREMENTS FOR ADMISSION TO THE FIVE-YEAR COURSES

The term *unit* means not less than five recitations of forty minutes each per week for a period of thirty-six weeks. In manual subjects and

kindred courses, it means the equivalent of ten recitation periods per week for thirty-six weeks.

*Required Subjects:*

English .....	*four units
Elementary Algebra.....	one unit
Plane Geometry.....	one unit
Electives.....	nine units

REQUIREMENTS FOR ADMISSION TO THE FOUR-YEAR COURSES

*Required Subjects:*

English.....	*four units
Elementary Algebra.....	one unit
Higher Algebra.....	one-half unit
Plane Geometry.....	one unit
Solid Geometry.....	one-half unit
Electives.....	eight units

*Electives.* (Eight units must be selected from this list for the four-year courses and nine units for the five-year courses.)

Latin

- Grammar, one unit
- Caesar, four books, one unit
- Cicero, six orations, one unit
- Virgil, six books, one unit

Greek

- Grammar, one unit
- Anabasis, four books, one unit

German

- Grammar, one unit
- Literature, one to three units

French

- Grammar, one unit
- Literature, one to three units

Spanish

- Grammar, one unit
- Literature, one unit

Scandinavian Languages

- Grammar, one unit
- Literature, one unit

History

- Ancient, to Charlemagne, one unit
- Modern, from Charlemagne, one unit
- English, one-half unit
- Senior American, one-half unit

\*Three units will satisfy the English requirement when the applicant presents four units in one foreign language. In this case a sufficient number of electives must be presented to make a total of fifteen entrance units.

American Government, one-half unit  
 Elementary Economics, one-half unit  
 History of Commerce, one-half unit  
 Commercial Geography, one-half or one unit  
 Physics, one unit  
 Chemistry, one unit  
 Botany, one-half or one unit  
 Zoology, one-half or one unit  
 Astronomy, one-half unit  
 Geology, one-half unit  
 Physiography, one-half unit

Not more than four units are allowed in the following vocationa, subjects, including Business Subjects, Manual Subjects, Domestic Science and Agriculture.

#### Business Subjects

Business Law, one-half unit  
 Business Arithmetic, one-half unit  
 Elementary Bookkeeping, one-half unit  
 Advanced Bookkeeping and Business Practice, one unit  
 Stenography and Typewriting, two units

#### Manual Subjects

Freehand Drawing, two units  
 Mechanical Drawing, two units  
 Shop Work, two units  
 Modeling and Wood Carving, one unit  
 Domestic Art and Science, two units  
 Agriculture

One to four units from schools receiving special state aid for Agriculture, and also from other schools in which such course in Agriculture is approved by the State High School Board, as fast as the said schools are prepared to offer work in Agriculture.

### DESCRIPTION OF SUBJECTS ACCEPTED FOR ADMISSION

A description of the subjects accepted for admission to the University will be found in the Bulletin of General Information, which will be sent to any address upon application to the Registrar, The University of Minnesota, Minneapolis, Minnesota.

### ADVANCED STANDING

The University accepts records from other colleges for credit to advanced standing. Such records are accepted as far as they are equivalent to the work in this University, subject to the approval of the departments concerned. In bringing records from other institutions, the certificates must be on the official blanks of the institution granting the certificate, and should show:



1. The subjects studied and ground covered.
2. The time spent upon each subject.
3. In case of laboratory subjects, a concise statement of work done.
4. The result. It is sufficient to state the subjects were creditably completed.

Students who desire to obtain advanced standing must present their applications and certificates to the departments concerned, obtain a written statement from the department, showing the exact credit allowed, and present this to the Enrollment Committee.

### 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 8:00 and closes at 12:00 o'clock; the afternoon session extends from 1:00 o'clock until 5:50 o'clock. A general assembly of the Faculty and students is held at 12:00 o'clock on Tuesdays, Thursdays, and Saturdays, at which there are brief and simple religious exercises. The noon hour extends from 12:00 to 1:00 o'clock. Work extends through six days of the week.

### EXAMINATIONS

Students failing to receive a semester mark of 75 per cent in any subject shall have the privilege of a supplementary examination before the opening of the following year.

Each student must obtain from the Registrar his yearly average in all subjects and present himself for supplementary examinations, according to the program given on page 4.

No other supplementary examination will be given. Students failing to report for supplementary examinations will be compelled to take work over in class as in case of failures.

Students failing to receive a semester mark of 50 per cent in any subject shall not be allowed to pursue any dependent subject.

The Faculty may exclude students from attending classes in any subject upon recommendation of the department concerned.

Students failing to pass supplementary examinations will become members of the succeeding class and must register for those subjects in which they have failed. They may take in addition other subjects not more than one year in advance of their class, with the exception of mining and metallurgical courses, based upon requirements of the various courses and daily program. They may also take certain electives in other colleges provided suitable arrangements can be made.

All subjects elected in other colleges become part of the School of Mines curriculum. All students are required to receive credits in these subjects before graduation.

All students who voluntarily register for Military Drill shall be required to drill the entire year and be subject to the same rules and reg-

ulations as other cadets. Such students must receive credit or honorable dismissal from the department before graduating.

All students must report in time to make suitable arrangements with departments concerned in case of conflicts in program.

Students failing to present themselves for final examination at the end of the first or second semester will be given zero on the examinations.

Students whose absences in either semester exceed four weeks in the aggregate are not permitted to take examinations without special permission of the Faculty.

A fee of five dollars per subject is required for each special examination.

### UNCLASSED STUDENTS

No unclassified students will be admitted to the School of Mines.

### GRADUATION

Students completing courses of study to the satisfaction of the Faculty are entitled to receive the appropriate degrees. Any person may undergo, at suitable times, examinations in any subject. If such person pass in all the studies and exercises of a course, he is entitled to the appropriate degree, provided that at least one full year be spent at the University before such degree shall be granted, and provided the examination in every case be held before a committee of the Faculty appointed for that purpose.

Seniors must be in regular attendance at all classes until after the final examinations held at the end of the second semester. Irregular attendance will debar a student from entering all final examinations.

### THESES

The thesis work is intended to bring in review and connect the work in Mining and Metallurgy, Geology and Mineralogy, Mechanical and Electrical Engineering, Mathematics and Mechanics.

It has been found that this purpose is most satisfactorily accomplished by assigning to each student a project, embracing the prospecting, development and equipment of a group of mining claims, for candidates for the degree of Engineer of Mines; the investigation of a problem in mining geology for candidates for the degree of Engineer of Mines (in Geology); and the investigation of a metallurgical problem for candidates for the degree of Metallurgical Engineer.

As much latitude as possible will be allowed the student in the choice of type of deposit and location. He must select a suitable project during the summer preceding the senior year. Outlines are furnished setting forth the lines of investigation necessary to obtain the required data. The junior field work affords ample opportunity therefor.

Prior to the re-opening of Field Work at the School of Mines, Tuesday, September 10, 1912, each student is required to submit to the department concerned an outline embodying the principal features of the project, together with a topographic map and a sufficient number of photographs to clearly represent the locality. Unless this outline is submitted when due and is accepted by the department, final registration for the first semester senior year will not be permitted.

Students may, if they so desire, take a reasonable number of samples on which to make assays and hand laboratory tests during the ore-testing laboratory work given in first semester senior year.

All preliminary work must be done and final work on project must be under way by December 1st. On April 7th the text of the thesis must be completed and submitted for final approval. Completed work (type-written and bound) together with all tracings and one set of clear blue prints therefrom must be in and accepted not later than April 30th. Theses will not be accepted or examined after these dates. Unless the above conditions are complied with no student can expect to graduate with his class.

These theses shall become the property of the School.

## SPECIAL INFORMATION

In the School of Mines there are three regular courses of study, viz., Mining Engineering, Mining Engineering specializing in Geology, and Metallurgy, leading to the degree of Engineer of Mines (E.M.), Engineer of Mines in Geology [E. M. (Geology)], and Metallurgical Engineer (Met. E.) respectively.

The degree of Metallurgical Engineer may be conferred upon a candidate who received the degree of Engineer of Mines in four or five years, and vice versa, provided such candidate completes an additional year's work at the School and presents a suitable thesis.

Students in the College of Science, Literature, and the Arts, in the College of Engineering and Mechanic Arts, and in the School of Technical and Applied Chemistry, who contemplate taking a degree in this School after completing their course, are recommended to select their electives with reference to as full a preparation as possible for the technical work of the course they propose to enter.

### SUMMARY OF EXPENSES

#### FIRST YEAR FIVE-YEAR COURSES

*Incidental fee . . . . .	\$55.00
Books (Estimated) . . . . .	20.00
Note books and supplies (Estimated) . . . . .	5.00

#### FRESHMAN YEAR

*Incidental fee . . . . .	\$55.00
Books (Estimated) . . . . .	25.00
Draughting instruments (Estimated) . . . . .	15.00
Note books and supplies (Estimated) . . . . .	5.00

#### SOPHOMORE YEAR

*Incidental fee . . . . .	\$55.00
Field work                      Surveying } (May 1st to July 1st) Geological } . . . . .	100.00 to 150.00
Books (Estimated) . . . . .	15.00
Note books and supplies (Estimated) . . . . .	5.00

#### JUNIOR YEAR

*Incidental fee . . . . .	\$55.00
Field Work                      Metallurgy } (May 1st to July 1st) Mining } . . . . .	175.00 to 250.00
Books (Estimated) . . . . .	30.00
Note books and supplies (Estimated) . . . . .	5.00

\*This fee covers all laboratory expenses.

## SENIOR YEAR

*Incidental fee.....	\$55.00
Books (Estimated).....	30.00
Note books and supplies (Estimated).....	5.00

In addition to the first semester incidental fee a deposit fee of \$5.00 is required to cover such items as annual rental of post office box, locker key deposit, condition examination fee, and late registration or late payment of fees. The unused balance will be returned at the end of the year.

## ORGANIZATION

The organization of the School of Mines dates back to 1889, when the General Faculty of the University recommended to the Board of Regents its establishment. In 1891 the Legislature of the State of Minnesota voted an appropriation for establishing and equipping the School. Two annual appropriations have since been made for its support. The Legislature of 1901 appropriated \$47,500 for a new School of Mines Building. In 1903 the Legislature appropriated \$25,000 for completing and equipping the School of Mines Building, and in 1905 an additional sum was provided for equipment.

## EXPERIMENT STATION

The School of Mines Experiment Station has been recently established to promote the development of the mining and mineral resources of the State, to assay specimens of ores, rocks, clays, and minerals; to make such assays free of charge for private parties subject to such regulations as the Board of Regents may deem necessary; to make mining and metallurgical experiments in the treatment of such substances and in the utilization of mining and metallurgical by-products; to investigate methods of mining and the use of explosives; to undertake such other mining and metallurgical problems as may seem desirable; to make all ore estimates for the Tax Commission and to do such other work along the lines above outlined as may be requested by other state departments. Co-operation has been effected with the Minnesota Geological Survey and the School of Chemistry.

The Experiment Station is prepared to assist citizens interested in these lines of work; to assay specimens of ore, rocks, clays, and minerals found within the State free of charge.

In submitting samples the sender must state the exact location where each sample was found, giving all possible additional information. This information, together with results of any test or analysis, will be on file and available to the public at the Office of the Station. Citizens desiring free assay privileges must agree to give accredited representatives of the School of Mines Experiment Station and of the Geological Survey access to the property should they desire to visit the same for purposes of examination and geological study.

\*This fee covers all laboratory expenses.

Correspondence will receive prompt attention, but consultations generally prove more satisfactory.

Each sample should be numbered for identification and bear the name and address of the sender. All shipments must be delivered to the Minnesota School of Mines, charges prepaid. Shipping tags will be furnished upon request.

Address all communications to William R. Appleby, Director, Minnesota School of Mines Experiment Station, The University of Minnesota, Minneapolis, Minnesota.

### THE SCHOOL OF MINES BUILDING

The School of Mines Building is designed to accommodate only the technical work of the School of Mines, as adequate building accommodations and equipment have already been furnished for Chemistry, Geology, Mineralogy, Drawing, and Mechanical and Electrical Engineering. The building is 150 feet long by 65 feet wide. It is a brick building three stories high. The lower floor is occupied by the assaying and metallurgical laboratories; the second floor contains offices, two large lecture rooms, a department library, and a museum; the third floor provides two quiz rooms, a large well-lighted draughting room, a thesis room, a dark room, and a blue print room. This building makes possible the development of the work already begun and offers facilities for more extended work along technical lines.

### LOCATION

The University of Minnesota is located in the city of Minneapolis, on the east bank of the Mississippi River. The School of Mines has its buildings and laboratories on the same ground. Students of the School of Mines have, therefore, all the opportunities afforded by a large university.

Minneapolis is surrounded by, and is in direct communication with, several important mining and smelting districts. As the city is a railroad center, all possible transportation facilities are available.

### FIELD WORK

Field work is conducted at the iron mines in the northern part of this State, in the copper and iron regions of Michigan, in the mines and smelters of Montana, Colorado, Utah, Arizona, and California, and in the coal mines of Pennsylvania.

At least one of these districts will be visited by each class, affording splendid opportunities for study and observation.

The field work in Mining and Metallurgy consists of two trips, one at the close of the sophomore year and one at the close of the junior year. For details, see pages 26 and 32.

Students must deposit with Cashier, at least two weeks before time set for departure of class, a sum sufficient to cover following expense items:

- 1st. Board and lodging.
- 2d. Necessary mine supplies.

Transportation and incidental expenses are not included in the above items and must be met individually.

A statement of expenditures will be rendered at the close of the work and any balance existing will be refunded.

The amount of deposit required will vary according to the locality visited, and will be announced each year when arrangements for the trip are completed.

### 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 the expenses of worthy students during sickness. The loans are to be repaid, without interest, at the earliest convenience of the recipients.

### LIBRARY

The library consists of about two thousand five hundred volumes. This number represents only those works that treat directly of mining and metallurgical subjects.

The School has a complete set of the leading mining and metallurgical journals and other similar books of reference. The leading periodicals are accessible to all. Constant references in lectures compel the student to keep himself well informed as to the latest methods, machinery, and changes in practice going on in his special line of work.

In addition to the above, many thousand volumes on Chemistry, Mineralogy, and Geology complete a most valuable working and reference library. A card index is kept of all articles of value and interest appearing in the leading periodicals.

### PHOTOGRAPHY

Photographs of surface and underground appliances, metallurgical plants, copies of drawings and other photographs are indispensable to the study of Mining and Metallurgy. With the report of his field work every student is expected to present photographs, as well as sketches, of

various objects under consideration. There is also a very complete set of lantern slides illustrating the principal methods of underground workings and metallurgical plants, at home and abroad. Several hundred slides have been made in the department's laboratory which bear directly on the work done in Minnesota and the neighboring northwest. Many valuable photographs are constantly being made. Blue prints of these are given students as illustrations. Much time, usually spent in making sketches and diagrams, is thus saved.

### CLASSIFICATION OF SUBJECTS

The work falls under the following subdivisions, supplemented by thorough courses in Mechanics, Mathematics, Physics, Chemistry, Mineralogy and Geology.

(a) *Assaying*—to determine if ore has value for treatment. (b) *Mining Engineering*—to furnish material for treatment. (c) *Ore Testing*—to determine best methods of treatment. (d) *Ore Dressing*—furnishing products for metallurgical treatment. (e) *Metallurgy*—smelting and refining ores and ore dressing products; reduction to metals.



# COURSES IN MINING ENGINEERING

## COURSES LEADING TO THE DEGREE OF E. M.

### FIRST YEAR—FIVE-YEAR COURSES

#### *First Semester*

Chemistry 1, General, six hours.  
Mathematics 1, Algebra, four hours  
Mathematics 3, Computation and Mensuration, three hours  
Mechanical Engineering 3, Foundry Practice, six hours (twelve weeks)  
Mechanical Engineering 2, Blacksmithing, six hours (six weeks)  
Rhetoric 15, four hours  
Spanish 11, Beginning, three hours

#### *Second Semester*

Chemistry 1, General, six hours  
Mathematics 2, Solid Geometry and Mensuration, three hours  
Mathematics 4, Mine Accounting, three hours  
Mechanical Engineering 2, Blacksmithing, six hours (twelve weeks)  
Mechanical Engineering 1, Carpentry, six hours (six weeks)  
Rhetoric 15, four hours  
Spanish 11, Beginning, three hours

### FRESHMAN YEAR—FOUR AND FIVE-YEAR COURSES

#### *First Semester*

Chemistry 2, General and Qualitative Analysis, five hours  
Drawing 11, Engineering Drawing, ten hours  
Mathematics 5, Algebra and Trigonometry, five hours  
Mineralogy 1, General Mineralogy, eight hours

#### *Second Semester*

Chemistry 3, Qualitative Analysis, seven hours  
Drawing 12, Engineering Drawing, eight hours  
Mathematics 6, Trigonometry and Analytic Geometry, five hours  
Metallurgy 1, Assaying, twelve hours  
Mineralogy 2, Physical Mineralogy, four hours

### SOPHOMORE YEAR—FOUR AND FIVE-YEAR COURSES

#### *First Semester*

Chemistry 4, Quantitative Analysis, eight hours  
Drawing 13, Descriptive Geometry, two hours  
Mathematics 7, Analytic Geometry and Calculus, five hours  
Metallurgy 2, General and Iron, three hours  
Mining 1, Mine Surveying, three hours  
Physics 1, General, three hours  
Physics 2, Laboratory Practice, two hours

#### *Second Semester*

Chemistry 5, Volumetric Analysis, eight hours  
Drawing 14, Drafting, four hours

Geology 3, Elements of Geology, three hours  
 Mathematics 8, Calculus, five hours  
 Metallurgy 3, Wrought Iron and Steel, three hours  
 Mining 1, Mine Surveying, three hours  
 Mining 2, one hour  
 Physics 3, General, three hours  
 Physics 4, Laboratory Practice, two hours  
 Field Work. Months of May, June, July, and August  
     Mining 3, Surveying, beginning about May 1st  
     Geology 3a, beginning about June 15th  
     Underground Mining Work, beginning about July 1st

JUNIOR YEAR—FOUR AND FIVE-YEAR COURSES

*First Semester*

Experimental Engineering 1, Strength of Materials, four hours  
 Geology 4, Historical and Economic Geology, three hours  
 Geology 9, Rock Study, four hours  
 Mechanics 9, five hours  
 Mechanics 11, Mine Plant, five hours  
 Metallurgy 4, Base Metals, four hours  
 Mining 4, five hours

*Second Semester*

Experimental Engineering 2, Steam Laboratory, four hours  
 Geology 10, Petrology, four hours  
 Mechanics 10, five hours  
 Metallurgy 5, Precious Metals, four hours  
 Mining 5, five hours  
 Mining 6, three hours  
 Mining 7, Ore Dressing, five hours  
 Mining 8, Mine Mapping, six hours  
 Field Work. Months of May, June, July, and August  
     Metallurgy 10, beginning about May 1st  
     Mining 9, beginning about May 15th  
     Underground Mining Work, beginning about June 1st

SENIOR YEAR—FOUR AND FIVE-YEAR COURSES

*First Semester*

Chemistry 14, Special Problems, eight hours  
 Electrical Engineering 4, Electric Power, five hours  
 Geology 12, Ore Deposits, four hours  
 Mechanics 13, Water Power, five hours  
 Mechanics 15, Engineering Construction, five hours  
 Metallurgy 6, Ore Testing, ten hours  
 Mining 10, Mining Engineering, five hours  
 Mining 13, Thesis, two hours

*Second Semester*

Chemistry 18, Iron and Steel Analysis, eight hours  
 Experimental Engineering 5, Experimental Laboratory, four hours  
 Geology 13, Special Problems, four hours

Mechanics 16, Mine Plant Design, six hours  
 Mining 11, Mining Engineering, five hours  
 Mining 12, Designs and Specifications, eight hours  
 Mining 13, Thesis, four hours

## COURSES LEADING TO THE DEGREE OF E. M. (GEOLOGY)

## FIRST YEAR

*First Semester*

Chemistry, 1, General, six hours  
 Drawing 11, Engineering Drawing, ten hours  
 French 1 or 3, three hours  
 or  
 German 1 or 4, three hours  
 Mathematics 1, Algebra, four hours  
 Rhetoric 15, four hours

*Second Semester*

Chemistry 1, General, six hours  
 Drawing 12, Engineering Drawing, eight hours  
 French 1 or 3, three hours  
 or  
 German 1 or 4, three hours  
 Mathematics 2, Solid Geometry and Mensuration, three hours  
 Rhetoric 15, four hours

## FRESHMAN YEAR

*First Semester*

Chemistry 2, General and Qualitative Analysis, five hours  
 French 2 or 5, three hours  
 or  
 German 3 or 7, three hours  
 Mathematics 5, Algebra and Trigonometry, five hours  
 Mineralogy 1, General Mineralogy, eight hours

*Second Semester*

Chemistry 3, Qualitative Analysis, seven hours  
 French 2 or 5, three hours  
 or  
 German 3 or 7, three hours  
 Mathematics 6, Trigonometry and Analytic Geometry, five hours  
 Metallurgy 1, Assaying, twelve hours  
 Mineralogy 2, Physical Mineralogy, four hours

## SOPHOMORE YEAR

*First Semester*

Chemistry 4, Quantitative Analysis, eight hours  
 Drawing 13, Descriptive Geometry, two hours  
 Mathematics 7, Analytic Geometry and Calculus, five hours  
 Mineralogy (Advanced), three hours  
 Mining 1, Mine Surveying, three hours

Physics 1, General, three hours

Physics 2, Laboratory Practice, two hours

*Second Semester*

Chemistry 5, Volumetric Analysis, eight hours

Drawing 14, Drafting, four hours

Geology 3, Elements of Geology, three hours

Mathematics 8, Calculus, five hours

Metallurgy, three hours

Mining 1, Mine Surveying, three hours

Mining 2, one hour

Physics 3, General, three hours

Physics 4, Laboratory Practice, two hours

Field Work. Months of May, June, July, and August

    Mining 3, Surveying, beginning about May 1st

    Geology 3a, beginning about June 15th

    Special Geological Field Work, beginning about July 1st

JUNIOR YEAR

*First Semester*

Geology 4, Historical and Economic Geology, three hours

Geology 9, Rock Study, four hours

Mechanics 9, five hours

Mining 4, five hours

Paleontology, three hours

Electives, ten hours

*Second Semester*

Geology 10, Petrology, four hours

Mechanics 10, five hours

Mining 5, five hours

Mining 6, three hours

Mining 7, Ore Dressing, five hours

Mining 8, Mine Mapping, six hours

Paleontology (Invertebrate), nine hours

Field Work. Months of May, June, July, and August

    Mining 9, beginning about May 15th

    Underground Mining Work, beginning about June 1st

    Practical Geology, beginning about July 1st

SENIOR YEAR

*First Semester*

Geology 12, Ore Deposits, four hours

Geology of Lake Superior District, five hours

General and Mining Law, three hours

Mechanics 13, Water Power, five hours

Mining 10, Mining Engineering, five hours

Thesis, ten hours

*Second Semester*

Geology 13, Special Problems, four hours

Geology 13a, Seminar in Ore Deposits, three hours

Geology of Western Mining Districts, five hours  
Mining 11, Mining Engineering, five hours  
Electives, five hours  
Thesis, ten hours

## DEPARTMENT OF MINING ENGINEERING

Mining Engineering extends through the sophomore, junior, and senior years. The subjects given, together with the sequence necessary, are treated in the accompanying outline of the course.

In the senior year, problems in hoisting, hauling, pumping, ventilation, and similar subjects become an important part of the work.

### DESIGNS AND SPECIFICATIONS

The student makes, in connection with his thesis work, working drawings of mine cars, skips, and other parts of mine equipment that are usually designed and made at the mine.

### MINE SURVEYING

The work in Surveying is given in the sophomore year and is designed solely for mining engineers.

The work begins with the elements of plane surveying with special reference to the computations necessary, followed by the higher theoretical work in plane surveying and its application to the problems met in underground surveying. Beginning with the first Monday in May, the class devotes seven weeks to field work at some convenient point on the Mesabe or Vermilion Range. The exact location will be announced in March of each year.

The students will be divided into squads of two to four. Each squad must provide itself with a 6-foot steel tape graduated to hundredths. The duration of the course will be seven weeks (5½ days of 8 hours each constitute a week). Each student will be required to complete satisfactorily the following exercises and surveys:

1. Chaining and taping
2. Compass work
3. Adjustment and use of wye and dumpy levels
4. Adjustment of mining transit
5. Reading angles
6. Traverse with transit and steel tape
7. Azimuth traverse with stadia
8. Determination of meridian, latitude, and time by solar and stellar observations
9. Survey of mining claim according to the regulations of the U. S. Government
10. Measurement of earthwork

11. Laying out railroad tangents, curves, and crossings
12. Exercises in plane table work and geological surveying
13. The survey of a mine.

A full equipment of surveying instruments of the latest and best makes is furnished to each squad for this work.

This is followed by a course in Mine Mapping during the second semester of junior year.

Students who furnish satisfactory evidence of proficiency in this work may be given credit therefor. The department, however, reserves the right in any case to require such students to take a theoretical or a practical examination or both.

## FIELD WORK IN MINING

### *Sophomore Year*

After the close of the field work in Geology (last two weeks in June) members of the sophomore class are required to engage for six weeks in underground mining work on the Minnesota or Michigan iron ranges, for which they may receive wages.

### *Junior Year*

Upon termination of the junior field work in Metallurgy (about May fifteenth), the members of the junior class, who are candidates for the degree of Engineer of Mines, are required to devote two weeks to the study of mine plant and mine operation under the direction of the department. This work will be given in one of the leading western metal mining districts, exact location to be announced in April of each year. Thereafter, during the months of June, July, and August, the student is required to spend at least eight weeks in actual underground mining work in the west, for which he may receive wages. The department will render all possible assistance in locating students in the camps of their choice. Each student must keep a diary and record therein, in minute detail, all observations and sketches. He must in person submit this diary to the department on date of reopening of field work. In judging the character of the student's field work, equal importance will be attached to the completed report and to the original field notes. The department reserves the right to reject notebooks considered below the standard that should be demanded of candidates for senior work.

Field work will reopen at the School of Mines, Tuesday, September 10, 1912. No senior will be registered after that date. Registration will cover Field Work, Electric Power, and Geology.

The final reports covering Field Work in Mine Mapping, Mining, and Metallurgy must be prepared at the School of Mines under the direct supervision of the departments concerned.

The program covering this work is as follows: Metallurgy, September 10th-17th inclusive; Mining, September 18th-30th.

On September 30th all seniors who expect to graduate must register for the remaining subjects. Prior to this date the student must submit a typewritten report on field work fully illustrated with sketches drawn to

scale covering all the metallurgical and milling operations, together with details of plant and equipment. Final registration will not be allowed until after final report on field work is made. All final reports, therefore, must be presented on or before September 30. These reports shall become the property of the School.

The completion of sophomore and junior field work is a requisite for graduation, and satisfactory evidence thereof must be submitted to the department. Should a student, for sufficient reason, fail to complete this work in regular course, he may, with the consent of the department, be permitted to pursue his regular studies. In all such cases, however, the degree will be withheld until all field work is completed.

### ORE DRESSING

The lectures and recitations in Ore Dressing extend through the second semester of the junior year, and comprise the detailed study of ore dressing and concentrating machinery, together with the study of typical combinations of dressing machines as found in the several mining districts of the United States.

In connection with the theoretical work, the ore dressing and testing plant of the school is utilized for practical illustrations.

# COURSES IN METALLURGY

## COURSES LEADING TO THE DEGREE OF MET. E.

### FIRST YEAR—FIVE-YEAR COURSES

#### *First Semester*

Chemistry 1, General, six hours  
Mathematics 1, Algebra, four hours  
Mathematics 3, Computation and Mensuration, three hours  
Mechanical Engineering 3, Foundry Practice, six hours (twelve weeks)  
Mechanical Engineering 2, Blacksmithing, six hours (six weeks)  
Rhetoric 15, four hours  
Spanish 11, Beginning, three hours

#### *Second Semester*

Chemistry 1, General, six hours  
Mathematics 2, Solid Geometry and Mensuration, three hours  
Mathematics 4, Mine Accounting, three hours  
Mechanical Engineering 2, Blacksmithing, six hours (twelve weeks)  
Mechanical Engineering 1, Carpentry, six hours (six weeks)  
Rhetoric 15, four hours  
Spanish 11, Beginning, three hours

### FRESHMAN YEAR—FOUR AND FIVE-YEAR COURSES

#### *First Semester*

Chemistry 2, General and Qualitative Analysis, five hours  
Drawing 11, Engineering Drawing, ten hours  
Mathematics 5, Algebra and Trigonometry, five hours  
Mineralogy 1, General Mineralogy, eight hours

#### *Second Semester*

Chemistry 3, Qualitative Analysis, seven hours  
Drawing 12, Engineering Drawing, eight hours  
Mathematics 6, Trigonometry and Analytic Geometry, five hours  
Metallurgy 1, Assaying, twelve hours  
Mineralogy 2, Physical Mineralogy, four hours

### SOPHOMORE YEAR—FOUR AND FIVE-YEAR COURSES

#### *First Semester*

Chemistry 4, Quantitative Analysis, eight hours  
Drawing 13, Descriptive Geometry, two hours  
Mathematics 7, Analytic Geometry and Calculus, five hours  
Metallurgy 2, General and Iron, three hours  
Mining 1, Mine Surveying, three hours  
Physics 1, General, three hours  
Physics 2, Laboratory Practice, two hours

#### *Second Semester*

Chemistry 5, Volumetric Analysis, eight hours  
Drawing 14, Drafting, four hours



Geology 3, Elements of Geology, three hours  
 Mathematics 8, Calculus, five hours  
 Metallurgy 3, Wrought Iron and Steel, three hours  
 Mining 1, Mine Surveying, three hours  
 Mining 2, one hour  
 Physics 3, General, three hours  
 Physics 4, Laboratory Practice, two hours  
 Field Work. Months of May, June, July, and August  
     Mining 3, Surveying, beginning about May 1st  
     Geology 3a, beginning about June 15th  
     Underground Mining Work, beginning about July 1st

JUNIOR YEAR—FOUR AND FIVE-YEAR COURSES

*First Semester*

Experimental Engineering 1, Strength of Materials, four hours  
 Geology 4, Historical and Economic Geology, three hours  
 Geology 9, Rock Study, four hours  
 Mechanics 9, five hours  
 Mechanics 11, Mine Plant, five hours  
 Metallurgy 4, Base Metals, four hours  
 Mining 4, five hours

*Second Semester*

Experimental Engineering 2, Steam Laboratory, four hours  
 Geology 10, Petrology, four hours  
 Mechanics 10, five hours  
 Metallurgy 5, Precious Metals, four hours  
 Mining 5, five hours  
 Mining 6, three hours  
 Mining 7, Ore Dressing, five hours  
 Mining 8, Mine Mapping, six hours  
 Field Work. Months of May, June, July and August  
     Metallurgy 10, beginning about May 1st  
     Mining 9, beginning about May 15th  
     Smelter Work, beginning about June 1st

SENIOR YEAR—FOUR AND FIVE-YEAR COURSES

*First Semester*

Chemistry 14, Special Problems, eight hours  
 Electrical Engineering 4, Electric Power, five hours  
 Mechanics 13, Water Power, five hours  
 Mechanics 15, Engineering Construction, five hours  
 Metallurgy 6, Ore Testing, ten hours  
 Metallurgy 7, Special Problems, eight hours  
 Metallurgy 8, Electro-Metallurgy, three hours

*Second Semester*

Chemistry 16, Electro-Chemical Analysis, six hours  
 Chemistry 18, Iron and Steel Analysis, eight hours  
 Experimental Engineering 5, Experimental Laboratory, four hours

Mechanics 18, Mill and Smelter Design, six hours  
Metallurgy 9, Metallography, six hours  
Metallurgy 11, Thesis, ten hours

### DEPARTMENT OF METALLURGY

This department is well supplied with representative ores of all the most important metals, drawings of furnaces, models and samples of all the different furnace products. The lectures treat of all the principal methods now in use.

The practical work consists in visits to smelting and refining works which are accessible. The work in Metallurgy extends through three years.

### ASSAYING

The lectures treat of and describe apparatus, reagents, assay furnaces, fuels, etc., in connection with this subject. The principles of assaying and sampling are fully explained. A collection of representative ores of various metals with a collection of corresponding slags are shown, and instruction is given as to nature and quantity of fluxes. Special and rapid methods of testing slags and metallurgical products as employed in western smelting works are emphasized.

The laboratory course includes preparing and testing reagents, making cupels, etc., and assaying samples of ores, furnace and mill products, and bullion; different charges are tried and practical conclusions drawn.

Great importance is attached to the work in the laboratory. A large, well-ventilated furnace room in which are located muffle and crucible furnaces, and another room of similar dimensions equipped with desks, pulp and bead balances, afford accommodations to a large number of students. Ores of various metals of known value are given the students, who are required to make up the necessary charges and submit their reports in detail. This work is offered to students completing the necessary courses in Mineralogy and Chemistry.

The Assay Laboratories are located in the School of Mines Building and consist of:

1st. Preparation room. This room is 62 feet long by 36 feet wide and accommodates 66 students. Here samples and reagents are weighed preparatory to assaying. Each student is furnished with a complete set of apparatus, including a pulp balance for individual use. All operations are therefore conducted with the greatest economy of time and entirely apart from the furnace room. The separation of the preparation room from the furnace room is of greatest importance. Nearly all ores are crushed and pulverized by suitable machines run by electric motors. Students are compelled to pulverize by hand a minimum number of samples, thereby saving much time for extended and advanced work in special lines.

2d. Furnace room. This room is 60 feet long by 42 feet wide. The high ceiling and special ventilation provided for this room make it a most comfortable assay furnace room. It provides for the accommodation of twelve double-decked muffle furnaces, twenty-four crucible furnaces, and twelve gasoline furnaces. After the sample has been placed in a suitable vessel for fusion, it is taken to the furnace room, which communicates directly with the preparation room.

3d. Balance room. This room is 31 feet long by 16 feet wide. In this room are various types of balances for accurately weighing gold and silver beads and bullion. The room is specially lighted by electric cove lights from the ceiling. The balances are placed on heavy brick piers which are independent of the walls of the building.

### ORE TESTING

The lectures treat of the use and purposes of all the machinery connected with the subject, supplemented by detailed drawings.

There are complete testing works connected with the department where the student may see the working of, and handle for himself, crushers, rolls, Huntington mill, concentrating machinery, such as vanners, buddles, jigs, pan for amalgamation, settlers, reverberatory furnaces for oxidizing and oxidizing-chloridizing roasts, leaching and chlorination plants, as well as sizing apparatus and hydraulic separators. Sufficiently large amounts of ore are given to make the necessary tests upon the different machines and the students report the best method of treatment. The first semester of the senior year is devoted to instruction and laboratory work, and is required of students both in Mining and Metallurgy.

The ore testing works meet educational as well as commercial needs.

*Educational.*—The ore testing plant acquaints the student with the construction and manipulation of the principal typical machines used in the leading ore dressing establishments of the country. It is here that students in Mining and Metallurgical Engineering get the requisite practical experience. They handle all machines and operate on sufficiently large amounts of material to determine the methods best suited to a given ore to extract the largest amount of metal with the least possible loss.

*Commercial.*—Ore testing works are an important factor in mining and metallurgical projects. The commercial object is to determine the best method of treating a given ore so as to yield the largest percentage of the metal it contains at the least possible cost. Samples varying from 500 pounds to car load lots can be treated by various methods.

The ore testing works are located on the east bank of the Mississippi between the Great Northern and Northern Pacific railroads. Located at this point on the University campus, it offers the very best facilities for both educational and commercial purposes.

As the funds appropriated for the erection of such a plant were sufficient to purchase only the necessary machinery, the business men of

Minneapolis generously provided a suitable building. This building, 94 by 66 feet, is built of brick and stone.

*Machinery.*—The plant contains all the machinery necessary to illustrate the various processes of ore testing, viz.: A Bridgman mechanical sampler, size B; a link belt bucket elevator; a pulley feeder complete; a pair of 12½ by 12 geared rolls complete; a four compartment spitzkasten; a three compartment Hartz jig; a Collum jig complete with cone for driving; a three and a half foot Huntington mill complete; a three stamp mill, 275-pound stamps; a five stamp mill, 850-pound stamps; a Challenge automatic feeder for five-stamp battery; a suspended Challenge feeder for three-stamp battery; a Tulloch feeder for Huntington mill; a single deck buddle, twelve feet in diameter; a four-foot plain belt Frue vanner; a Cammett concentrator; a Hooper pneumatic concentrator; a Century drop motion jig; a three-foot amalgamating pan; a five-foot settler; a Bruckner roasting furnace, with fire box on wheels; a chlorination barrel; a battery tightener; a two-horsepower vertical boiler; a steam drying pan; three trommels, with driving arrangement and gears; a one thousand pound Reedy elevator, complete with worm gear; two overhead crawls, each with eighty-foot track; one-ton pulley block; a quarter-ton pulley block; a scoop car, with flat wheels; two twenty-horse power electric motors; three MacDermott automatic samplers, etc.

### FIELD WORK IN METALLURGY

At the end of junior year opportunity is given the student to study metallurgical operations at one or more smelting works. This work will begin about May 1st. Not over two weeks' time will be devoted to this work.

Upon termination of the junior field work in Metallurgy and two weeks in Mining (not later than June 1st), the members of the junior class who are candidates for the degree of Metallurgical Engineer, are required to spend at least eight weeks in practical work in one or more of the smelters of the West, for which he may receive wages. The department will render all possible assistance in locating students in the camps of their choice. Each student must keep a diary and record therein, in minute detail, all observations and sketches. He must, in person, submit this diary to the department on date of reopening of field work. In judging the character of the student's field work equal importance will be attached to the completed report and to the original field notes. The department reserves the right to reject notebooks considered below the standard that should be demanded of candidates for senior work.

Field work will reopen at the School of Mines, Tuesday, September 10, 1912. No senior will be registered after that date. Registration will cover Field Work, Electric Power, and Geology.

The final reports covering field work in Metallurgy and Mining must be prepared at the School of Mines under the direct supervision of the departments concerned.

The program covering this work is as follows: Metallurgy, September 10th-21st, inclusive; Mining, September 23d-30th.

On September 30th all seniors who expect to graduate must register for the remaining subjects. Prior to this date the student must submit a typewritten report on field work fully illustrated with sketches drawn to scale covering all the metallurgical and milling operations, together with details of plant and equipment. Final registration will not be allowed until after final report on field work is made. All final reports, therefore, must be presented on or before September 30th. These reports shall become the property of the School.

# DEPARTMENTAL STATEMENTS

## CHEMISTRY

GEORGE B. FRANKFORTER, Ph.D., Professor	114 Chemistry Building
CHARLES F. SIDENER, B.S., Professor	203 Chemistry Building
FRANCIS C. FRARY, Ph.D., Assistant Professor	108 Chemistry Building
PAUL H. M-P. BRINTON, Instructor	205 Chemistry Building
LILLIAN COHEN, M.S., Instructor	106 Chemistry Building

1. General Chemistry Miss COHEN  
\*Six credits (six hours per week); both semesters. Required of first-year students, five-year courses.

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. General and Qualitative Analysis Messrs. FRANKFORTER and BRINTON  
Four credits (three lectures, two laboratory hours per week); first semester. Required of freshmen.

The course includes special general chemistry and the reactions of the metals as applied to their separation and identification.

3. Qualitative Analysis Messrs. FRANKFORTER and BRINTON  
Four credits (one lecture, six laboratory hours per week); second semester. Open to students completing Course 2. Required of freshmen.

The work in this course will include examination of alloys, minerals, slags, and other compounds.

4. Quantitative Analysis Mr. SIDENER and ASSISTANTS  
Five credits (two lectures, six laboratory hours per week); first semester. Open to students completing Course 3. Required of sophomores.

The course includes an introduction to quantitative and a beginning of gravimetric analysis.

5. Volumetric Analysis Mr. SIDENER and ASSISTANTS  
Five credits (two lectures, six laboratory hours per week); second semester. Open to students completing Course 4. Required of sophomores.

The course includes an introduction to volumetric determinations with a discussion of standard solutions and the necessary stoichiometric calculations.

14. Special Problems Mr. SIDENER and ASSISTANTS  
Five credits (two lectures, six laboratory hours per week); first semester. Open to students completing Course 5. Required of seniors in E. M. and Met. E. Courses.

The course includes the working out of various mineralogical, technological, and metallurgical problems, with work on ores of base metals, limestones, slags, etc.

\*A credit is one recitation or lecture hour per week, per semester. Two laboratory hours are equal to one credit.

16. Electro-Chemical Analysis Mr. FRARY  
 Four credits (two lectures, four laboratory hours per week); second semester. Open to students completing Course 14. Required of seniors in Met. E. Courses.

The course includes the qualitative and quantitative separation of metals by electrolysis.

18. Iron and Steel Analysis Mr. SIDENER and ASSISTANTS  
 Five credits (two lectures, six laboratory hours per week); second semester. Open to students completing Course 14. Required of seniors in E. M. and Met. E. Courses.

The course includes the rapid determination of iron by the various methods, as well as the determination of associated elements, sulphur, phosphorus, silicon, manganese, carbon, and others.

### DRAWING AND DESCRIPTIVE GEOMETRY

WILLIAM H. KIRCHNER, B.S., Professor

209 Main Engineering Building

FRANK B. ROWLEY, B.S., M.E., Instructor

209 Main Engineering Building

ROBERT W. FRENCH, B.S., Instructor

209 Main Engineering Building

\_\_\_\_\_, Instructor

11. Engineering Drawing Messrs. KIRCHNER and FRENCH  
 Five credits (ten drafting hours per week); first semester. Required of freshmen in E. M. and Met. E. Courses, and of first-year students in E. M. (Geol.) Course.

Sketching, lettering, representation, parallel and radial projection, elements of engineering drawing, representation of details of machines and structures, interpretation of working drawings.

12. Engineering Drawing Mr. FRENCH  
 Four credits (eight drafting hours per week); second semester. Open to students completing Course 11. Required of freshmen in E. M. and Met. E. Courses, and of first-year students in E. M. (Geol.) Course.

Continuation of Course 11 as outlined above. The elements of general drafting, mechanical drawing as a language. Lines, views, dimensions, standards, signs, abbreviations, and explanatory notes. Maps and sketches. Brush and pen conventions.

13. Descriptive Geometry Mr. KIRCHNER  
 Two credits (two lectures per week); first semester. Open to students completing Course 12 and Mathematics 6. Required of sophomores.

Projection—central and special cases, principles and applications, representation of lines, planes, and solids, and of their relations; tangencies, intersections, and developments. Recitations, lectures, and solution of problems.

14. Drafting Messrs. ROWLEY and FRENCH  
 Two credits (four drafting hours per week); second semester. Open to students completing Course 13. Required of sophomores.  
 Graphics, machine drafting, and structural drafting. Instruction in drafting room methods.

### ELECTRICAL ENGINEERING

GEORGE D. SHEPARDSON, M.A., M.E., Professor  
 30 Electrical Engineering Building  
 WILLIAM T. RYAN, E.E., Assistant Professor  
 14 Electrical Engineering Building

4. Electric Power Mr. RYAN  
 Three credits (one lecture, four laboratory hours per week); first semester. Open to students completing Physics 3 and 4. Required of seniors in E. M. and Met. E. Courses.  
 Elements of theory and practice of electrical measurements, wiring, dynamos, motors, and electric lighting.

### EXPERIMENTAL ENGINEERING

WILLIAM H. KAVANAUGH, M.E., Professor, 107 Experimental Engineering Building  
 CHARLES F. SHOOP, B.S., Assistant Professor, 107 Experimental Engineering Building

1. Strength of Materials Mr. SHOOP  
 Two credits (four laboratory hours per week); first semester. Open to students taking Mechanics 9. Required of juniors in E. M. and Met. E. Courses.  
 Laboratory work, investigating the strength and physical qualities of iron, steel, brass, copper, belting, chains, beams, brick, and stone.
2. Steam Laboratory Mr. SHOOP  
 Two credits (four laboratory hours per week); second semester. Open to students completing Course 1. Required of juniors in E. M. and Met. E. Courses.  
 Exercises in valve setting, indicator practice, calibration of steam gauges, efficiency of screws and hoists.
5. Experimental Laboratory Mr. KAVANAUGH  
 Two credits (four laboratory hours per week); second semester. Open to students completing Course 2. Required of seniors in E. M. and Met. E. Courses.  
 Hydraulic measurements. Calibration of weirs, nozzles, meters, and other hydraulic apparatus, calorimetry; tests of pumps, engines, and boilers.



## FRENCH AND SPANISH

CHARLES W. BENTON, M.A., Litt.D., Professor of Romance Languages	200 Folwell Hall
CHARLES M. ANDRIST, M.L., Professor	228 Folwell Hall
JULES T. FRELIN, B.A., Assistant Professor	228 Folwell Hall

## FRENCH

1. Beginning Messrs. ANDRIST and FRELIN  
Six credits (three hours per week); both semesters. Open to first-year students in E. M. (Geol.) Course.  
French Grammar and Reader; modern texts.
2. Intermediate Mr. ANDRIST  
Six credits (three hours per week); both semesters. Open to students completing Course 1.  
Modern texts will be read, including some of the works of Coppee, Merimee, Daudet, Scribe, etc.
3. Advanced Grammar and Composition Mr. ANDRIST  
Six credits (three hours per week); both semesters. Open to students in E. M. (Geol.) Course who enter with two years of French.  
Readings from modern authors, including selections from Coppee, Feuillet, and Sandeau.
5. The Classical Period of French Literature Mr. BENTON  
Six credits (three hours per week); both semesters. Open to students completing Course 2 or 3.  
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, Moliere, La Fontaine, etc. Compositions.

## SPANISH

11. Beginning Mr. FRELIN  
Six credits (three hours per week); both semesters. Required of first-year students in E. M. and Met. E. Courses.  
Monsanto and Languellier, *Spanish Course-Josselyn*; Worman, *First Spanish Book*; Bransby, *Spanish Reader*.

## GERMAN

JOHN G. MOORE, B.A., Professor of German	210 Folwell Hall
HANS JUERGENSEN, M.A., Assistant Professor	215 Folwell Hall
OSCAR C. BURKHARD, M.A., Assistant Professor	214 Folwell Hall
RICHARD WISCHKAEMPER, M.A., Instructor	216 Folwell Hall

1. Beginning Messrs. JUERGENSEN, BURKHARD, and WISCHKAEMPER  
Six credits (three hours per week); both semesters. Open to first-year students in E. M. (Geol.) Course.  
Pronunciation, grammar, conversation and composition; selected reading in easy prose and verse.

3. Scientific Intermediate Messrs. JUERGENSEN; BURKHARD, and WISCHKAEMPER  
 Six credits (three hours per week); both semesters. Open to students completing Course 1.

This course is arranged to meet the peculiar needs of students of the School of Mines.  
 Text: Merckel's *Bilder aus der Ingenieurtechnik*.

4. Prose and Poetry Messrs. MOORE, JUERGENSEN, BURKHARD, and WISCHKAEMPER

Six credits (three hours per week); both semesters. Open to first-year students in E. M. (Geol.) Course who enter with two years of German.

Stern's *Aus deutschen Meisterwerken*; Goethe's *Gedichte*; Heine's *Buch der Lieder*. Geography, history, and legend. Review of German grammar throughout the year. This course may be supplemented.

7. Advanced Scientific Reading Messrs. JUERGENSEN and BURKHARD  
 Six credits (three hours per week); both semesters. Open to students who have taken Course 3 or 4.

Reading of scientific monographs and periodicals.

## MECHANICAL ENGINEERING

- JOHN J. FLATHER, Ph.B., M.E., Professor  
 12 Mechanical Engineering Building  
 S. CARL SHIPLEY, B.S., M.E., Assistant Professor  
 18 Mechanical Engineering Building  
 WILLIAM H. RICHARDS, Instructor  
 28 Mechanical Engineering Building  
 EDWARD QUIGLEY, Instructor  
 Mechanical Engineering Building  
 PETER PETERSON, Instructor  
 Mechanical Engineering Building

1. Carpentry Mr. RICHARDS  
 Four credits (six hours per week, six weeks); second semester.  
 Required of first-year students, five-year E. M. and Met. E. Courses.  
 Wood working, use of tools; lathe and bench work. Patterns for moulding, core boxes, flasks. Lectures and practice.
2. Blacksmithing Messrs. SHIPLEY and QUIGLEY  
 Two credits (six hours per week, eighteen weeks); first semester.  
 Required of first-year students, five-year E. M. and Met. E. Courses.  
 Use of tools, forging, welding, tool dressing, tempering. Lectures and practice.
3. Foundry Practice Mr. PETERSON  
 Three credits (six hours per week, twelve weeks); first semester.  
 Required of first-year students, five-year E. M. and Met. E. Courses.  
 Moulding, casting, mixing metals, brass work, and core making. Shop practice, recitations, and lectures.

## MECHANICS AND MATHEMATICS

ELTING H. COMSTOCK, M.S., Professor 22 School of Mines Building  
 EDWIN M. LAMBERT, M.E., Assistant Professor

JULIUS H. SANTO, E.M., Instructor 22 School of Mines Building

1. Algebra Mr. SANTO  
 Four credits (four recitations per week); first semester. Required of first-year students, five-year courses.  
 Review of Elementary Algebra, equations with one, two, or more unknown quantities, inequalities, involution and evolution, theory of exponents, surds, quadratic equations, both numerical and literal, equations with one or more unknown quantities that can be solved by means of quadratic equations, progressions.
2. Solid Geometry and Mensuration Mr. SANTO  
 Three credits (three recitations per week); second semester. Required of first-year students, five-year courses.  
 Demonstrations of most important theorems, volumes, approximate volumes, prismatic formula, etc.
3. Computation and Mensuration Mr. COMSTOCK  
 Three credits (three recitations per week); first semester. Required of first-year students, five-year E. M. and Met. E. Courses.  
 Approximate computation, graphs and graphical computation, logarithms and logarithmic computation, areas and approximations of areas.
4. Elementary Mine Accounting Mr. LAMBERT  
 Three credits (three lectures per week); second semester. Required of first-year students, five-year E. M. and Met. E. Courses.  
 Elementary accounting in general, applications to mine accounts; primary records, labor, supply, mine and mill products, and fund sheets; secondary records, invoice, labor and supply, mine and mill cost sheets, trial balance, etc.
5. Algebra and Trigonometry Mr. SANTO  
 Five credits (five recitations per week); first semester. Required of freshmen.  
 Functions and functional notation, factors and roots of general quadratics, factor and remainder theorems, factors and values of functions, determinants, development of functions and undetermined coefficients, derived functions, theory of equations, permutations and combinations; trigonometric ratios, right triangles, general definitions of trigonometric functions, analytic relations, addition formulas, etc.
6. Trigonometry and Analytic Geometry Mr. SANTO  
 Five credits (five recitations per week); second semester. Open to students completing Course 5. Required of freshmen.  
 Trigonometric equations, oblique triangles, spherical formulas and solution of spherical triangles; systems of co-ordinates, loci, straight line, transformations, equations of conics, properties of conics.
7. Analytic Geometry and Calculus Mr. LAMBERT  
 Five credits (five recitations per week); first semester. Open to students completing Course 6. Required of sophomores.

General equation of second degree, higher plane curves, co-ordinates in space, point, plane, straight line, quadric surfaces; nature of differentiation, elementary forms, geometric applications, rates, successive differentiation, maxima and minima, elementary integration, expansion of functions, indeterminate forms, partial derivatives, change of variable.

## 8. Calculus

Mr. LAMBERT

Five credits (five recitations per week); second semester. Open to students completing Course 7. Required of sophomores.

Applications continued, rational fractions, rationalization, formulas of reduction, multiple integration, various systems of co-ordinates, approximate integration, hyperbolic functions, some differential equations of mechanics; adjustments of observations.

## 9. Mechanics

Mr. LAMBERT

Five credits (five recitations per week); first semester. Open to students completing Course 8, and Physics 3. Required of juniors.

Statics and dynamics, rectilinear, circular, curvilinear motion in general, dynamics of rigid bodies, impact, work and energy; elementary mechanics of materials.

## 10. Mechanics

Mr. LAMBERT

Five credits (five recitations per week); second semester. Open to students completing Course 9. Required of juniors.

Mechanical and elastic properties of materials of construction; beams, shafts, columns, reinforced concrete, hollow cylinders and spheres, rollers, plates; theory of internal stress.

## 11. Mine Plant

Mr. COMSTOCK

Five credits (five lectures per week); first semester. Open to students taking Course 9. Required of juniors in E. M. and Met. E. Courses.

Discussion of the machinery and appurtenances employed in the equipment of mines. Hoisting, pumping, air compression, headframes, ore bins, etc.

## 13. Hydraulics and Water Power

Mr. COMSTOCK

Five credits (five recitations and lectures per week); first semester. Open to students completing Course 10. Required of seniors.

Laws of the equilibrium, pressure and flow of liquids, estimation of power to be developed at a power site, dams and appendages, theory of water wheels and turbines, number and type of units to install, speed control, power house equipment, transmission.

## 15. Engineering Construction

Messrs. COMSTOCK and LAMBERT

Three credits (one lecture, four drafting hours per week); first semester. Open to students completing Course 10. Required of seniors in E. M. and Met. E. Courses.

Analytic and graphic resolution of stresses in framed structures, loads, stresses in mining structures, design of mining structures.

## 16. Mine Plant Design

Mr. COMSTOCK

Three credits (six drafting hours per week); second semester. Open to students completing Course 15. Required of seniors in E. M. Course.

A study of power possibilities, costs, etc., and design of a power plant, surface equipment, and structures in connection with thesis work.

## 18. Mill and Smelter Design

Mr. COMSTOCK

Three credits (six drafting hours per week); second semester. Open to students completing Course 15. Required of seniors in Met. E. Courses.

A study of the construction and mechanical equipment of mills and smelters in connection with thesis work.

## METALLURGY

WILLIAM R. APPLEBY, M.A., Professor	27 School of Mines Building
PETER CHRISTIANSON, B.S., E.M., Professor	25 School of Mines Building
LEVI B. PEASE, M.S., Professor	26 School of Mines Building
EDMUND NEWTON, E.M., Instructor	25 School of Mines Building

- 1. Assaying** Mr. APPLEBY and ASSISTANTS  
 Eight credits (four lectures and eight laboratory hours per week); second semester. Open to students completing Mineralogy 1. Required of freshmen in E. M. and Met. E. Courses.  
 Determination of values of ores, metallurgical products and bullion.
- 2. General Metallurgy and Metallurgy of Iron** Mr. CHRISTIANSON  
 Three credits (three lectures per week); first semester. Open to students completing Course 1. Required of sophomores in E. M. and Met. E. Courses.  
 Including the subjects of combustion, fuels, refractory materials, and furnaces. Lectures and recitations on metallurgy of iron.
- 3. Metallurgy of Wrought Iron and Steel** Mr. CHRISTIANSON  
 Three credits (three lectures per week); second semester. Open to students completing Course 2. Required of sophomores in E. M. and Met. E. Courses.  
 Consideration of the principles of manufacture, details of plant construction, and chemical and physical phenomena.
- 4. Metallurgy of the Base Metals** Mr. PEASE  
 Four credits (four lectures per week); first semester. Open to students completing Course 3. Required of juniors in E. M. and Met. E. Courses.  
 Lead, copper, zinc, and mercury. Consideration of smelting methods and principles involved in refining methods.
- 5. Metallurgy of the Precious Metals** Mr. PEASE  
 Four credits (four lectures per week); second semester. Open to students completing Course 4. Required of juniors in E. M. and Met. E. Courses.  
 Gold, silver, and platinum. Methods and principles of cyanidation, chlorination, amalgamation, and lixiviation as applied to the treatment of the above.
- 6. Ore Testing** Mr. APPLEBY and ASSISTANTS  
 Six credits (two lectures and eight laboratory hours per week); first semester. Open to students completing Course 5 and Mining 7. Required of seniors in E. M. and Met. E. Courses.  
 Determination of methods of ore treatment, stamping, concentration, cyanidation, roasting, chlorination, lixiviation, and amalgamation.

7. Special Problems in Metallurgy      Mr. APPLEBY and ASSISTANTS  
Four credits (eight laboratory hours per week); first semester. Open to students taking Course 6. Required of seniors in Met. E. Course. Research work preparatory to thesis.
8. Electro-Metallurgy      Mr. CHRISTIANSON  
Three credits (three lectures per week); first semester. Open to students completing Course 5. Required of seniors in Met. E. Courses.  
A study of the reduction of ores, refining of metals and production of metals by electrolytic deposition; and the use of the electric furnace for smelting of ores, refining metals, and the manufacture of refractory alloys.
9. Metallography      Mr. NEWTON  
Four credits (two lectures, four laboratory hours per week); second semester. Open to students completing Course 3. Required of seniors in Met. E. Courses.  
A study of the microstructure of metals and alloys as affected by heat and industrial treatments, together with the influence of changes of structure on their properties. Special attention is given to siderurgic products.
10. Field Work in Metallurgy      Mr. APPLEBY and ASSISTANTS  
Two credits (eight hours per day in field for seven days); June following second semester. Open to students completing Course 5. Required of juniors.  
Study of metallurgical operations at smelters and mills. Detailed report is required covering plants visited.
11. Thesis and Specifications      Messrs. APPLEBY and COMSTOCK  
Five credits (ten hours, conference and laboratory); second semester. Open to students completing Course 9. Required of seniors in Met. E. Courses.  
Detailed investigations of ore treatment, with report including designs and specifications for suitable plants.

## MINING ENGINEERING

CHARLES E. VAN BARNEVELD, B.A., Sc., E.M., Professor  
28 School of Mines Building

EDWARD P. MCCARTY, E.M., Professor      28 School of Mines Building

MERTON S. KINGSTON, E.M., Assistant Professor  
28 School of Mines Building

ERVIN W. MCCULLOUGH, E.M., Instructor  
28 School of Mines Building

1. Mine Surveying      Messrs. MCCARTY and KINGSTON  
Six credits (three lectures per week); both semesters. Open to students completing Mathematics 6. Required of sophomores.  
Computation, platting, and problems with special reference to mine surveying.

2. Mining Mr. VAN BARNEVELD  
One credit (one lecture per week); second semester. Required of sophomores.  
Explosives and blasting.
3. Field Work Mr. VAN BARNEVELD and ASSISTANTS  
Eight credits (eight hours a day for seven weeks); second semester. Open to students completing Mining 1. Required of sophomores.  
Practice in general surveying during month of May. Practice in underground surveying during first two weeks of June. This work is given on the Iron Ranges.
4. Mining Mr. VAN BARNEVELD  
Five credits (five lectures per week); first semester. Open to students completing Course 2. Required of juniors.  
Mode of occurrence of ore bodies; prospecting, drilling and blasting. Use of churn and diamond drill.
5. Mining Mr. VAN BARNEVELD  
Five credits (five lectures per week); second semester. Open to students completing Course 4. Required of juniors.  
Shaft-sinking, tunneling, drifting, stoping, timbering.
6. Mining Mr. VAN BARNEVELD  
Three credits (three lectures per week); second semester. Open to students completing Course 4. Required of juniors.  
Methods of metal mining. Methods of coal mining. Hydraulic mining. Quarrying.
7. Ore Dressing Mr. McCARTY  
Five credits (five lectures per week); second semester. Open to students completing sophomore work. Required of juniors.  
Mechanical preparation of ore for the markets, for metallurgical treatment, etc.
8. Mine Mapping Mr. KINGSTON  
Three credits (six drafting hours per week); second semester. Open to students completing Course 3. Required of juniors.  
Mine mapping in accordance with prevalent practice in the western mining districts. Ore and stripping estimates and mine maps based on Mesabe Range practice.
9. Practical Mining Mr. VAN BARNEVELD and ASSISTANTS  
Eight credits (eight hours per day for ten weeks); summer vacation. Open to students completing Course 6. Required of juniors.  
Study of mining operations. Mine plant and equipment and practical mining work a mine to be selected by department during months of May, June, July, and August.
10. Mining and Mining Engineering Mr. VAN BARNEVELD  
Five credits (five lectures per week); first semester. Open to students completing Mining 9. Required of seniors in E. M. Courses.  
Mining machinery, underground transportation, hoisting, pumping, and ventilation. Electricity applied to mining.

11. Mining and Mining Engineering Mr. VAN BARNEVELD  
 Five credits (five lectures per week); second semester. Open to students completing Mining 10. Required of seniors in E. M. Courses.  
 Mine management, mine accounts, mining law, mining accidents, examination of a mining property, sampling ore reserves.
12. Designs and Specifications Messrs. VAN BARNEVELD and COMSTOCK  
 Four credits (eight drafting hours per week); second semester. Open only to seniors in regular standing. Required of seniors in E. M. Courses.  
 Designs of mine cars, skips, head-frames, etc., in connection with thesis work.
13. Thesis Messrs. VAN BARNEVELD, McCARTY, and McCULLOUGH  
 Two and four credits (two and four-hour conferences); both semesters. Open only to seniors in regular standing. Required of seniors in E. M. Courses.  
 Conference with individual students. This work is based upon a review of the preceding technical work and field work.

### MINERALOGY AND GEOLOGY

WILLIAM H. EMMONS, Ph.D., Professor	108 Pillsbury Hall
FRANK F. GROUT, M.S., Assistant Professor	102 Pillsbury Hall
FREDERICK W. SARDESON, Ph.D., Assistant Professor	103 Pillsbury Hall
OLIVER BOWLES, M.A., Instructor	102 Pillsbury Hall
EDGAR K. SOPER, B.A., Instructor	112 Pillsbury Hall

1. General Mineralogy Messrs. GROUT and BOWLES  
 Six credits (four lectures, four laboratory hours per week); first semester. Required of freshmen.  
 The development of the systems of crystallization; the morphological, physical, and chemical characters of minerals; classification and description of common minerals; laboratory work, involving the application of chemical and blowpipe tests to the identification of species, with demonstrations; determination of minerals by physical properties, and sight identification. The occurrence, genesis, and use of minerals.
2. Physical Mineralogy Messrs. GROUT and BOWLES  
 Three credits (two lectures, two laboratory hours per week); second semester. Open to students completing Course 1. Required of freshmen.  
 A continuation of Course 1, special attention being given to economic and rock-forming minerals. Laboratory work, mineral determination and sight identification; introduction to the use of the goniometer and microscope. Reference reading and field excursions.
3. Elements of Geology Mr. SOPER  
 Three credits (three lectures per week); second semester. Required of sophomores.  
 The course is a synoptical treatment of the materials of the earth and of geologic processes; physiographic, structural, and dynamic geology, with a brief introduction to historical geology. Geologic structure is emphasized and the lectures are reinforced by the study of geologic maps.



## 3a. Field Work

Mr. SOPER

One credit (first two weeks in June). Required of sophomores.

A two-week excursion to the Iron Ranges for practice in field methods, such as tracing contacts, working out structures, and constructing and interpreting geologic maps.

## 4. Historical and Economic Geology

Messrs. EMMONS and SOPER

Three credits (three lectures a week); first semester. Required of juniors.

(a) Historical Geology. The geologic history of North America, with special reference to its syngenetic mineral deposits.

(b) Economic Geology. A study of the occurrence, genesis, distribution, and uses of the non-metallic minerals of economic value, including a discussion of the geologic guides to prospecting for these deposits.

## 9. Elements of Rock Study

Messrs. GROUT and BOWLES

Two credits (four laboratory hours per week); first semester. Open to students completing Course 3. Required of juniors.

The composition of the earth's crust, a general treatment of the origin, occurrence, and genesis of igneous, sedimentary and metamorphic rocks; their mineral and chemical composition; their structure, texture and physical constitution; the alteration of rocks; the classification of igneous rocks; an introduction to the use of the microscope.

## 10. Petrology

Messrs. GROUT and BOWLES

Two credits (four laboratory hours per week); second semester. Open to students completing Course 9. Required of juniors.

Laboratory work, lectures, and reference reading. The identification of minerals and rocks by optical study; a study of igneous rocks, followed by that of crystalline schists and metamorphic rocks; the origin and classification of rocks.

## 12. Ore Deposits

Messrs. EMMONS and SOPER

Four credits (four lectures per week); first semester. Open to students completing Course 10. Required of seniors.

A discussion of ore deposition; the nature, distribution, and genesis of metalliferous ore deposits of the United States. A study of the relation of ore deposits to geologic structure and of the changes which ore deposits undergo through oxidation and related processes. The course includes laboratory work illustrating the use of mine maps and geologic cross sections through mines, and detailed laboratory studies of reports on mining districts.

## 13. Special Problems in Ore Deposits

Messrs. EMMONS and SOPER

Two credits (four laboratory hours per week); second semester. Open to students completing Course 12. Required of seniors in E. M. and E. M. (Geol.) Courses.

Lectures on field and laboratory methods. A study of metallogenic epochs and metallographic provinces, particularly those of the United States.

## 13a. Seminar in Ore Deposits

Mr. EMMONS

Three credits (three hours per week); second semester. Open to students completing Course 12. Required of seniors in E. M. (Geol.) Course.

Selected problems. Development of methods of research.

## PHYSICS

JOHN ZELENY, Ph.D., Professor

15 Physics Building

JAMES COXE SANDERSON, Ph.D., Instructor

32 Physics Building

## 1. General Physics

Messrs. JOHN ZELENY and SANDERSON

Three credits (three hours per week); first semester. Open to students completing Mathematics 6. Required of sophomores.

Mechanics of solids and fluids, heat and sound. This is the first part of an elementary course in Physics, designed for those who do not intend to pursue the subject longer than one year. The course is experimental rather than mathematical and gives the student a general knowledge of the fundamental principles of the subject. There will be one experimental lecture and two recitations each week.

## 2. General Laboratory Practice

Mr. SANDERSON

One credit (two hours per week); first semester. Open to students taking Course 1. Required of sophomores.

Physical measurements in the mechanics of solids and fluids, and in heat and sound, giving the student a knowledge of experimental methods.

## 3. General Physics

Messrs. JOHN ZELENY and SANDERSON

Three credits (three hours per week); second semester. Open to students completing Course 1. Required of sophomores.

Light, electricity and magnetism. This is the second part of the elementary course begun under Course 1. 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. SANDERSON

One credit (two hours per week); second semester. Open to students taking Course 3. Required of sophomores.

Physical measurements in light, electricity, and magnetism, giving the student a knowledge of experimental methods.

## RHETORIC

JOSEPH M. THOMAS, Ph.D., Professor

310 Folwell Hall

WARREN T. POWELL, M.A., Instructor

410 Folwell Hall

## 15. Rhetoric and Composition

Mr. POWELL

Eight credits (four hours per week); both semesters. Required of all freshmen.

This course is planned with special reference to the needs of engineering students. Practical training in writing will be given, and in connection with the written work the student will be required to study the work of those writers who have handled scientific subjects with clearness and power.

To broaden the scope of the student's knowledge and interests a course of outside reading will also be required.

## STUDENTS

### SENIORS—24

Bjorge, Guy N., Duluth  
Coventry, Edward D., Duluth  
Dickson, Robert H., Minneapolis  
Hagstrom, Leonard J., Minneapolis  
Harrington, Geo. L., Minneapolis  
Hewitt, Ezra A., Minneapolis  
Kennedy, Charles T., Minneapolis  
Knox, Lafayette F., St. Paul  
Kremer, Edward G., Grand Rapids  
Lea, John, Zumbrota  
Lewis, John W., Minneapolis  
McAdams, Howard R., Minneapolis

Martin, Lynn U., Grand Meadow  
O'Brien, J. Chas., St. Paul  
Olson, Walter S., St. Paul  
Perry, Joe B., Minneapolis  
Prouty, Roswell W., St. Paul  
Quinn, Max F., Minneapolis  
Stevens, Howard E., Stillwater  
Taylor, W. L., Dundas  
Victor, Albin F., Lindstrom  
Wallinder, Arthur, Duluth  
Walter, Rollie B., Delano  
Woodis, Clark N., Amboy

### JUNIORS—17

Coady, Leo J., Minneapolis  
Cohen, Julius M., St. Paul  
Ely, Robert H., Duluth  
Hammond, Arthur H., Minneapolis  
Hanson, J. Bernard, Minneapolis  
Harvey, Harry J., Duluth  
Hondrum, Olaf, Bemidji  
Ladd, Greeley, Minneapolis

Larson, John Ed., Minneapolis  
McCormack, Clyde P., Minneapolis  
Michie, Roy G., Montevideo  
Nissen, Arvid E., Minneapolis  
Ofsthun, Norman H., Glenwood  
Quinlan, Howard, St. Paul  
Walker, Charles A., Brainerd  
Wasson, Harold J., Minneapolis

Williams, James H., Virginia

### SOPHOMORES—14

Amidon, Richard G., Minneapolis  
Bierman, Alfred, Litchfield  
Eidemiller, Howard N., St. Paul  
Haugan, Albert C., Hanska  
Johnson, Roy R., St. Louis Park  
Larson, Ernest L., Akeley  
Nordale, Carl E., Minneapolis

Potter, Orrin W., St. Paul  
Ravicz, Louis, Minneapolis  
Richard, Charles L., Stillwater  
Schultze, Max F., Walker  
Van Cleve, R. H., Minneapolis  
Vorck, Charles R., St. Paul  
Williams, Paul S., Lake Benton

### FRESHMEN—22

Buresh, Charles E., Lakefield  
Butler, William V., Little Falls  
Chatfield, William E., Minneapolis  
Christenson, Alfred, Madelia  
Clark, Malcolm W., Northfield  
Coller, Walter A., St. Paul  
Collins, Leon T., Pine Island  
Dopp, Lawrence, Ashland, Wis.  
Glass, Archie, Duluth  
Harmon, Sidney E., St. Paul  
Heilig, Louis S., Minneapolis

Johnson, Fred C., Willmar  
Kerr, Charles D., Minneapolis  
Lee, Martinus, Minneapolis  
Lee, Oscar, St. Paul  
Montgomery, Daniel, Worthington  
Neerland, Herman, Minneapolis  
Nord, Harry H., St. Paul  
Sanchez, Richard M., Tarma, Peru  
Stene, James, Minneapolis  
Urquhart, George K., St. Paul  
Wade, Henry H., Hopkins

## FIRST YEAR CLASS—21

Aronson, Sam, St. Paul	McDermid, Archie J., Duluth
Barskey, Philip M., Minneapolis	McHardy, Roy H., Minneapolis
Capser, Leo W., St. Paul	Marr, Ralph C., Minneapolis
Carroll, Lawrence, Sparta, Wis.	Marr, William N., Minneapolis
Dovre, Adolph, Sleepy Eye	Murphy, Vernon R., Centuria, Wis.
Ells, George J., Minneapolis	Neumeier, Frederick G., Stillwater
Evleth, Everett B., St. Paul	Oglesby, Fred B., Valley City, N. D.
Josephson, Samuel, Minneapolis	Ostrom, George E., Stillwater
Krogh, Alvin T., Minneapolis	Sweetman, Edwin, Aitkin
Levy, Martinio, Sao Paulo, Brazil	Tollefson, Russell, Minneapolis
	Williams, Maurice W., Minneapolis

# The University of Minnesota

## THE COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

1912-1913



BULLETIN OF THE UNIVERSITY OF MINNESOTA  
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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 and one for the Summer Session 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, the college or school of the University concerning which information is desired should be stated. Address,

**THE REGISTRAR,**

The University of Minnesota,

Minneapolis, Minnesota

## TABLE OF CONTENTS

For Alphabetical Index, see Page 153

The University.....	3-8
Calendar.....	4-5
Entrance Examinations.....	6
Colleges and Schools.....	7
The Board of Regents.....	8
The Executive Officers.....	8
The College of Science, Literature, and the Arts.....	9-155
Faculty of Instruction.....	9-15
Faculty Committees.....	15
Admission.....	16-20
Equipment.....	21-23
Fees.....	24
Scholarships, Loans, and Prizes.....	24-27
Student Organizations and Publications.....	30-31
Courses of Study.....	32-42
Departmental Statements.....	43-136
Students.....	137-152
Index.....	153

1912							1913																		
<b>JULY</b>							<b>JANUARY</b>							<b>JULY</b>											
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<b>DECEMBER</b>							<b>JUNE</b>							<b>DECEMBER</b>											
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# UNIVERSITY CALENDAR

1912-1913

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.

1912

September	3	Tuesday	Registration closes except for new students
September	3-10	Week	Fees payable except for new students
September	10-16	Week	Entrance examinations, registration of new students, and payment of fees
September	11-17	Week	Military encampment of cadets
September	18	Wednesday	First semester begins
Sept. 30 - Oct.	5	Week	Second semester condition examinations
November	27	Wednesday	Thanksgiving recess begins 6:00 p. m.
December	2	Monday	Thanksgiving recess ends 8:00 a. m.
December	20	Friday	Christmas vacation begins 6:00 p. m.

1913

January	7	Tuesday	Christmas vacation ends 8:00 a. m.
January	21	Tuesday	Registration for second semester closes
January	27	Monday	Final examinations begin
January	28	Tuesday	Payment of fees for second semester closes
February	5	Wednesday	Second semester begins
February	12	Wednesday	Lincoln's Birthday: a holiday
February	13	Thursday	First semester class reports due
February	22	Saturday	Washington's Birthday: a holiday
March	19	Wednesday	Easter recess begins 6:00 p. m.
March	27	Thursday	Easter recess ends 8:00 a. m.
March 31-Apr.	5	Week	First semester condition examinations
May	30	Friday	Decoration Day: a holiday
June	2	Monday	Final examinations begin
June	7	Saturday	Second semester closes
June	8	Sunday	Baccalaureate service
June	9	Monday	Senior class day exercises
June	11	Wednesday	Alumni Day
June	12	Thursday	Forty-first Annual Commencement
June	13	Friday	Summer vacation begins

The University year for 1913-14 will begin Tuesday, September 9.

*Program of Entrance Examinations 1912-13*

Entrance examinations for admission to the various colleges of the University will be conducted according to the following schedule, in Room 205, Library Building, unless otherwise specified.

Any student finding a conflict in his program should report to the Registrar for adjustment.

Tuesday,	Sept. 10	9 a. m.	Astronomy, Botany, Geology, Chemistry, Physiography, Zoology
		2 p. m.	American Government, History, Physics, Economics, Commercial Geography
Wednesday,	Sept. 11	9 a. m.	English
		2 p. m.	German, French, Latin, Scandinavian
Thursday,	Sept. 12	9 a. m.	Elementary Algebra
		2 p. m.	Higher Algebra
Friday,	Sept. 13	9 a. m.	Plane Geometry
		2 p. m.	Solid Geometry

A representative of each department will be at the office of the head of the department each forenoon of entrance examination week from 9 to 12 to give information and advice.

## THE UNIVERSITY

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 COLLEGE OF FORESTRY, including—

FOREST EXPERIMENT STATIONS AT ITASCA AND CLOQUET

THE SCHOOL OF AGRICULTURE, including—

THE DAIRY SCHOOL

THE SHORT COURSE FOR FARMERS

TEACHERS' SUMMER TRAINING SCHOOL

THE SCHOOL OF TRACTION ENGINEERING

THE SCHOOL OF AGRICULTURE, CROOKSTON

THE SCHOOL OF AGRICULTURE, MORRIS

THE EXPERIMENT STATIONS, including—

THE MAIN STATION AT ST. ANTHONY PARK

THE SUB-STATION AT CROOKSTON

THE SUB-STATION AT GRAND RAPIDS

THE SUB-STATION AT DULUTH

THE SUB-STATION AT WASECA

THE SUB-STATION AT ZUMBRA HEIGHTS

AGRICULTURAL EXTENSION

BUREAU OF RESEARCH IN AGRICULTURAL ECONOMICS

THE LAW SCHOOL

THE COLLEGE OF MEDICINE AND SURGERY, including—

THE SCHOOL FOR NURSES

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE SCHOOL OF MINES, including—

MINNESOTA SCHOOL OF MINES EXPERIMENT STATION

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

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THE GEOLOGICAL AND NATURAL HISTORY SURVEY

## THE BOARD OF REGENTS

The Hon. JOHN LIND, Minneapolis, President of the Board	-	-	1914
GEORGE EDGAR VINCENT, Ph.D., LL.D., Minneapolis	-	-	<i>Ex-Officio</i>
The President of the University			
The Hon. ADOLPH O. EBERHART, Mankato	-	-	<i>Ex-Officio</i>
The Governor of the State			
The Hon. C. G. SCHULZ, St. Paul	-	-	<i>Ex-Officio</i>
The State Superintendent of Public Instruction			
The Hon. W. J. MAYO, Rochester	-	-	1913
The Hon. MILTON M. WILLIAMS, Little Falls	-	-	1913
The Hon. HENRY B. HOVLAND, Duluth	-	-	1914
The Hon. A. E. RICE, Willmar	-	-	1915
The Hon. CHARLES L. SOMMERS, St. Paul	-	-	1915
The Hon. B. F. NELSON, Minneapolis	-	-	1916
The Hon. PIERCE BUTLER, St. Paul	-	-	1916
The Hon. CHARLES A. SMITH, Minneapolis	-	-	1916

---

## EXECUTIVE OFFICERS

GEORGE EDGAR VINCENT, Ph.D., LL.D., President  
 ERNEST B. PIERCE, B.A., Registrar  
 GEORGE H. HAYES, University Comptroller and Secretary of the Board  
     of Regents  
 JAMES T. GEROULD, B.A., Librarian  
 JOHN F. DOWNEY, M.A., C.E., Dean of the College of Science, Literature,  
     and the Arts  
 FRANCIS C. SHENEHON, C.E., Dean of the College of Engineering and  
     Mechanic Arts  
 ALBERT F. WOODS, M.A., Dean and Director of the Department of  
     Agriculture  
 WILLIAM R. VANCE, Ph.D., LL.B., Dean of the Law School  
 FRANK FAIRCHILD WESBROOK, M.A., M.D., C.M., Dean of the College of  
     Medicine and Surgery  
 ALFRED OWRE, B.A., M.D., C.M., D.M.D., Dean of the College of Den-  
     tistry  
 FREDERICK J. WULLING, Ph.D., LL.M., Dean of the College of Pharmacy  
 WILLIAM R. APFLEBY, M.A., Dean of the School of Mines  
 GEORGE B. FRANKFORTER, M.A., Ph.D., Dean of the School of Chemistry  
 GEORGE F. JAMES, Ph.D., Dean of the College of Education  
 HENRY T. EDDY, C.E., Ph.D., LL.D., Dean of the Graduate School  
 ADA L. COMSTOCK, M.A., Dean of Women

# COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

## FACULTY

- GEORGE EDGAR VINCENT, Ph.D., LL.D., President 1005 5th St. S. E.  
CYRUS NORTROP, LL.D., President Emeritus 519 10th Ave. S. E.  
JOHN F. DOWNEY, M.A., C.E., Dean, Professor of Mathematics, Head  
of Department of Mathematics 1115 5th St. S. E.  
\*ADA LOUISE COMSTOCK, M.A., Dean of Women, Professor of Rhetoric  
West Sanford Hall  
MARGARET SWEENEY, Ph.D., Dean of Women, Professor of Rhetoric  
WILLIAM W. FOLWELL, LL.D., Emeritus Professor of Political Science  
1020 5th St. S. E.  
JOHN G. MOORE, B.A., Professor of German, Head of Department of  
German 2810 University Ave. S. E.  
CHARLES WILLIAM BENTON, Litt.D., Professor of the French Language  
and Literature, Head of Department of Romance Languages  
516 9th Ave. S. E.  
MARIA L. SANFORD, Emeritus Professor of Rhetoric  
1050 13th Ave. S. E.  
JOHN CORRIN HUTCHINSON, B.A., Professor of Greek, Head of Depart-  
ment of Greek 3806 Blaisdell Ave.  
JOHN SINCLAIR CLARK, B.A., Professor of Latin Language and Litera-  
ture 729 10th Ave. S. E.  
HENRY F. NACHTRIEB, B.S., Professor of Animal Biology, Head of  
Department of Animal Biology 905 6th St. S. E.  
DAVID L. KIEHLE, LL.D., Emeritus Professor of Education  
266 25th St. N., Portland, Ore.  
GEORGE BELL FRANKFORTER, Ph.D., Professor of Chemistry, Head of  
Department of Chemistry 525 E. River Road  
\*WILLIS MASON WEST, M.A., Professor of History, Head of Department  
of History 1314 6th St. S. E.  
FRANCIS P. LEAVENWORTH, M.A., Professor of Astronomy, Head of  
Department of Astronomy 317 17th Ave. S. E.  
FREDERICK KLAEBER, Ph.D., Professor of Comparative and English  
Philology, Head of Department of Comparative Philology  
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JOSEPH BROWN PIKE, M.A., Professor of Latin, Head of Department of  
Latin 525 10th Ave. S. E.

\*Resigned June, 1912.

- CHARLES PETER SIGERFOOS, Ph.D., Professor of Zoology  
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- RICHARD BURTON, Ph.D., Professor of English Literature, Head of  
Department of English 2109 Blaisdell Ave.
- JOHN ZELENY, Ph.D., Professor of Physics, Head of Department of  
Physics 712 10th Ave. S. E.
- SAMUEL G. SMITH, Ph.D., LL.D., Professor of Sociology, Head of Depart-  
ment of Sociology and Anthropology The Aberdeen, St. Paul
- GEORGE FRANCIS JAMES, Ph.D., Professor of Education, Head of Depart-  
ment of Education 316 10th Ave. S. E.
- NORMAN WILDE, Ph.D., Professor of Philosophy and Psychology, Head  
of Department of Philosophy and Psychology 901 6th St. S. E.
- \*CARL SCHLENKER, B.A., Professor of German 514 11th Ave. S. E.
- FRANK MALOY ANDERSON, M.A., Professor of History  
1629 University Ave. S. E.
- ALBERT ERNEST JENKS, Ph.D., Professor of Anthropology  
825 5th St. S. E.
- WILLIAM A. SCHAPER, Ph.D., Professor of Political Science  
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- CHARLES FREDERICK SIDENER, B.S., Professor of Chemistry  
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- JOHN EVENSON GRANRUD, Ph.D., Professor of Latin  
605 Delaware St. S. E.
- CHARLES ALBERT SAVAGE, Ph.D., Professor of Greek  
618 12th Ave. S. E.

\*Absent on leave 1912-13.

†Absent on leave from February 1, 1912 to February 1, 1913.

- ANTHONY ZELENY, Ph.D., Professor of Physics 613 Fulton St. S. E.  
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 LOUIS JOSEPH COOKE, M.D., Medical Examiner and Director of Gym-  
 nasium 909 6th St. S. E.  
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 DANIEL FORD, M.A., Assistant Professor of Rhetoric 1206 7th St. S. E.  
 FRANCIS C. FRARY, M.S., Assistant Professor of Chemistry  
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 JULES T. FRELIN, B.A., Assistant Professor of French 112 Church St. S. E.

\*Term of service expires September 1, 1912.

†Absent on leave 1912-13.

‡Until June, 1912.

- FRANK F. GROUT, M.S., Assistant Professor of Geology and Mineralogy  
1202 7th St. S. E.
- EVERHART P. HARDING, Ph.D., Assistant Professor of Chemistry  
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- JAMES BURT MINER, Ph.D., Assistant Professor of Psychology  
428 Walnut St. S. E.
- THOMAS WARNER MITCHELL, Ph.D., Assistant Professor of Business  
Administration 1092 15th Ave. S. E.
- CHARLES W. NICHOLS, M.A., Assistant Professor of Rhetoric  
220 Harvard St. S. E.
- EDWARD E. NICHOLSON, M.A., Assistant Professor of Chemistry  
914 7th St. S. E.
- WALLACE NOTESTEIN, Ph.D., Assistant Professor of History  
112 Church St. S. E.
- OSCAR W. OESTLUND, Ph.D., Assistant Professor of Animal Biology  
3616 Lyndale Ave. S.
- \*GEORGE PORTER PAINE, M.A., Assistant Professor of Mathematics  
1818 Melbourne Ave. S. E.
- FRANK M. RARIG, M.A., Assistant Professor of Rhetoric  
63 Barton Ave. S. E.
- SAMUEL N. REEP, Ph.D., Assistant Professor of Sociology  
602 Essex St. S. E.
- FREDERICK W. SARDESON, Ph.D., Assistant Professor of Paleontology  
414 Harvard St. S. E.
- ROYAL R. SHUMWAY, B.A., Assistant Professor of Mathematics  
716 12th Ave. S. E.
- DAVID FERDINAND SWENSON, B.S., Assistant Professor of Philosophy  
3101 16th Ave. S.
- ANTHONY LISPENARD UNDERHILL, Ph.D., Assistant Professor of Mathe-  
matics 615 6th St. S. E.
- LOUIS D. H. WELD, Ph.D., Assistant Professor, Extension Work in Eco-  
nomics and Political Science
- HENRY L. WILLIAMS, M.D., Director of Athletics 1313 5th St. S. E.
- HERBERT H. WOODROW, Ph.D., Assistant Professor of Psychology  
806 4th St. S. E.
- JEREMIAH S. YOUNG, Ph.D., Assistant Professor of Political Science  
1120 6th St. S. E.
- LINCOLN K. ADKINS, M.S., Instructor in Mathematics
- ARTHUR B. BALCOM, B.S., M.A., Instructor, Extension Work in Eco-  
nomics and Political Science

\*Resigned June, 1912.



- FRANK W. BLISS, M.S., Instructor in Chemistry 511 15th Ave. S. E.  
 OLIVER BOWLBS, M.A., Instructor in Geology 321 19th Ave. S. E.  
 \*ANNA M. BUTNER, Director of Physical Training for Women 65 11th St. S.  
 EDITH CLEMENTS, Ph.D., Instructor in Botany 800 4th St. S. E.  
 WILFORD O. CLURE, B.A., LL.B., Instructor in Rhetoric 209 Pleasant St. S. E.  
 LILLIAN COHEN, M.S., Instructor in Chemistry 415 E. 14th St.  
 JAMES DAVIES, Ph.D., Instructor in German 616 12th Ave. S. E.  
 RENE M. DELAMARE, B.L., Instructor in French 501 8th Ave. S. E.  
 AUSTIN S. EDWARDS, Ph.D., Instructor in Psychology  
 WILLIAM K. FOSTER, LL.M., Assistant Director of Gymnasium 210 Pleasant St. S. E.  
 J: THEODORE GEISSENDOERFER, Ph.D., Instructor in German  
 HALDOR B. GISLASON, B.A., LL.B., Instructor in Rhetoric 217 Harvard St. S. E.  
 WILLIAM H. HUNTER, Ph.D., Instructor in Chemistry 112 Church St. S. E.  
 CHARLES E. JOHNSON, M.A., Instructor in Comparative Anatomy of Vertebrates 714 16th Ave. S. E.  
 A. WOLFRED JOHNSTON, M.A., Instructor in Geology 417 Union St. S. E.  
 JANE KENNEDY, M.D., Medical Supervisor of Women 1778 Humboldt Ave. S.  
 ALFRED E. KOENIG, M.A., Instructor in German 327 6th Ave. S. E.  
 LOUIS W. MCKEEHAN, Ph.D., Instructor in Physics  
 CARL M. MELOM, M.A., Instructor in Spanish and French 112 Arthur Ave. S. E.  
 LEON METZINGER, Ph.B., Instructor in German 319 Oak St. S. E.  
 JAMES S. MIKESH, B.A., Instructor in Mathematics 427 12th Ave. S. E.  
 ALICE M. MISZ, M.A., Instructor in Botany 651 Otsego St., St. Paul  
 GEORGE NORTON NORTHROP, M.A., Instructor in English 2213 Grand Ave.  
 LILLIAN L. NYE, M.A., Instructor in Chemistry 1625 7th St. S. E.  
 LUTHER WOOD PARKER, M.A., Instructor in French  
 EARL PETTIJOHN, B.A., B.S. Chem., Instructor in Chemistry 3012 James Ave. S.  
 ANNA H. PHELAN, Ph.D., Instructor in Rhetoric 612 10th Ave. S. E.  
 RAYMOND V. PHELAN, Ph.D., Instructor, Extension Work in Economics 612 10th Ave. S. E.  
 RUTH SHEPARD PHELPS, M.A., Instructor in Italian East Sanford Hall  
 WARREN T. POWELL, M.A., Instructor in Rhetoric 517 Essex St. S. E.  
 CHARLES H. PRESTON, B.A., Instructor, Extension Work in Economics and Political Science 94 Malcolm Ave. S. E.  
 CARL LEO RAHN, Ph.B., Instructor in Psychology 119 Union St. S. E.  
 BERT A. ROSE, Instructor of Band 710 7th St. S. E.  
 JAMES C. SANDERSON, Ph.D., Instructor in Physics 710 13th Ave. S. E.  
 THEOPHILUS H. SCHROEDEL, B.A., Instructor in German 800 5th St. S. E.

\*Until June, 1912.

RUFUS C. SHELLNBARGER, M.A., Instructor in Physics	1105 6th St. S. E.
CHARLES E. SKINNER, M.A., Instructor in Rhetoric	517 Essex St. S. E.
HERMON L. SLOBIN, Ph.D., Instructor in Mathematics	2541 Harriet Ave.
EDGAR K. SOPER, B.A., Instructor in Geology	417 Union St. S. E.
WOLDEMAR M. STERNBERG, B.S. in Chem. Eng., Instructor in Chemistry	2109 Lyndale Ave. S.
HELEN A. WHITNEY, M.A., Instructor in Rhetoric	4432 Stevens Ave.
RICHARD WISCHKAEMPER, M.A., Instructor in German	504 Beacon St. S. E.

## ASSISTANTS AND SCHOLARS (STUDENT HELPERS)

C. ROY ADAMS, M.A., Scholar in Economics and Political Science
DORIS L. BROWN, B.A., Scholar in Mathematics
LOUISE BRUHN, B.A., Scholar in German
ARTHUR C. BURKHARD, B.A., Assistant in German
H. ARNO DAUM, Scholar in Physics
HOMER A. DESMARAIS, B.A., Assistant in French
ZOE DONALDSON, Scholar in Rhetoric
STANLEY GILLAM, Scholar in Economics and Political Science
GLENNE W. GOLDSMITH, B.A., Scholar in Botany
HAROLD HANSEN, Assistant in Biology
GEORGE L. HARRINGTON, Scholar in Geology and Mineralogy
RUTH E. HERMANN, B.A., Scholar in Biology
LOUISE E. JENSEN, B.A., Scholar in Botany
PAUL E. KLOPSTEG, B.S., Assistant in Physics
HENRY O. LEE, Clerk for Committee on Students' Work
ELTA LENART, B.A., Scholar in Rhetoric
HYME LOSSE, B.A., Assistant in French
DAVIDA McCASLIN, B.A., Scholar in Rhetoric
SOLVEIG M. MAGELSSSEN, Scholar in Rhetoric
CHARLES A. MANEY, Scholar in Astronomy
WILLIAM A. McMANIGAL, B.A., Scholar in Sociology and Anthropology
BENJAMIN PALMER, B.A., Scholar in Economics and Political Science
RICHARD PURCELL, M.A., Scholar in History
MARY K. REELY, Scholar in Rhetoric
HELEN A. SANBORN, B.A., Assistant in Biology
CLIFFORD G. SCHULTZ, B.A., Scholar in History
WILLIAM YALE SMILEY, M.A., Scholar in Sociology and Anthropology
AUDREY N. SMITH, M.A., Scholar in Sociology and Anthropology
IRA SWANMAN, Scholar in Biology
ESTHER L. SWENSON, B.A., Scholar in English
CHARLOTTE WAUGH, B.A., Scholar in Botany
HULDAH L. WINSTED, B.A., Scholar in Geology and Mineralogy
HAZEL WITCHIE, B.A., Theme Clerk in Department of Rhetoric
HARTIE E. ZABEL, B.A., Scholar in Comparative Philology
BENJAMIN F. ZUEHL, M.A., Scholar in Philosophy and Psychology

## FACULTY COMMITTEES

For 1912-13

*Admission of Students whose Credentials are Irregular.*—Messrs. SWENSON (320 Folwell Hall), DOWNEY, H. (203 Pillsbury Hall), UNDERHILL (121 Folwell Hall).

*Advanced Standing.*—Messrs. SAVAGE (112 Folwell Hall), ZELENY, A. (20 Physics Building), ALLIN (Mechanic Arts Building).

*Students' Work.*—Messrs. NICHOLSON (104 Chemistry Building,) WHITE (110 Library Building), Miss SWEENEY (313 Folwell Hall), Messrs. WILDE (323 Folwell Hall), BUSSEY (122 Folwell Hall).

*Program.*—Messrs. ANDERSON, CRAIG, GROUT, ROSENDAHL, COOK, E. A.

*Curriculum.*—Messrs. ROBINSON, SIGERFOOS, ERIKSON, PIKE, BAUER, JENKS, SCHLENKER.

*Accredited Schools.*—Messrs. CLEMENTS, YOUNG, LEHNERTS.

*Bulletin.*—Messrs. DOWNEY, J. F., STOMBERG, PIERCE.

## ADMISSION\*

Admission is either by certificate or by examination. In either case candidates must present:

(1) Four years of English, or three years of English accompanied by four years of one foreign language.

(2) A major series of three or more units and a minor series of two units, each series chosen from one of the admission groups, B, C, D, E. Either the major or the minor series must be in Mathematics, and both shall not be in the same group. To form a language series, at least two units of the same language must be offered.

(3) Enough additional work to make in all fifteen units, of which not more than four may be in Group F.

No candidate will be admitted with less than fifteen units of the required grade. The Enrollment Committee may, however, authorize substitutions in the list of required subjects to the extent of one unit, in case the candidate did not have an opportunity to take all the required subjects.

Certificates from the College Entrance Examination Board and from the State High School Board are accepted under either plan of admission as satisfying the scholarship requirement.

No new student will be admitted to the work of the second semester unless he bring from another college a certificate of advanced standing, showing his qualifications to continue the second semester's work.

### 1. ADMISSION TO THE FRESHMAN CLASS BY EXAMINATION

Entrance examinations are offered at the University during the opening week of the University year. Candidates must pass examinations in all subjects specified above, except such as may be covered by College Entrance Examination Board or State High School Board certificates.

### 2. ADMISSION TO THE FRESHMAN CLASS BY CERTIFICATE

The following are admitted to the freshman class by certificate:

(a) Graduates of a four-year course of a Minnesota State High School or other accredited school in Minnesota, provided they meet the general requirements stated above, and the following special requirements as to grades.

(1) The applicant for admission must present to the Registrar the principal's certificate containing his record on all the studies which were

\*In September, 1913, and thereafter, admission will be governed by the rules here stated; in September, 1912, candidates will be admitted under either this plan or the one stated in the Bulletin for 1911-12, pp. 18-21.

counted toward graduation. All records shall be entered on this certificate as *passed*, *passed with credit*, or *passed with honor*.\*

To facilitate the operation of this rule, each accredited school is expected to keep its record of standings in these three grades or else 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 grades.

(2) Candidates for admission on certificate must have an average record in the subjects counted for admission of *pass with credit*. For the purpose of this average a *pass* is offset by a *pass with honor*. Candidates are therefore admitted provided they have at least as many semester marks of *pass with honor* as they have semester marks of *pass*.

Candidates entering on certificate shall not be examined for admission on subjects which are lacking or below the required grade, except on presentation to the Enrollment Committee of satisfactory evidence that they have done adequate special work in preparation for the examination. A certificate from the principal of the last school attended, or other person approved by the Enrollment Committee, shall constitute satisfactory evidence; and adequate special preparation shall consist of not less than thirty 60-minute hours under competent instruction on each semester subject presented for examination. (See (c), last paragraph.)

(b) Graduates of the Advanced Latin and Advanced English courses of the Minnesota State Normal Schools.

(c) Graduates of a four-year course of a school in any other state which is accredited to the state university of that state, provided such candidates satisfy all the requirements as to major and minor series, subjects, and grades demanded of the graduates of Minnesota High Schools. (See 2 (a) above.)

In case the records of any candidate from another state cannot be translated into the grades used in this state, the Enrollment Committee shall order examinations in English and also in three other subjects chosen from three different admission groups. The results of such examinations shall be final.

The examinations authorized under 2 (a) and 2 (c) shall be held at the same time and according to the same schedule as the regular entrance examinations mentioned under 1.

### *Admission Groups*

The term *unit* means not less than five recitations of forty minutes each per week for a period of thirty-six weeks. In manual subjects and kindred courses, it means the equivalent of ten recitation periods per week for thirty-six weeks.

\*In per cent, 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.

## Group A: English

English, four or three units

- (a) Principles of rhetoric
- (b) Practice in written expression in each of the years of the course, on an average of not less than one hour a week
- (c) Classics

## Group B: Foreign Languages

Latin—

Grammar, one unit  
 Caesar, four books, one unit  
 Cicero, six orations, one unit  
 Virgil, six books, one unit

Greek—

Grammar, one unit  
 Anabasis, four books, one unit

German—

Grammar, one unit  
 Literature, one, two, or three units

French—

Grammar, one unit  
 Literature, one, two, or three units

Spanish—

Grammar, one unit  
 Literature, one, two, or three units

Scandinavian Languages—

Grammar, one unit  
 Literature, one, two, or three units

## Group C: History and Social Sciences

History—

Ancient, to Charlemagne, one unit  
 Modern, from Charlemagne, one unit  
 English, one-half unit  
 Senior American, one-half unit  
 American Government, one-half or one unit  
 Elementary Economics, one-half unit

Commercial Geography, one-half or one unit  
 History of Commerce, one-half or one unit  
 Economic History of England, one-half unit  
 Economic History of the United States, one-half unit

## Group D: Mathematics

Elementary Algebra, one unit  
 Plane Geometry, one unit  
 Higher Algebra, one-half unit

Solid Geometry, one-half unit  
 Trigonometry, one-half unit

## Group E: Natural Sciences

Physics, one unit  
 Chemistry, one unit  
 Botany, one-half or one unit  
 Zoology, one-half or one unit

Physiology, one-half unit  
 Astronomy, one-half unit  
 Geology, one-half unit  
 Physiography, one-half unit

## Group F: Vocational Subjects

Not to exceed four units may be offered from the following list of vocational subjects.

Business Subjects—

Business Law, one-half unit

Advanced Bookkeeping, one unit

Business Arithmetic, one-half unit	Stenography and Typewriting, two units
Elementary Bookkeeping, one unit	
Manual Subjects—	
Freehand Drawing, two units	Shop Work, two units
Mechanical Drawing, two units	Modeling and Wood Carving, one unit
Domestic Art and Science, four units	
Agriculture—	

One to four units from schools receiving special state aid for Agriculture and also from other schools in which such course in Agriculture is approved by the State High School Board, as fast as the said schools are prepared to offer work in Agriculture.

*Description of Subjects Accepted for Admission*

A description of subjects accepted for admission to the University may be found in the Bulletin of General Information, a copy of which will be sent to any address upon application to the Registrar, University of Minnesota, Minneapolis.

*List of Accredited Schools*

A list of accredited schools, including State High Schools and private schools, may be found in the Bulletin of General Information, a copy of which will be sent to any address upon application to the Registrar, University of Minnesota, Minneapolis.

3. ADMISSION TO THE COMBINED ACADEMIC-MEDICAL COURSES

The requirements are the same as under 1 and 2 above, except that two years of Latin are required.

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 credits; provided they comply with the usual requirements regarding majors and minors on page 32, and with the regulations governing Mathematics for freshmen. Such students will not be permitted to elect Education 5 or 7, Rhetoric 1, or History 1.

Individual graduates of the Advanced Latin course (five years) or of the Advanced English course (five years) of a Minnesota State Normal School who, on the basis of maturity and ability, present from the President of the Normal School certificates of special fitness, will be admitted with advanced standing under the same regulations and proviso.

This does not include those students of any of the above classes who substitute for the more advanced work of certain courses specialized work in preparation for elementary teaching.

#### 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.

Candidates wishing to gain credits for advanced standing by examination are allowed examinations without additional charge, providing they be taken within six weeks after matriculating.

#### 6. ADMISSION AS UNCLASSED STUDENTS

Unclassed students are persons of mature years, engaged in teaching or other occupation, but registered either without having satisfied the entrance requirements, or for less than eleven credit-hours of work. Only by permission of the Committee on Admission of Students whose Credentials are Irregular and upon the presentation of satisfactory reasons for not taking the regular course will an applicant be admitted as an unclassified student. Unless he take the same examinations or present the same credentials as are required of those who enter the freshman class he can be admitted only upon vote of the Faculty. A new application must be made each semester to the Committee on Students' Work. No student will be admitted as unclassified after the fourth week.

#### 7. 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. (See classes 1 and 2.) 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.



## 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 one hundred and twenty acres, lying between University Avenue and the Mississippi River and between Eleventh Avenue and Harvard Street 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.

Eleven of the twenty-three buildings on the campus 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 Building, with provision for the social science and English departments; Pillsbury Hall, for animal biology, botany, and geology; the Physics Building; the Chemistry Building; the Observatory; a plant house; the Armory, for military purposes and physical training; Shevlin Hall, devoted to the exclusive use of women students; Sanford Hall, a dormitory for women students; and the Y. M. C. A. Building.

### LIBRARIES

Besides the General Library, the College of Science, Literature, and the Arts has the following departmental libraries, viz., those of Astronomy, Animal Biology, Botany, Chemistry, Economics and Politics, Geology, German, Greek, History, Latin, Mathematics, Military Science, Philology, Philosophy, Physics, Rhetoric, Romance Languages, and Scandinavian.

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 whole number of bound volumes owned by the University is about one hundred and fifty thousand; unbound books and pamphlets, about twenty thousand. About nine hundred current periodicals are received.

### 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:

*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 recognized as the A. S. Williams Collection of Photographs and Photographic Negatives.

*Zoology.*—All the material collected by the Zoological Survey; 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, Phillipine Island corals, and other foreign material.

The ornithological reference collection contains the excellent Thomas S. Roberts and Franklin Benner collection of skins, nests, and eggs of Minnesota birds. The entomological collection of over 3,000 named Minnesota insects is particularly rich in Aphidae and contains the Guthrie collection of Collembola.

*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.

*Sociology and Anthropology.*—Photographs and exhibits, showing the work in Charities and Corrections of the various state institutions; photographs and exhibits of leading national movements for better social conditions; wall-charts and maps which present graphically a large number of sociological facts, from various parts of the United States; a collection of plaster-cast crania and skulls, showing man's ancestors, fossil man from Western Europe, typical members of the various living races and sub-races, both normal and artificially deformed; a collection of face-masks in color, presenting well the Oceanic peoples; a series of busts in white, presenting facial and cranial characteristics of a considerable number of different peoples; natural cranial, skull, and skeletal materials from some dozen different continental and insular geographic

areas; the Guthrie collection of ethnologic specimens from the Bulu tribe of Kamerun Province, Africa, presenting the material culture of a savage people in the Tropics; a collection of American Indian stone implements, weapons, etc.

*Classics.*—Some material illustrating classical geography, topography, chronology, mythology, archaeology, and art, consisting mainly of plans and charts, casts, pictorial illustrations, facsimilies of manuscripts and inscriptions.

*English.*—A few facsimiles of manuscripts, plates that may serve for the purpose of archaeological instruction, reprints of black-letter books and of original editions, photographs, and portraits.

*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.

## GENERAL INFORMATION

### FEEES

The annual incidental fee is thirty dollars (\$30.00) for resident students, and sixty dollars (\$60.00) for non-resident students. It includes all charges for matriculation and laboratory courses, except piano courses in the Department of Music, for which there is an additional fee of sixty-four dollars (\$64.00) or one hundred and twenty-eight (\$128.00). One half the incidental fee is payable at the opening of each semester.

In addition to the first semester incidental fee, a deposit fee of five dollars (\$5.00) is required to cover the following items:

Change of registration	\$2.50 per subject
Examination for removal of condition, at set time	1.00
Rental of post-office box, University post-office	.50 per year
Locker rental	.50 to 1.00 "
Penalties for late registration or late payment of fees.	

A penalty fee of one dollar must be paid by all students who register or pay fees after the prescribed time. (See calendar page 5). After the day previous to that on which classes begin, the penalty for delay increases at the rate of twenty-five cents a day.

The unused balance of the deposit fee will be returned at the end of the year. This fee is to be deposited with the University cashier at the beginning of each year when the student registers. If, at any time during the college year, the amount of charges against a student exceed the amount of the deposit, a second fee of five dollars (\$5.00) will be required.

The following special items may be included in the expenses of a student:

Special examination for removal of condition, at other than the set time	\$5.00
Examination on subject taken out of class	5.00
No fee for such examinations on first entering the University, if taken within the first six weeks	
Military uniform, men, about	15.00
Gymnasium suit, men and women	5.00

### ASSISTANTS, SCHOLARS, SCHOLARSHIPS, LOANS, AND PRIZES

#### ASSISTANTS AND SCHOLARS

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 and scholars 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 President of the University, 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 line of their appointments; (4) they are not regularly placed in charge of classes, and, when exceptions are made to meet emergencies, the arrangement is regarded as a temporary one.

#### 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 to him. The annual income of the fund is used to further English study. The scholarship is awarded by the English Department as a recognition of special capacity for literary studies.

*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.

*The College Woman's Club Scholarship.*—The College Woman's Club, of Minneapolis, has established a scholarship for the benefit of women students in this University. For the year 1912-13 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 the 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 1912-13 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 the 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 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 is awarded to the members of the team winning the freshman-sophomore debate.

*The Alumni Weekly Gold Medal.*—This medal is provided by the *Minnesota Alumni Weekly* and is awarded by the Faculty Committee on Debate and Oratory. The award is made annually to that member of the graduating class who has, in the judgment of the members of the Committee, made the best record in forensics during his college course. The medal is awarded only to a student who has shown himself broad-minded, unselfish, industrious, and willing to work courteously and enthusiastically with others so as to serve the highest interests of debate and oratory in the University. The recipient must be a type and a model as nearly as the student body offers such a candidate each year, of what a man may make himself through diligent application to the duty next at hand.

*The William Jennings Bryan Prize.*—The Hon. William Jennings Bryan, in 1898, gave the University the sum of two hundred and fifty dollars for the encouragement of studies in Political Science. The quadrennial income from this fund, amounting to fifty dollars, will be awarded every fourth year as a prize to the writer of the best essay upon some governmental question. The competition is open to all students of the College of Science, Literature, and the Arts. The essay must be handed to one of the instructors in Political Science by May 1, 1913, and must not exceed ten thousand words. Three judges to be designated by the President of the University will award the prize. The next topic is: "The Workman's Compensation Movement in Minnesota."

*The Frank O. Lowden Prize.*—The Hon. Frank O. Lowden, of Chicago, offers as prizes to be competed for by the Northern Oratorical League, the annual income on an endowment of three thousand dollars. A prize of one hundred dollars will be given to the orator winning first place and fifty dollars to the orator winning second place; the remainder will be set aside each year for an interest fund to accumulate and, in time, produce another endowment.

*The Maurice L. Rothschild and Company Prize.*—Maurice L. Rothschild and Company have provided three cash prizes of fifty, thirty, and twenty dollars each, which are annually awarded to those three students in the freshman and sophomore classes who write and deliver the best orations.

*The Andrew Lanquist Prize.*—The Society for the Advancement of the Study of Swedish offers an annual prize of twenty-five dollars to be

known as the Andrew Lanquist Prize, in honor of the donor. It is awarded to the student who, during the current year, has received the highest rank in the study of Swedish.

### 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 and closes at twelve; the afternoon session extends from one o'clock until five fifty. A general assembly of the faculty and students is held at twelve m., Tuesdays, Thursdays, and Saturdays.

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.

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.

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 reported below grade in sixty per cent of his work at the middle or close of the first semester or middle of the second semester is dropped from the rolls and not allowed to re-enter the University until the opening of the following year.

### 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. At any such institution where a Professor of Military Science and Tactics is detailed, War Department Orders of 1905 require that in its regular schedule of studies at least three hours per week for two years, or the equivalent thereof, shall be assigned for instruction in the military department.

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. Military Drill is required of all male students during the freshman and sophomore years. An encampment of cadets is held at the beginning of each year. Sophomore cadets attending the encampment are excused from all Military Drill of the first semester except on Saturdays. Students due but not reporting for encampment are required to report for all military exercises during the semester and, unless excused for satisfactory reasons, will be required to report at the next encampment.

### THE UNIVERSITY STATE TEACHER'S CERTIFICATE

Graduates of the College of Science, Literature, and the Arts may receive 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 Philosophy 1a or 1b and Courses 1 and 2 or Course 3 in Education, with sufficient additional work in Education to make a total of fifteen credits, including those specified in Philosophy.

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, the Registrar will supply a list of boarding and rooming places recommended for women students. In September, as soon as registration begins, other addresses may be had by application to the Dean of Women, Shevlin Hall. The houses thus recommended make it their particular object to care for the women students of the University. Rooms in them are rented only to women, and parlors are provided in which callers may be received. Attention is called to the fact that only by special permission of the Dean of Women may a woman student occupy a room in a house in which young men are received as lodgers.

While the University has confidence in the houses on its list, it does not advise anyone to engage a room without seeing it. There should always be a definite understanding with the householder as to rates, time of payment, vacation charges, the period for which the room is en-



gaged, and the privileges and rules of the house. Parents are urged to give as careful attention as possible to finding suitable and comfortable rooms for their daughters. In this, as in other matters affecting the well-being of the women students, the Dean of Women is glad to be of any service within her power.

Young women who wish to earn a part of their expenses may generally learn of opportunities by communicating with the Dean of Women. During the college year she 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.

*Sanford Hall.*—The University opened in November 1910, a dormitory for the accommodation of a part of the women students. In honor of Maria L. Sanford, Emeritus Professor of Rhetoric, this dormitory is named Sanford Hall. It is situated on the corner of Eleventh and University Avenues, Southeast. It furnishes a home for ninety girls, about one-half of whom may be freshmen. The charge for room and board is \$225 for the University year. Applications should be sent to the Director of Sanford Hall, The University of Minnesota.

*Shevlin Hall.*—Through the generosity of the late Thomas H. Shevlin, the University 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. A lunch room in which luncheon is furnished daily on the cafeteria plan and in which "spreads" and banquets are given, is one of the useful and attractive parts of the building.

*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.

## STUDENT ORGANIZATIONS AND PUBLICATIONS

For information regarding the Young Men's Christian Association, the Young Women's Christian Association, the University Catholic Association, the Athletic Association, and student publications, see Bulletin of General Information.

## 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*.—This 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.

*Literary Societies*.—There are four men's literary societies at the University: Shakopean, Forum, Castalian, and Law Literary. They 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. The women's societies are Minerva, Theta Epsilon, Thalian, and Acanthus. Members to these are elected only by vote of the society.

*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 Illinois, 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 Euterpean Club* is a regularly organized body of singers, composed of forty of the women students of the University. The selection of voices is made at the beginning of each school year. The club is under the direction of Professor Scott.

*The Sem. Bot.* is essentially a research society in Botany, composed of the botanical staff and of advanced students in the department. It meets once each week to present the results of investigation, and for discussion.

*Lambda Alpha Psi.*—This society was founded for the purpose of encouraging the study of languages and their literatures. To this end it maintains a course of popular lectures on artistic, literary, and linguistic subjects, given at intervals throughout the college year, by various professors in the University and noted educators from abroad. A small number of students from the senior class in the College of Science, Literature, and the Arts, who have specialized in languages and literature, are elected each year to membership, such elections being based upon scholarship and high character.

*The Masquers.*—This society was organized in 1898 under the name of the University Dramatic Club. Two plays are given each year after careful training under an experienced dramatic coach. The active membership, limited to thirty, is composed of students who qualify by trials held soon after the beginning of each University year.

## COURSES OF STUDY

### I. FOUR-YEAR 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 credits, in addition to the required exercises in Drill, Gymnasium, and Physical Training. A credit is one hour per week through one semester.

Juniors and seniors pursuing beginning language courses (not including Spanish, Greek, and Hebrew), Mathematics 1 and 2, Chemistry 1 (a), Rhetoric 1, or History 1, shall receive only half credit.

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 credits), the student must secure a grade of *good*. For the system of grades, see page 27. For the purpose of this count each *excellent* shall balance one *pass*, making an average of *good* for both records.

C. *Distribution of Work.*—1. The student must conform to the requirements of the respective four years of the course (see pp. 33-35) and 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.

Majors are not offered in the Department of Music.

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 first year of beginning languages (excepting Spanish and Greek), Rhetoric 1, or History 1 be so counted.

2. Each student must choose his major subject before the end of the sophomore year and report to the Registrar his choice.

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 subjects of a minor are not excluded from this list of reinforcing subjects.

The B. A. degree will be granted in no case in which the applicant has earned less than thirty credits in residence in this College. If the term of residence is only one year, that year must be the senior year. In any case, at least half of the work of the senior year must be done in residence.

## FRESHMAN YEAR

The subjects for which freshmen register must be continued through the year.

All freshmen shall take not less than fourteen nor more than seventeen credit hours, in accordance with the regulations that follow (A, B, C), besides (in case of men) Military Drill and Gymnasium.

*A. For Students with Entrance Credits in Both Higher Algebra and Solid Geometry*

Required: Rhetoric 1, three hours.

The following is a rule of the Faculty: All students in Rhetoric 1 shall be regarded as taking the work on probation during the first four weeks of the first semester. At the end of that time those who have shown their inability to do satisfactory work *because of lack of preparation* shall be dropped from the course with a record of *failed*. Such students shall be required to make up this deficiency in preparation, pass a special examination before the beginning of the following college year, and take Rhetoric 1 during their second year. They will be expected to devote at least three hours each week to regular instruction outside the college and will, therefore, not be permitted to carry more than fourteen hours of college work.

Elective: Not less than eleven nor more than fourteen credit hours from the groups below (I, II, III), at least one subject to be chosen from each group.

*B. For Students without Entrance Credits in Higher Algebra*

Required: Rhetoric 1, three hours; Mathematics 1 and 2, five hours.

Elective: Not less than six nor more than nine credit hours from the groups below, at least two groups to be represented by the subjects selected.

*C. For Students with Entrance Credits in Higher Algebra, but not in Solid Geometry*

Required: Rhetoric 1, three hours; Mathematics 3 and 4, three hours.

Elective: Not less than eight nor more than eleven credit hours from the groups below, at least two groups to be represented by the subjects selected.

*Elective Groups*

## I

- French 1, five hours; open to those who have had no French.
- \*French 3, three hours; open to those who have had two years of preparatory French.
- French 4, two hours; open to those taking French 3.
- German 1, five hours; open to those who have had no German.
- \*German 4, three hours; open to those who have had two years of preparatory German.
- German 5, two hours; open to those taking German 4.
- Latin A, three hours; open to those who have had two years of preparatory Latin.
- Latin B, three hours; open to those who have had three years of preparatory Latin.
- Latin 1, three hours; open to those who have had four years of preparatory Latin.
- Scandinavian 1, five hours; open to those who have had no Norwegian.
- Scandinavian 2, three hours; open to qualified students by permission.
- Scandinavian 3, five hours; open to those who have had no Swedish.
- Scandinavian 4, three hours; open to qualified students by permission.

## II

- Animal Biology 1, three hours; open to all.
- Botany 1, three hours; open to all.
- Chemistry 1, three hours; open to those who have had no Chemistry.
- Chemistry 2, three hours; open to those who have had preparatory Chemistry.

## III

- Greek 1, five hours; open to those who have had no Greek.
- Greek 3, three hours; open to those who have had two years of preparatory Greek.
- History 1, three hours; open to those who have had less than two years of preparatory History.
- History 2, three hours; open to those who have had two or more years of preparatory History.
- History 8, three hours; open to those who have had less than two years of preparatory History.
- Mathematics 3 and 4, three hours; open to those who have had Higher Algebra.

## SOPHOMORE YEAR

Required: Military Drill, for men.

Elective: Not less than fifteen nor more than eighteen credit hours of work from the following groups, selecting at least one from each group and not more than six credit hours from any one department.

\*Students who enter with more than two years of French or German will be admitted to correspondingly advanced courses.

Any student who fails in a subject during the freshman year is not allowed to elect more than fifteen credit hours per semester in the sophomore year, and all sophomores are strongly urged to take less than eighteen credit hours per semester.

Sophomores, so long as they conform to the above requirements, may elect courses in Scandinavian, and any subjects of the freshman year which they have not already taken.

### *Elective Groups*

#### I

Comparative Philology, Courses 1, 2, 3.  
 English, Courses 1, 2, 3, 4, 5, 6, 18.  
 French and Spanish, Courses 1, 2, 3, 4, 5, 6, 7, 10, 11, 13.  
 German, Courses 1, 2, 3a, 4, 5, 6, 7, 8.  
 Greek, Courses 1, 2, 3, 4, 5, 11.  
 Latin, Courses A, B, 1, 2, 3, 4.  
 Rhetoric and Public Speaking, Courses 2a, 2b, 20.

#### II

Animal Biology, Courses 1, 2, 3, 4, 5, 9, 10, 11, 12, 14, 15, 16, 17.  
 Astronomy, Courses 1, 2.  
 Botany, Courses 1, 2, 3, 15.  
 Chemistry, Course 3.  
 Geology and Mineralogy, Courses 1a, 1c, 2, 3a, 3b, 18, 19, 26, 29b.  
 Physics, Courses 1, 2, 3, 4, 5, 6.

#### III

Economics, Courses 1, 2a, 2b, 3a, 3b, 4, 5, 9, 15.  
 Political Science, Courses 1, 7, 15.  
 History, Courses 1, 2, 3, 5, 6, 8, 15.  
 Mathematics, Courses 3, 4, 7, 8.  
 Philosophy and Psychology, Courses 1a, 1b, 2, 11.  
 Sociology and Anthropology, Courses 1, 2.

### JUNIOR AND SENIOR YEARS

The work of these two years is elective, subject to the restrictions imposed by the requirements for a major course and four minor courses (see page 32), and the regulation that certain courses of the two preceding years count, when taken by juniors and seniors, for only half credit.

The number of credit-hours in any semester must be not less than fifteen nor more than eighteen, except by permission of the Committee on Students' Work.

### *Election of Subjects in Other Colleges*

In the senior year, any student registered in the College of Science, Literature, and the Arts may elect not to exceed six credit hours per semester in any other college or school of this University, provided that (1) certain courses are indicated by the Dean of the college or school in

question and approved by the Curriculum Committee of this College as suitable for such election; (2) no duplication of subjects occurs; and (3) the subjects so elected are specifically approved by the advisers. Courses so taken are counted toward the B. A. degree on the same terms as those taken in the College of Science, Literature, and the Arts; and twelve credits in closely related subjects, thus obtained, may be substituted for one of the four required minors, provided neither of the groups (a) (b) (c) is thus left unrepresented.

By resolution of the Board of Regents students in any college electing work in any other college must complete the work so elected before they are allowed to come up for the degree for which they are candidates.

#### *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 a chosen subject, and shall be granted in only one department.

2. To become a candidate for the degree of B. A. 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. At graduation have a record higher than *pass* in four-fifths of all his work (provided that an *excellent* shall balance a *pass* as in 3 above).
- 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.
- 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 canceled 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 canceled 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 on 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.

### COMBINATION COURSES

For the benefit of those who wish to begin a professional course before completing the four-year course in Science, Literature, and the Arts, the following combination courses and short courses are offered.

#### COMBINED ACADEMIC-MEDICAL COURSES

Students wishing to begin the study of Medicine before completing the regular four-year course in the College of Science, Literature, and the Arts have the choice between a combined eight-year course, leading to the degrees of B. A. and M. D., and a combined seven-year course, leading to the degrees of B. S. and M. D., according to conditions named in II and III below.

In case any student, after taking part of either combined Academic-Medical course, becomes a candidate for the B. A. degree in the regular four-year course in the College of Science, Literature, and the Arts, he must satisfy all the requirements of that course.

#### II. EIGHT-YEAR COURSE IN ARTS AND MEDICINE, LEADING TO THE DEGREES OF BACHELOR OF ARTS AND DOCTOR OF MEDICINE

For requirements for admission, see page 19. To be eligible for admission to the College of Medicine and Surgery students in this course must secure in the College of Science, Literature, and the Arts not less than ninety credits (ninety-four credits until September, 1914), with an average grade of *good* in half their work. They must complete a major and two minors (see page 32), each from one of the three groups (a), (b), (c).

#### FRESHMAN YEAR

All freshmen shall take not less than fourteen nor more than seventeen credit-hours of work, besides (in case of men) Military Drill and Gymnasium. The subjects must include the following:

Rhetoric 1, three hours.

German or French (unless a reading knowledge has already been acquired), three or five hours.

Zoology 1 or Botany 1 (Zoology preferred), three hours.

Chemistry 1 or 2, three hours.

(Mathematics 1 and 2, five hours, or 3 and 4, three hours, only as a prerequisite for Physics).

*Note*:—If a freshman takes five-hour German or French and five-hour Mathematics, he must postpone Zoology (or Botany) to the second year.

#### SOPHOMORE YEAR

German or French (unless a reading knowledge has already been acquired), three hours.

Chemistry 3 (Qualitative Analysis), three hours.

Physics 1, 2, 3, and 4, four hours.

Sufficient sophomore electives, including one from Group III, page 34, to make not less than fifteen nor more than eighteen credit hours, besides (in case of men) Military Drill.

#### JUNIOR YEAR

The work of the junior year is elective, subject to the restrictions imposed by the requirement for a major and two minors (see page 32).

The number of credit-hours must be not less than fifteen nor more than eighteen.

#### SENIOR YEAR

This year is taken in the College of Medicine and Surgery, and is counted toward the B. A. degree, provided that no duplication of subjects occurs, and provided further that the student secures an average grade of *good* in half the work so credited.

### III. SEVEN-YEAR COURSE IN SCIENCE AND MEDICINE, LEADING TO THE DEGREES OF BACHELOR OF SCIENCE AND DOCTOR OF MEDICINE

For requirements for admission, see page 19. To be eligible for admission to the College of Medicine and Surgery, students in this course must secure in the College of Science, Literature, and the Arts not less than sixty credits (sixty-two credits until September, 1914), with an average grade of *good* in half their work.

#### FRESHMAN AND SOPHOMORE YEARS

The work and the requirements of these two years are identical with those of the freshman and sophomore years under II.

#### JUNIOR AND SENIOR YEARS

The work of these two years is taken in the College of Medicine and Surgery, and is credited toward the B. S. degree, provided that no duplication of work occurs, and provided further that the student secures an average grade of *good* in one-half the work so credited.

Students who have completed elsewhere two or more years of collegiate or university work which includes the required subjects specified above, and is in other respects the full equivalent of the two years of Academic work required in the seven-year combined course, will be awarded the degree of B. S. on recommendation of the Faculty of the College of Science, Literature, and the Arts, provided that they secure an average of *good* on at least half their work in the first two years of the Medical course. The credit value of work done elsewhere shall be determined by the Committee on Advanced Standing of the College of Science, Literature, and the Arts, but such credits shall not become effective until the student shall have completed, with the required standing, two full years of work in the College of Medicine and Surgery of the University of Minnesota.

#### IV. SIX-YEAR COURSE IN ARTS AND DENTISTRY, LEADING TO THE DEGREES OF BACHELOR OF ARTS AND DOCTOR OF DENTAL SURGERY

The first three years of the Arts and Dentistry course are given in the College of Science, Literature, and the Arts, and the last three years in the College of Dentistry. It leads to the degree of Bachelor of Arts in four years and the degree of Doctor of Dental Surgery in six years. In order to complete the Academic portion of their work and be eligible for admission to the College of Dentistry in this course, they must obtain 90 credits (94 credits until September, 1914), including a major and two minors, one in each of the groups (a), (b), (c), p. 32), besides (in case of men) two years of Military Drill and one year of Gymnasium; and they must have an average of *good* in at least half of their work. The first year of the course in Dentistry counts as equivalent to the last year of the regular Academic course, provided that no duplication of subjects occurs, and provided further that the student secures an average grade of *good* in half of such year's work.

#### COMBINED ACADEMIC-LAW COURSES

Students wishing to begin the study of Law before completing the regular four-year course in the College of Science, Literature, and the Arts have the choice between a combined six-year course, leading to the degrees of B. A. and LL. B., and a combined five-year course, leading only to the degree of LL. B., according to conditions named in V. and VI. below.

#### V. SIX-YEAR COURSE IN ARTS AND LAW, LEADING TO THE DEGREES OF BACHELOR OF ARTS AND BACHELOR OF LAWS

The combined six-year course is given in the College of Science, Literature, and the Arts for the first three years, and in the College of Law for the last three years.

A student may register in this course at any time prior to the end of his third year. Before so registering he must choose a major line of work and secure the signature of an adviser in that department; and in every case the major subject must be chosen before the end of the sophomore year (See C, 1, 2, 3, 4, page 32).

The election of work during the first three years is governed by the same regulations as in the case of other academic students.

In order to complete the Academic portion of the combined six-year course and be admitted to the College of Law, students must secure not less than 90 credits (94 credits until September, 1914), including a major and two minors representing the three groups (a), (b), (c), (p. 32). They must also have an average of *good* in half of their work. The first year of the course in Law counts as equivalent to the last year of the regular Academic course, provided the student receive an average of *good* in half of such year's work.

## VI. SPECIAL PRE-LEGAL COURSE

A student registering in the combined five-year course in the College of Science, Literature, and the Arts, and the College of Law must decide, and state on his registration blank, whether he elects to follow the regular Academic course for two years, or to take the special pre-legal course indicated below. Whichever course is chosen must be followed without variation. In either case, the student must secure at least 60 credits (62 credits until September, 1914), with an average of *good* on half of his work, in order to be eligible for admission to the College of Law.

In case any student, after taking the special pre-legal course, shall become a candidate for the B. A. degree, he must satisfy all of the regular requirements for that degree.

Students who offer for entrance less than two units of natural science must take one year of natural science.

### FRESHMAN YEAR

	Credits
Rhetoric 1.....	6
Mathematics or Science.....	6 (or 10)
(1) The student without entrance credits in Higher Algebra, Mathematics 1 and 2.	
(2) The student with entrance credits in Higher Algebra but not in Solid Geometry, Mathematics 3 and 4.	
(3) The student with entrance credits in Higher Algebra and Solid Geometry, Mathematics 3 and 4, or 6 credits in freshman science.	
Language.....	6 (or 10)
(1) The student with two or more units of entrance credits in Latin, must take Latin (6 credits)	
(2) The student not qualified to take Latin must take a modern language.	

History .....	6
(1) The student with two units of entrance credits in History, must take History 2.	
(2) The student without two units of entrance credits in History, must take History 8.	
Economics 1.....	}
Political Science 1.....	
Military Drill and Gymnasium, for men	6
30—38*	

SOPHOMORE YEAR

	Credits
Rhetoric 2b or English 1 or Public Speaking or Psychology and Logic or Ethics or Mathematics or Science.....	6
Language.....	6
A continuation of the same language taken in the freshman year.....	
History 5.....	6
History 2.....	6
For those who did not take this course in their freshman year.	
Economics	}
Not less than one or more than four of the following courses: 1 (if not previously taken), 4, 5, 6, 11, 15, 16, 25.	
Political Science	}
Not less than one nor more than four of the following courses: 1 (if not previously taken), 2, 7, 12, 15, 18.	
Military Drill, for men	6—18
30—36	

VII. COURSE FOR MUSIC STUDENTS

Students who enter the University for the express purpose of studying Music are required to register for Courses 1 and 4 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.

VIII. UNCLASSED STUDENTS

Unclassed students are persons of mature years, engaged in teaching or other occupation, but registered either without having satisfied the regular entrance requirements, or for less than eleven credit-hours of work.

\*Students taking 10 hours each in Mathematics and Language, must omit either History, or Economics 1 and Political Science 1 this year.

A new application must be made each semester to the Committee on Students' Work, and the new enrollment will not be granted unless the work of the preceding semester has been satisfactory.

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 page thirty-two.

## DEPARTMENTAL STATEMENTS

### ANIMAL BIOLOGY

HENRY F. NACHTRIEB, B.S., Professor, Head of Department of Animal Biology	205 Pillsbury Hall
CHARLES P. SIGERFOOS, Ph.D., Professor	201 Pillsbury Hall
OSCAR W. OESTLUND, Ph.D., Assistant Professor	220 Pillsbury Hall
HAL DOWNEY, Ph.D., Assistant Professor	203 Pillsbury Hall
_____ , Assistant Professor	
CHARLES E. JOHNSON, M.A., Instructor	2 Pillsbury Hall

### REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, twelve credits.

*For a Major*, eighteen credits, together with reinforcing subjects (thirty credits) selected from Botany, Geology, Chemistry, Physics, Sociology and Anthropology, Psychology, advanced modern language, and additional Animal Biology.

*For B. A. with Distinction*, the general requirements (page 36) and six credits in the department in addition to the requirements for a major.

*For a Teacher's Certificate*, an average of at least *good* in Courses 1, 18, 17, and 11 or 2 or 4 or 5, and twelve additional credits in the biological sciences, six of which must be in Botany.

### 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.

### COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
1.	General Zoology.....	1, 2	6*	All	None
2.	Histology-Embryology ...	1, 2	6*	Soph., Jr., Sr.	1
3.	Technique.....	2	3	Soph., Jr., Sr.	See statement
4.	General Physiology.....	1, 2	6*	Soph., Jr., Sr.	1
5.	Comparative Anatomy ...	1, 2	6*	Soph., Jr., Sr.	1
6.	Emb. of Invertebrates....	1, 2	6*	Jr., Sr., Grad.	1, 3
7.	Emb. of Vertebrates.....	1, 2	6*	Jr., Sr., Grad.	1, 2, 3
9.	Entomology.....	1, 2	6*	Soph., Jr., Sr.	1
10.	Protozoology.....	1	3	Soph., Jr., Sr.	1
11.	Morphol. of Invertebrates.	2	3	Soph., Jr., Sr.	1
12.	Parasitology.....	2	3	Soph., Jr., Sr.	1
14.	Ornithology.....	2	3	Soph., Jr., Sr.	1

\*Both semesters must be completed before credit can be obtained for the first semester.





## 4. General Physiology

Mr. NACHTRIEB

Six credits (six hours per week); both semesters. Open to those who have completed Course 1. Both semesters must be completed before credit can be obtained for the first semester.

First semester: The physical, structural, and functional features of living substance; the cell, present conditions, and expressions of life; the theories of the origin of life and death. Demonstrations and simple experiments an essential part of the course in both semesters. Second semester: The life of the cell in its relations to that of other cells.

## ADVANCED AND SPECIAL COURSES

## 5. Comparative Anatomy of Vertebrates

Mr. JOHNSON and ASSISTANT

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 can be obtained for the first semester.

First semester: Chordates, cartilaginous and bony fishes and all classes up to the mammalia. Second semester: A detailed study of the cat and comparative studies of the rabbit, sheep, and man. Lectures, quizzes, and laboratory work. Text-books, *Laboratory Syllabus* and *Burkeholder's Anatomy of the Brain*.

## 6. Embryology of Invertebrates

Mr. SIGERFOOS

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 can be obtained for the first semester.

Reference and laboratory work on the development of invertebrates.

## 7. Embryology of Vertebrates

Mr. NACHTRIEB

Six credits (six hours per week); both semesters. Open to those who have completed Courses 1, 2, and 3. Both semesters must be completed before credit can be obtained for the first semester.

Reference and laboratory work on the development of vertebrates.

## 9. Entomology

Mr. OESTLUND

Six credits (six hours per week); both semesters. Open to those who have completed Course 1. Both semesters must be completed before credit can be obtained for the first semester.

The elements of entomology; the structure, functions, development, and economics of insects, leading up to a discussion of the principles of taxonomy and their application to the classification of insects. Text-book, *Folsom's Entomology*.

## 10. Protozoology

Mr. SIGERFOOS

Three credits (six hours per week); first semester. Open to those who have completed Course 1.

Can be combined with Course 11 or Course 12 for a year course. Mainly reference and laboratory work on the structure and life histories of Protozoa, with special reference to the relation of the Protozoa to diseases of animals.

## 11. Morphology of Invertebrates

Mr. SIGERFOOS

Three credits (six hours per week); second semester. Open to those who have completed Course 1. Can be combined with Course 10 for a year course.

An intensive study of the Crustacea and some of the smaller phyla of the animal kingdom.

12. Parasitology Mr. NACHTRIEB  
 Three credits (six hours per week); second semester. Open to those who have completed Course 1. Can be combined with Course 10 for a year course.

Reference and laboratory work on animal parasites, their structure, habits, life histories, and economic importance.

14. Ornithology Mr. JOHNSON  
 Three credits (six hours per week); second semester. Open to those who have completed Course 1.

Lectures, quizzes, laboratory and field work on the structure, classification, nest building, food, habits, and distinction of birds; migration, coloration, flight, etc.; practical demonstrations of the preparation of birds and eggs for scientific purposes. Text-book, Chapman's *Handbook of Birds of Eastern North America*.

15. Herpetology Mr. JOHNSON  
 Three credits (six hours per week); first semester. Open to those who have completed Course 1.

Primarily for students capable of independent work and interested in the classification, natural history, and economic aspects of the amphibians and reptiles of North America. Much attention given to the herpetology of Minnesota.

16. Mammalogy Mr. JOHNSON  
 Three credits (six hours per week); second semester. Open to those who have completed Course 1.

For students able to work independently and who are interested in the classification, natural history, and economic aspects of the mammals of North America, with special reference to the mammals of Minnesota.

17. Elements of Entomology and Ornithology MESSRS. OESTLUND and JOHNSON

Six credits (six hours per week); both semesters. Open to those who have completed Course 1. Both semesters must be completed before credit can be obtained for the first semester.

With special reference to candidates for the teacher's certificate. First semester: The Elements of Entomology, with Mr. Oestlund. Second semester: The Elements of Ornithology, Course 14, with Mr. Johnson.

18. Nature Study Mr. SIGERFOOS  
 Two credits (four hours per week); first semester. Open to those who have completed a minor in Zoology.

The ends to be attained through courses in General Zoology in the secondary schools and the methods and means by which such ends may be gained; collection of specimens in the field and their preparation and preservation. Lectures, discussions, and reference work.

#### ADVANCED AND GRADUATE COURSES

21. Problems and Research Mr. NACHTRIEB and ASSOCIATES  
 Six or twelve credits (six or twelve hours per week); both semesters. Open to graduate students and undergraduates who have completed Course 1 or its equivalent and such other courses as may be required by the character of the work.

Advanced and essentially independent work in some specific line carried on under the supervision of the professor in charge of the subject.

22. Blood of Vertebrates Mr. DOWNEY

Twelve credits (twelve hours per week); both semesters. Open to seniors and graduate students who have completed Courses 1, 2, 3, and 7, and who have a reading knowledge of German and French. Both semesters must be completed before credit can be obtained for the first semester.

A comparative study of blood and blood-forming organs of vertebrates. In this course the student will devote the major portion of his time to research.

23. Morphology of Vertebrates Mr. JOHNSON

Six or twelve credits (six or twelve hours per week); both semesters. Open to those who have completed Courses 1 and either 3 or 5.

An advanced course in comparative or special anatomy of vertebrates, including anatomical technique. Students qualified will be directed into lines of original investigation.

### ART

For courses in Art, open to sophomores, juniors, and seniors of this College, see Bulletin of the College of Education.

### ASTRONOMY

FRANCIS P. LEAVENWORTH, M.A., Professor, Head of Department of  
Astronomy Observatory or 123 Folwell Hall

#### REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, Courses 1 and 4 (the latter taken as a three-hour course).

*For a Major*, Courses 1 and 4 (the latter taken as a six-hour course), together with five additional courses and reinforcing subjects (thirty credits) selected from Mathematics, Physics, Mechanics, Chemistry, Geology, and additional Astronomy.

*For B. A. with Distinction*, the general requirements (page 36), Course 1, Course 4 (as a six-hour course), and six credits in Physics.

#### ASTRONOMICAL OBSERVATORY

The 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 meridian circle and zenith telescope; a Repsold photographic measuring machine, a chronograph, and astronomical clocks.

#### COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
1.	General Astronomy.....	1, 2	6	Soph., Jr., Sr.	Math. 4 or 2
2.	Observatory Practice.....	1, 2	3	Soph., Jr., Sr.	See statement
3.	Descriptive Astronomy.....	1	3	Jr., Sr.	None
4.	Practical Astronomy.....	1, 2	6 or 12	Jr., Sr.	1 and Math. 7, 8, and 9
5.	Adv. Practical Astronomy	1, 2	6	Grad.	1 and 4
6.	Celestial Mechanics.....	1, 2	6	Grad.	1
7.	Astrophotography.....	1, 2	6	Grad.	1 and 4

1. General Astronomy Mr. LEAVENWORTH  
Six credits (three hours per week); both semesters. Open to sophomores, juniors, and seniors who have completed Mathematics 4 or 2 (Trigonometry).  
A study of the general principles of astronomy illustrated by lantern slides and telescopic observations. This course may be combined with Course 2.
2. Observatory Practice Mr. LEAVENWORTH  
Three credits (hours arranged); both semesters. Open to those who have completed or are taking Course 1 or 3. Work at the Observatory in connection with Course 1 or 3.
3. Descriptive Astronomy Mr. LEAVENWORTH  
Three credits (three hours per week); first semester. Open to juniors and seniors.  
Lectures on the elements of astronomy, illustrated by lantern slides. This course may be combined with Course 2.
4. Practical Astronomy Mr. 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 7, 8, and 9.  
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.
5. Advanced Practical Astronomy Mr. LEAVENWORTH  
Six credits (three hours per week); both semesters. Open to graduate students who have completed Courses 1 and 4.
6. Celestial Mechanics Mr. LEAVENWORTH  
Six credits (three hours per week); both semesters. Open to graduate students who have completed Course 1.
7. Astrophotography Mr. LEAVENWORTH  
Open to graduate students who have completed Courses 1 and 4.  
Photography of the heavenly bodies, measurement of plates, determination of positions, parallax, etc.

## BOTANY

- FREDERIC E. CLEMENTS, Ph.D., Professor, Head of Department of Botany 207 Pillsbury Hall
- \*JOSEPHINE E. TILDEN, M.S., Professor 214 Pillsbury Hall
- CARL OTTO ROSENDAHL, Ph.D., Professor 18 Pillsbury Hall
- FREDERIC K. BUTTERS, B.S., B.A., Assistant Professor 206 Pillsbury Hall
- NED L. HUFF, M.A., Assistant Professor 214 Pillsbury Hall
- EDITH CLEMENTS, Ph.D., Instructor 207 Pillsbury Hall
- ALICE MISZ, M.A., Instructor 16 Pillsbury Hall

\*Absent on leave 1912-13.

REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, Courses 1 and 2.

*For a Major*, Courses 1 and 2, together with one advanced course covering two semesters, and reinforcing subjects (thirty credits) selected from Zoology, Chemistry, Physics, Geology, advanced modern languages, Greek, Latin, and additional Botany.

*For B. A. with Distinction*, the general requirements (page 36), Courses 1, 2, and any two advanced courses, each covering both semesters.

*For a Teacher's Certificate*, an average of at least good in Courses 1, 2, and twelve additional credits in biological sciences, of which six shall be in Zoology. Courses 11 and 16 are recommended.

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 11 to 18. 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.

The special courses in Botany are designed to prepare students directly for scientific positions in the United States Department of Agriculture and in the agricultural colleges and experiment stations of the various states. Such positions are those of ecologist, physiologist, systematic botanist, mycologist, agrostologist, algologist, etc., in the Bureau of Plant Industry, and of ecologist in the Forest Service. In co-operation with the Department of Plant Pathology and Botany in the College of Agriculture, training is given for the positions of plant pathologist and of seed expert in the Bureau of Plant Industry and in the state experiment stations. Positions in some of these lines are open to women as well as men. In addition to the general courses which are prerequisites, Courses 3, 5, 7, and 11 are most important in this preparation, followed by still more advanced courses determined by the training sought.

COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
1.	General Botany.....	1, 2	6*	All	None
2.	Advanced Botany.....	1, 2	6	Soph., Jr., Sr.	1
3.	Plant Phys. and Ecology .	1, 2	6	Soph., Jr., Sr.	See statement
4.	Algae.....	1, 2	6	Jr., Sr.	1 and 2
5.	Fungi.....	1, 2	6	Jr., Sr.	1 and 2
6.	Mosses and Ferns.....	1, 2	6	Jr., Sr.	1 and 2
7.	Flowering Plants.....	1, 2	6	Jr., Sr.	1 and 2
8.	Ecology.....	1, 2	6	Jr., Sr.	1, 2, and 3
9.	Plant Physiology.....	1, 2	6	Jr., Sr.	1, 2, and 3
10.	Cytology.....	1, 2	6	Jr., Sr.	1 and 2
11.	Industrial Botany.....	1, 2	6	Jr., Sr.	See statement
12.	Plant Foodstuffs and Textiles.....	1, 2	6	Jr., Sr.	See statement

\*Both semesters must be completed before credit is given for the first semester.

No.	Title	Semester	Credits	Offered to	Prereq. courses
15.	Botanical Microchemistry.	1, 2	6	Soph., Jr., Sr.	1
16.	Plant Studies.....	1, 2	6	Jr., Sr.	1 and 2
17.	General Bacteriology.....	1, 2	6	Jr., Sr.	See statement
18.	Pharmacognosy.....	1, 2	6	Jr., Sr.	1
21.	Morph. and Taxonomy ...	1, 2	..	Grad.	See statement
22.	Problems in Algology.....	1, 2	..	Grad.	See statement
23.	Problems in Physiology and Ecology.....	1, 2	..	Grad.	See statement
24.	Problems in Cytology.....	1, 2	..	Grad.	See statement

### GENERAL COURSES

Required for entrance to any special course, except those in technical botany, 11 to 18 inclusive.

#### 1. General Botany Messrs. CLEMENTS, HUFF, and BUTTERS and Miss MISZ

Six credits (six hours per week); both semesters. Open to all; both semesters must be completed before credit is given for the first semester.

Laboratory study of the structure of flowering plants, from organs through parts and tissues to cells, followed by a brief study of the common types of flowerless plants, leading to the origin of the flower and seed habit, and the classification of flowering plants; greenhouse study of the behavior of plants, correlated with the study of organs and tissues; field work and classification of trees and shrubs, fruits and seeds, buds and shoots, and spring flowers.

#### 2. Advanced Botany Messrs. CLEMENTS, and ROSENDAHL, Mrs. CLEMENTS, and Miss MISZ

Six credits (six hours per week); both semesters. Open to those who have completed Course 1.

Greenhouse and field study of the important flower families from the standpoint of evolution, classification, and identification, with especial reference to woody plants, composites, weeds, and grasses; in the second semester, the emphasis is upon pollination and seed production, following the life history from the origin of pollen grains and ovules through fertilization, development of the embryo, germination, and growth; during the spring, particular attention is given to the correlation of the year's results by means of the chart method of identification and classification.

### SPECIAL COURSES

#### 3. Plant Physiology and Ecology Mr. CLEMENTS

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.

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.

4. Algae Miss TILDEN  
Six credits (six hours per week); both semesters. Open to those who have completed Courses 1 and 2.  
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 Mr. CLEMENTS  
Six credits (six hours per week); both semesters. Open to those who have completed Courses 1 and 2.  
The classification and life history of the various groups of Fungi based on identification, culture, 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 Messrs. ROSENDAHL and HUFF  
Six credits (six hours per week); both semesters. Open to those who have completed Courses 1 and 2.  
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 Mr. ROSENDAHL  
Six credits (six hours per week); both semesters. Open to those who have completed Courses 1 and 2.  
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 generic 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 Mr. CLEMENTS  
Six credits (six hours per week); both semesters. Open to those who have completed Courses 1, 2, and 3.  
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 Mr. CLEMENTS  
Six credits (six hours per week); both semesters. Open to those who have completed Courses 1, 2, and 3.  
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 Mr. ROSENDAHL  
Six credits (six hours per week); both semesters. Open to those who have completed Courses 1 and 2.  
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 Miss 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.

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. Plant Foodstuffs and Textiles

Miss TILDEN

Six credits (six hours per week); one or both semesters. Open to technical students who have completed Course 1, and to academic students who have completed Courses 1 and 2.

A study of the botany of foods, textiles, and fabrics, with reference to their source, structure, preparation, adulteration, etc., together with an inquiry into the relation of plants to household processes and problems. Lectures, demonstrations, topics, and laboratory work.

15. Botanical Microchemistry

Mr. CLEMENTS

Six credits (six hours per week); both semesters. Open to those who have completed Course 1.

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

Mr. CLEMENTS

Six credits (six hours per week); both semesters. Open to those who have completed Courses 1 and 2.

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.

17. General Bacteriology

Messrs. CLEMENTS and BUTTERS

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 first semester of the course is given in the College of Medicine, and deals with the technique of general culture methods, inoculation, staining, etc. The second semester's work is primarily with non-pathogenic bacteria, yeasts, and molds in their relation to everyday life, and to fundamental processes among plants and animals. Class discussions and quizzes and laboratory work.

18. Pharmacognosy

Mr. NEWCOMB

Six credits (six hours per week); both semesters. Open to pharmaceutical or medical students who have completed Course 1.

Vegetable drugs, with respect to both gross and microscopical structure. The first semester, crude drugs; second semester, powdered drugs and their adulterations. Lectures, quizzes, and laboratory work.

### GRADUATE COURSES

21. Morphology and Taxonomy

Mr. 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.

22. Problems in Algology Miss 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.

23. Problems in Physiology and Ecology Mr. 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.

24. Problems in Cytology and Embryology Mr. 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.

## CHEMISTRY

GEORGE B. FRANKFORDER, M.A., Ph.D., Professor, Head of Department  
of Chemistry 114 Chemistry Building

CHARLES F. SIDENER, B.S., Professor 203 Chemistry Building

EDWARD E. NICHOLSON, M.A., Assistant Professor  
104 Chemistry Building

EVERHART P. HARDING, M.S., Ph.D., Assistant Professor  
209 Chemistry Building

IRA H. DERBY, Ph.D., Assistant Professor 220 Chemistry Building

FRANCIS C. FRARY, M.S., Assistant Professor 108 Chemistry Building

WILLIAM H. HUNTER, Ph.D., Instructor 207 Chemistry Building

LILLIAN COHEN, M.S., Instructor 106 Chemistry Building

FRANK W. BLISS, B.A., M.S., Instructor 205 Chemistry Building

BENJAMIN F. P. BRENTON, M.A., Instructor 207 Chemistry Building

PAUL H. M.-P. BRINTON, Instructor 205 Chemistry Building

LILLIAN L. NYE, M.A., Instructor 106 Chemistry Building

EARL PETTIJOHN, B.S. Chem., Instructor 216 Chemistry Building

WOLDEMAR M. STERNBERG, B.S., Chem. Eng., Instructor  
205 Chemistry Building

HAROLD H. BROWN, M.A., Shevlin Fellow in Chemistry  
 JOSEPH H. DEWITT, B.A., Assistant  
 WARD LAMBERT, B.A., Assistant  
 FREDERICK POPPE, M.S., Assistant  
 ROGER WILSON, M.A., Assistant

### REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, twelve credits.

*For a Major*, eighteen credits, together with supporting subjects (thirty credits) selected from Physics, Mathematics, Geology, Botany, Zoology, advanced modern languages, and additional Chemistry.

*For B. A. with Distinction*, the general requirements (page 36) and six credits in addition to the requirements for a major.

*For a Teacher's Certificate*, an average of at least *good* in Courses 1, 2, 3, 4 or 5, and 25.

### COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
1.	General Chemistry.....	1, 2	6*†	Those who enter without Chemistry	
2.	Advanced General Chemistry.....	1, 2	6*	Those who enter with Chemistry	Entrance credit in Chemistry
3.	Qualitative Analysis.....	1, 2	6*	Soph., Jr., Sr.	1 or 2
4.	Quantitative Analysis.....	1, 2	6*	Jr., Sr.	3
5.	Organic Chemistry.....	1, 2	6*	Jr., Sr.	3
6.	Theoretical Chemistry.....	2	2	Jr., Sr.	5
18.	Physical Chemistry.....	1, 2	6*	Jr., Sr.	Chemistry 5, Physics 3 and 4
24.	Radiochemistry.....	2	3	Jr., Sr.	
25.	Teachers'.....	2	1	Sr.	3
26.	Household & Sanitary Science.....	1, 2	6*	Jr., Sr.	1 or 2
33.	Special Inorganic.....			Grad.	
34.	Electrochemistry.....			Grad.	
35.	Organic Chemistry.....			Grad.	
36.	Alkaloids.....			Grad.	
37.	Analytical Chemistry.....			Grad.	
38.	Theoretical Electrochemistry.....			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 ASSISTANTS  
 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.

Recitation and laboratory work. A study of the common elements and their compounds, with an introduction to the modern theories of chemistry.

2. Advanced General Chemistry                      Mr. FRANKFORTER, Miss COHEN,  
Miss NYE, and ASSISTANTS  
Six credits (six hours per week); both semesters. Open to all who have completed a satisfactory entrance course in General Chemistry. Both semesters must be completed before credit is given for the first semester.  
Lectures and laboratory work. An introduction to physical and technological chemistry, with an exhaustive study of the chemical elements.
3. Qualitative Analysis                      Messrs. NICHOLSON, BLISS, BRENTON, and  
ASSISTANTS  
Six credits (six hours per week); both semesters. Open to those who have completed Course 1 or 2.  
Lectures and laboratory work, with recitations and collateral reading. The general reactions of the metals and acids, with their qualitative separation; the ionic theory and the law of mass action, with special reference to common qualitative reactions.
4. Quantitative Analysis                      Messrs. SIDENER and BRINTON  
Six credits (six hours per week); both semesters. Open to those who have completed Course 3.  
Quantitative methods, with laboratory work in gravimetric analysis, first semester; standard solutions and the necessary stoichiometric calculations with laboratory work in volumetric analysis, second semester.
5. Organic Chemistry                      Messrs. FRANKFORTER, DERBY, HUNTER,  
and ASSISTANTS  
Six credits (two lectures and six hours of laboratory work per week); both semesters. Open to those who have completed Course 3.  
The aliphatic and the aromatic series, with the preparation of the more important compounds.
6. Theoretical Chemistry                      Mr. DERBY  
Two credits (one lecture and one recitation per week); second semester. Open to those who have completed Course 5.  
A study of the most important theories which co-ordinate and unify chemical and physico-chemical phenomena.
18. Physical Chemistry                      Mr. DERBY  
Six credits; both semesters. Open to those who have completed Chemistry 5, Physics 3 and 4.  
Enables the student to gain a wide and varied knowledge of physico-chemical principles and methods both from the theoretical and practical standpoint.
24. Radiochemistry                      Mr. DERBY  
Three credits; second semester.  
To follow the course in theoretical electrochemistry and has to do with the phenomena associated with the various radioactive elements, including the chemical changes which these elements undergo and the chemical reactions which may be induced while the changes are in progress.
25. Teachers' Course                      Miss COHEN  
One credit (two hours per week); second semester. Open to those who have had Course 3.

Offered to those who are interested in the teaching of Chemistry. No regular laboratory work will be offered, but certain experiments illustrating the difference between good and poor work may be given.

#### 26. Household and Sanitary Science

Messrs. FRANKFORTER and HARDING

Six credits; both semesters. Open to women of the junior and senior classes who have completed Course 1 or 2. To obtain credit, both semesters must be taken.

Sanitation: } Chemical and sanitary analysis of water and air.  
 } Causes and control of germ diseases, disinfection, pests, etc.

Foodstuffs: Origin, preparation, purity, analysis and adulteration, selection, preparation, preservation.

Personal Hygiene: Dietetics, food values, clothing, exercise, etc.

The following professors will co-operate in giving the course: Messrs. Wesbrook, Beard, Clements, Flather, Nachtrieb, and Bass.

### GRADUATE COURSES

The following are open to graduate students. Arrangements may be made upon application to the department.

33. Special Inorganic Chemistry.
34. Electrochemistry.
35. Organic Chemistry.
36. Alkaloids.
37. Analytical Chemistry.
38. Theoretical Electrochemistry.

### COMPARATIVE PHILOLOGY

FREDERICK KLAEBER, Ph.D., Professor, Head of Department of Comparative Philology  
 222 Folwell Hall

#### REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, Courses 1, 2, 3, 4, 6.

*For a Major*, Courses 1, 2, 3, 4, 5, 6, together with two additional courses and reinforcing subjects (thirty credits) selected from English, ancient languages, and advanced modern languages.

*For B. A. with Distinction*, the general requirements (page 36) and English 2, 3, and 18, or English 2 and German 14, in addition to the requirements for a major.

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.

COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
1.	Science of Language.....	1	2	Soph., Jr., Sr.	None
2.	Life of Words.....	2	2	Soph., Jr., Sr.	None
3.	Teutonic Philology.....	2	2	Soph., Jr., Sr.	See statement
4.	Universal Language.....	1	2	Jr., Sr.	None
5.	Science of Lang. (Adv.)..	2	2	Jr., Sr.	1
6.	Comparative Phonology ..	2	2	Jr., Sr.	See statement
7.	Comparative Grammar ...	.	.	Grad.	
8.	Gothic.....	.	.	Grad.	
9.	Urgerm. Gram.....	.	.	Grad.	
10.	Old Saxon.....	.	.	Grad.	
11.	Old High German.....	.	.	Grad.	

1. General Introduction to the Science of Language Mr. KLAEBER  
 Two credits (two hours per week); first semester. Open to sophomores, juniors, and seniors.

Sufficiently general to be of use to all students who wish to obtain an insight into the life of language.

2. The Life of Words Mr. KLAEBER  
 Two credits (two hours per week); second semester. Open to sophomores, juniors, and seniors. Alternates with Course 3.

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.

3. Introduction to Teutonic Philology Mr. KLAEBER  
 Two credits (two hours per week); second semester. Open to sophomores, juniors, and seniors who have a fair knowledge of German. Alternates with Course 2.

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).

4. The Universal Language Mr. KLAEBER  
 Two credits (two hours per week); first semester. Open to 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, Ido, and other artificial languages. Exercises in Esperanto.

5. Science of Language, Advanced Course Mr. KLAEBER  
 Two credits (two hours per week); second semester. Open to juniors and seniors who have completed Course 1. Alternates with Course 6.

Investigation of linguistic problems. Study of standard works (Paul, Delbrück, Wundt, Jespersen, etc.). Reports on recent publications.

6. Comparative Phonology of English and German Mr. KLAEBER  
 Two credits (two hours per week); second semester. Open to juniors and seniors who have a fair knowledge of German. Alternates with Course 5.

Elements of phonetics; history of English and German sounds; orthography. The lectures will be supplemented by practical exercises.

7. Comparative Grammar of the Greek, Latin, and Germanic Languages

Mr. 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

Mr. 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 texts (Stamm-Heyne-Wrede's *Ulfilas*, or Streitberg's *Gotische Bibel*).

9. Urgermanische Grammatik

Mr. 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

Mr. 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 *Heliand*.

11. Old High German

Mr. 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.

Braune's *Althochdeutsche Grammatik*; Braune's *Althochdeutsches Lesebuch*. This course is identical with German 14.

## ECONOMICS AND POLITICAL SCIENCE

\*JOHN H. GRAY, Ph.D., Professor, Head of Department of Economics and Political Science

Mechanic Arts Building

EDWARD VAN DYKE ROBINSON, Ph.D., Professor, Acting Head of Department of Economics and Political Science, Feb. 1912-Feb. 1913.

Mechanic Arts Building

WILLIAM A. SCHAPER, Ph.D., Professor

Mechanic Arts Building

CARL W. THOMPSON, M.A., Associate Professor and Director of the Bureau of Research in Agricultural Economics

Mechanic Arts Building

\*Absent on leave second semester, 1911-12 and first semester, 1912-13.

THOMAS WARNER MITCHELL, Ph.D., Assistant Professor	
	Mechanic Arts Building
JEREMIAH S. YOUNG, Ph.D., Assistant Professor	
	Mechanic Arts Building
J. FRANKLIN EBERSOLE, M.A., Assistant Professor,	
	Mechanic Arts Building
CEPHAS D. ALLIN, M.A., LL.B., Assistant Professor	
	Mechanic Arts Building
LOUIS D. H. WELD, Ph.D., Assistant Professor,	Extension Work
	Mechanic Arts Building
RAYMOND V. PHELAN, Ph.D., Instructor, Extension Work	
	Mechanic Arts Building
CHARLES H. PRESTON, B.A., Instructor, Extension Work	
	Mechanic Arts Building
ALBERT B. BALCOM, M.A., Instructor, Extension Work	
	Mechanic Arts Building

### REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, twelve credits, all in Economics or all in Political Science, except that Business Law may be taken in either group.

*For a Major*, eighteen credits, all in Economics or all in Political Science, except that Business Law may be taken in either group. Unless registered in a combined Academic-Professional course, students taking a major in Economics must take a minor in Political Science, and vice versa; and must take additional supporting subjects (eighteen credits) selected from other courses in Economics or Political Science, History, Sociology, Psychology or Philosophy; or from other subjects according to individual arrangements with advisers.

*For B. A. with Distinction*, the general requirements (page 36), six credits in addition to the general requirements for a major, and not less than twelve credits in History, Psychology, Philosophy, or Sociology, or all combined.

*For a Teacher's Certificate* in business subjects, a major in Economics, including Accounting, Business Law, and Economic Geography; for a Teacher's Certificate in Government, a major in Political Science. In either case an average of *good* in the major line of work is prerequisite.

The Departments of Economics and Political Science, History, and Sociology and Anthropology 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.

## SUGGESTIONS AS TO COURSES IN THE DEPARTMENT

In order to aid students who have some idea as to their intended profession or calling to make a wise choice of courses, the accompanying tabulated statement has been prepared.

These recommendations are merely suggestive and more courses are sometimes recommended than suffice to make up a technical minor or major in order that students may choose those courses which interest them 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

## COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
<i>Introductory Courses:</i>					
1.	Elements of Economics.....	1 or 2	3	Soph., Jr., Sr.	None
2a.	Physical and Human Geog....	1, 2	6†	Soph., Jr., Sr.	See statement
2b.	Economic Geography.....	2	3	Soph., Jr., Sr.	See statement
*3a.	Indust. Hist. of Europe.....	1	3	Soph., Jr., Sr.	None
*3b.	Indust. Hist. of U. S.....	2	3	Soph., Jr., Sr.	None
<i>General Courses:</i>					
4.	Advanced Economics.....	2	3	Soph., Jr., Sr.	1
5.	Money and Banking.....	2	3	Soph., Jr., Sr.	1
6.	Public Finance & Taxation ..	1	3	Jr., Sr.	1
7.	Railway Problems.....	1	3	Jr., Sr.	1
*8a.	Development of Commerce...	1	3	Jr., Sr.	1
*8b.	Economics of Colonization...	1	3	Jr., Sr., Grad.	6 cred. in Econ.
9.	Commercial Policies.....	2	3	Soph., Jr., Sr.	1
10.	Municipal Industries.....	2	3	Jr., Sr.	1
11.	The Modern Bus. Corpor'n...	1	3	Jr., Sr.	1
12.	Socialism vs. State Regula- tion.....	1	3	Jr., Sr.	1
13.	Labor Problems.....	1, 2	6†	Jr., Sr.	1
14.	Econ. Conditions in Cities...	2	3	Jr., Sr.	1
<i>Specialized Courses:</i>					
15.	Business Organization.....	2	3	Soph., Jr., Sr.	1
16.	The Principles of Accounting	1	3	Jr., Sr.	1
17.	Corporation Accounting .....	2	3	Jr., Sr., Grad.	1 and 16
18.	Problems in Accounting.....	1	3	Sr., Grad.	16, 17
19.	Auditing.....	2	3	Sr., Grad.	16, 17, 18
*20.	Advertising and Credit.....	2	3	Jr., Sr.	1
21.	Business Law.....	1, 2	6†	Jr., Sr.	1 or Pol. Sci. 1
22.	Rural Economics.....	1	3	Jr., Sr.	1
*23.	Forest Econ. & Conservation	1	3	Jr., Sr.	1

\*Starred courses are given in alternate years.

†Both semesters must be completed before credit is given for the first semester.



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, 9, 11, 10, 24	5, 7, 28	Law	2, 3, 7, 8, 15, 17	4, 5, 10, 9, 12, 14, 20, 19, 18
3a, 3b, 6, 11, 10	12, 16, 27	Public Service	2, 3, 7, 15, 14, 9, 18, 20	8, 4, 5, 10, 12, 19, 17, 20
2a, 2b, 3a, 3b, 9, 8b, 27	5, 7, 15	Consular and Diplomatic Service	2, 3, 5, 10, 14, 20, 19, 18	4, 8, 12, 17, 20
6, 7, 10, 11	12, 13, 27, 28	Journalism	17, 20	4, 5, 12, 18, 19,
26, 7, 11, 10	13, 16, 17, 21, 15	Engineering or Railway Service	6, 7, 14, 15	4, 8, 20
2b, 9, 8a, 11, 13	16, 17, 21, 15, 27	Chemistry or Manufacturers	2, 3, 7, 9	8, 12, 14, 18, 20
7, 11, 13, 2a,	2b, 9, 8, 21	Mining	2, 3, 7, 15,	9 8, 12, 14, 20
5, 25, 26, 27	16, 17, 18, 21, 24	Insurance or Banking	2, 3, 7, 14, 15, 17	4, 8, 10, 12, 20
2b, 3a, 3b, 5, 8a, 9	15, 16, 20, 21, 24	General Business	2, 3, 7, 15, 9, 17	8, 12, 19, 20
2a, 2b, 23, 22, 8a, 9	7, 5, 16, 21	Forestry or Agriculture	2, 3, 15, 14	9, 12, 8, 20
2a, 2b, 3a, 3b, 5, 28	15, 16, 21, 29	Teaching Business Subjects or American Government	2, 3, 7, 9, 13, 15, 17, 18, 20,	4, 5, 12, 10, 8, 14, 19
3a, 3b, 5, 14	6, 9, 11, 10	Medicine	2, 3, 7, 9	8, 12, 15, 20
3a, 3b, 13, 14	12, 28, 8a	Charity Work or the Ministry	2, 3, 7, 8, 17	9, 12, 15, 18, 19, 20
3a, 3b, 13, 14	12, 28, 8a	The Ministry		19, 20

No.	Title	Semester	Credits	Offered to	Prereq. courses
24.	Investment & Speculation....	2	3	Jr., Sr., Grad.	1 and 5
25.	Personal Insurance.....	1	3	Jr., Sr.	1
26.	Property Insurance.....	2	3	Jr., Sr.	1
<i>Advanced and Graduate Courses:</i>					
*27.	Theory and Prac. of Statistics	1	3	Jr., Sr., Grad.	6 cred. in Econ.
28.	Hist. of Economic Thought..	1	3	Jr., Sr., Grad.	1 and 4
29.	Seminar in Econ. Developm't	2	3	Sr., Grad.	1 and 4
30.	Seminar in Corporations.....	1, 2	6†	Sr., Grad.	1 and 4
31.	Seminar in Accounting.....	1, 2	6†	Sr., Grad.	16 and 17
32.	Pro-Seminar in Labor Prob...	1, 2	6†	Sr., Grad.	13
33.	Seminar in Agric. Economics..	1, 2	6†	Sr., Grad.	1 and 22
34.	Economic Conference.....	1, 2	..	Sr., Grad.	See statement

\*Starred courses are given in alternate years.

†Both semesters must be completed before credit is given for the first semester.

### INTRODUCTORY COURSES

1. Elements of Economics      Messrs. ROBINSON, THOMPSON, MITCHELL,  
and EBERSOLE

Three credits (three hours per week); each semester. Open to sophomores, juniors, and seniors.

Elements of economic theory, with special reference to present-day economic and social problems. Marshall, Wright, and Field's *Outlines* and a text-book, supplemented by lectures with a weekly quiz.

- 2a. Physical and Human Geography      Messrs. LEHNERTS and ROBINSON

Six credits (three hours per week); both semesters. Open to sophomores, juniors, and seniors who have not taken Geography 29a. Constitutes a unit course for which no credit is allowed until both semesters are completed. May be counted toward a major or minor in either the Department of Geology and Mineralogy or the Department of Economics and Political Science.

First semester, given by Mr. Lehnerts: Fundamental physiographic facts, processes, and relations, with special reference to their effect on the activities of mankind; planetary relations, climate, land forms, and oceans; rivers, lakes, and waterpowers; ground water and soils; mountains, plateaus, and plains; deserts, steppes, and prairies. Lectures, laboratory and field work.

Second semester, given by Mr. Robinson: A study of economic and political development in relation to nature, exclusive of ethnography; meaning of the geographic and the economic interpretations of history; economic progress as a phase of adaptation to environment, illustrated by reference to the industrial conditions of the leading countries. Text-book, supplemented by lectures and reports on special topics.

- 2b. Economic Geography      Mr. ROBINSON

Three credits (three hours per week); second semester. Open to sophomores, juniors, and seniors, except those who have admission credit in Commercial Geography. Course 2a may profitably precede or accompany 2b.

The economic basis of modern civilization; the causes, both in nature and man, which control the localization of industries; the geographic factor in American history and economic development; natural resources and the economic problem of their use and conservation; the principal extractive, manufacturing, and distributive industries of the United States,

its outlying possessions, and the leading foreign countries, especially those which have a large prospective value as markets for American manufactures and as fields for the investment of American capital. Text-book with lectures and special reports.

The following courses dealing with the materials of commerce and with industrial processes, may profitably follow Course 2b, if students desire to specialize along those lines: Materials of Commerce (evening course), Animal Biology 20 (Economic Zoology), Botany 11 (Industrial Botany), Chemistry 16-17 (Industrial Chemistry).

\*3a. Modern Industrial and Commercial History of Europe Mr. GRAY  
Three credits (three hours per week); first semester. Open to sophomores, juniors, and seniors.

The industrial and commercial development of the chief European countries since the middle of the 18th century, with special attention to Great Britain; the effects of mechanical invention and political change on industry and trade.

Course 3a requires no preliminary course and may be taken advantageously with Course 1 or Course 2b. (See Course 3b.) Not given in 1912-13.

\*3b. Industrial and Commercial History of the United States Mr. GRAY  
Three credits (three hours per week); second semester. Open to sophomores, juniors, and seniors.

Courses 3a and 3b are conducted each with a text-book, supplemented by lectures and prescribed topical readings. In each of these courses, one written report of considerable length will be required each semester. Not given in 1912-13.

#### GENERAL COURSES

4. Advanced Economics Mr. ROBINSON  
Three credits (three hours per week); second semester. Open to those who have completed Course 1; *required for a major in Economics and should be taken as soon as possible after Course 1.*

An advanced course in economic theory, devoted chiefly to a study of recent theories of distribution. Assigned readings, reports, and discussions.

5. Money and Banking Mr. EBERSOLE  
Three credits (three hours per week); second semester. Open to those who have completed Course 1.

The nature, functions, and theories of money, with special reference to the monetary history of the United States; the nature and uses of credit, including foreign exchange; the functions of banks and trust companies; types of banking systems in this and other countries. Lectures, text-book, assigned readings, and discussions.

6. Public Finance and Taxation Mr. ROBINSON  
Three credits (three hours per week); first semester. Open to juniors and seniors 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 leading countries with special emphasis on the United States; public revenues from public domains and industries; tax systems, tax reforms, and special forms of taxation. Text-book with lectures and reports on special topics.

7. Railway Problems Mr. ROBINSON  
Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Course 1.

Conditions affecting economy of operation; economic principles underlying the making of railway rates; competition in relation to rate wars, discrimination, pooling, and combination; the great railway systems of the United States; regulation by the states and the federal government; government ownership and operation of railways in Europe and Australasia. Lectures, assigned readings, and special topics.

\*8a. Development of Commerce

Mr. ROBINSON

Three credits (three hours per week); first semester. Open to those who have completed Course 1.

The development of commerce and of commercial policies prior to the Industrial Revolution. Text-book, supplemented by lectures and assigned readings. Alternates with Course 8b. Given in 1912-13.

\*8b. Economics of Colonization

Mr. ROBINSON

Three credits (three hours per week); first semester. Open to those who have six credits in Economics.

The economic causes of human migration; historical survey of colonization and classification of colonies with reference to their economic bases; colonial commerce in relation to modern commercial and foreign policies; preferential tariffs and imperial federation. Lectures, assigned readings, and reports on special topics. Alternates with Course 8a. Not given in 1912-13.

9. Commercial Policies

Mr. ROBINSON

Three credits (three hours per week); second semester. Open to those who have completed Course 1.

Theory and mechanism of international commerce; free trade, reciprocity and protection, with special emphasis on the tariff history and policy of the United States; 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.

10. Municipal Industries

Mr. GRAY

Three credits (three hours per week); second semester. Open to juniors and seniors 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. Text-book, lectures, and quizzes.

11. The Modern Business Corporation

Mr. 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.

12. Socialism versus State Regulation

Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Course 1.

Aristocracy versus democracy in economics; competition, socialism, and state regulation plus education as means of achieving economic justice; special attention to socialism as a philosophy of industrial evolution and a program of economic reform, and to the alternative of adequate, reasonable, and efficient public regulation of private economics. Lectures, assigned readings, and discussions.

## 13. Labor Problems

Six credits (three hours per week); both semesters. Open to juniors and seniors who have completed Course 1. No credit given unless both semesters are completed.

Modern labor problems: Woman and child labor, industrial education, unemployment, poverty, industrial hygiene, welfare work, profit sharing, co-operation, labor unions, strikes, boycotts, conciliation and arbitration. Immigration: Causes, effects, remedies. Lectures, text-book, assigned readings, discussions, and investigations of local conditions.

## 14. Economic Conditions in American Cities

Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Course 1.

The causes of economic dependence in American cities, the standard of living and the constructive agencies for economic betterment. Lectures, assigned readings, and visits of inspection in the Twin Cities.

## SPECIALIZED COURSES

## 15. Business Organization

Mr. MITCHELL

Three credits (three hours per week); second semester. Open to those who have completed Course 1.

Forms of organization to effect business control; executive committees; the main departments of a business and the principles governing sub-departmentization and office organization of each. Based on Parson's *Business Administration*, with lectures, theses, and class discussions.

## 16. Principles of Accounting

Mr. MITCHELL

Three credits (three hours per week); first semester. Open to those who have completed Course 1.

Aims and essentials of a desirable system of accounts; tabular books and ledger systems; proper treatment of discounts, contingent liabilities, and anticipated losses; depreciation; expense classification; preparation and interpretation of revenue accounts, balance sheets, and other business statements. A laboratory course, with supplementary lectures.

## 17. Corporation and Cost Accounting

Mr. MITCHELL

Three credits (three hours per week); second semester. Open to those who have completed Courses 1 and 16.

The books and accounts peculiar to a corporation. Cost accounting; the classification of production costs; methods of managing materials, labor, and machines; methods of distributing indirect costs; methods of compiling process and contract costs; relation of cost to general accounts; use of cost data to show forth and enforce economy of operation. A laboratory course supplemented by lectures.

## 18. Problems in Expert Accounting

Mr. MITCHELL

Three credits (three hours per week); first semester. Open to those who have completed Courses 16 and 17. Not given in 1912-13.

A selection from C. P. A. examinations and other sources of difficult problems that confront the professional accountant; the analysis of railway and other corporation reports.

## 19. Auditing

Mr. MITCHELL

Three credits (three hours per week); second semester. Open to those who have completed Courses 16, 17, and 18.

The duties and qualifications of an auditor; the method of preparing for, and conducting, an audit; the auditor's report and certification; legal responsibilities of auditors. Based on Dicksee's *Auditing*, Montgomery's American Edition; assigned readings, class discussions, and lectures.

\*20. Advertising, Salesmanship, and Commercial Credit Mr. WELD

Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Course 1.

Various types of advertising; organization of advertising department and methods of measuring relative values of advertising media; advertising agencies. Qualities necessary in a good salesman. Forms and uses of credit; organization of credit department; mercantile agencies, creditmen's associations, and credit bureaus; credit insurance. Not given in 1912-13.

21. Elements of Business Law Mr. YOUNG

Six credits (three hours per week); both semesters. Open to juniors and seniors who have completed Course 1 or Political Science, Course 1.

The principles of law governing ordinary commercial transactions, so much as every educated man ought to know for his guidance in every-day business affairs; the general law of contracts, bankruptcy, agency, sales, negotiable instruments, partnership, and corporations. Lectures, quizzes, and assigned readings.

22. Principles of Rural Economics Mr. THOMPSON

Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Course 1.

Introductory survey of agricultural systems; comparison of rural and urban economy; a study of internal and external economies of agricultural industries, giving special attention to localization, marketing, land tenure, and credit; the social and political aspects of rural economy. Lectures, assigned readings, and written reports.

\*23. Forest Economics and Conservation Mr. ROBINSON

Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Course 1.

The development of forest policies in Europe and America; economic relation of forests to other industries; share of forest products in foreign commerce; effects of transportation rates and forest taxation; the general problem of the conservation of natural resources, with special reference to forestry. Lectures, assigned readings, and reports. Not given in 1912-13.

24. Investment and Speculation Mr. EBERSOLE

Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Course 5.

The social significance of the processes of saving and investing; private property as a basis of investment; funds, credit instruments, and other machinery of investment; investment markets; laws of investment values and causes affecting values; the various classes of investments; organization and working of stock and produce exchanges; Wall Street; investment versus speculation versus gambling. Lectures, assigned readings, and interpretation of quotations, financial articles, and market reports.

25. Personal Insurance (Life and Accident) Mr. WELD

Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Course 1.

Life and accident insurance; history and evolution of life insurance; the social functions of insurance and its importance in the business world; the different types of policy and

the technical meaning of premium, reserve, dividend, surplus, expectation of life, annuities, surrender values, extensions, loans, paid-up insurance, etc.; the personal insurance problem and its solution; public regulation. Lectures and assigned readings.

26. Property Insurance

Mr. WELD

Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Course 1.

The basic theory of fire insurance; the historic development of various forms of property insurance, a technical study of an insurance company of each type; critical examination of policy contracts. Lectures and assigned readings.

ADVANCED AND GRADUATE COURSES

\*27. Theory and Practice of Statistics

Mr. WELD

Three credits (three hours per week); first semester. Open to juniors, seniors, and graduate students who have six credits in Economics.

Statistical method and the work of the statistician; general critical survey of present day statistical information; correct principles of collection, tabulation, classification, and interpretation of statistical material. A first-hand investigation into some practical problem by the class. Lectures, assigned readings, and work on special problems.

28. Pro-Seminar in the History, Scope, and Methods of Economics

Mr. ROBINSON

Three credits (three hours per week); first semester. Open to graduate students, juniors, and seniors who have completed Economics 1 and 4.

In 1912-13 the general topic will be the history of economic thought in ancient, medieval, and modern times. In alternate years, emphasis will be placed on the scope and logical methods of Economics, the relation of Economics to the other social sciences and to Ethics, and on methods of investigation and instruction in Economics. Assigned readings, reports on special topics and class discussions. Method of work informal, approaching the seminar plan.

Courses 2 and 11 in Philosophy (Logic and Ethics) may profitably precede or accompany Course 28.

29. Seminar in the Economic Development of the Middle West

Mr. ROBINSON

Three credits (three hours per week); second semester. Open to graduate students and to seniors who have credit in Economics 1 and 4. Course 2b should also precede Course 29.

In 1912-13 members of the seminar will undertake original investigations relating to the development of various industries in the Middle West. In alternate years, attention will be given to the development of tax systems and present problems in taxation, viewed as functions of economic development. Reference reading, discussions, and thesis work.

30. Seminar in Corporation and Trust Problems

Mr. GRAY

Six credits (three hours per week); both semesters. Open to graduate students and to seniors who have credit in Courses 1 and 4, and are capable of original investigations. Both semesters must be completed before credit is given.

Practical investigation of problems pertaining to corporations, trusts, and other monopolies.

31. Seminar in Accounting Mr. MITCHELL  
 Six credits (three hours per week); both semesters. Open to seniors and graduate students who have completed Courses 16 and 17. Both semesters must be completed before credit is given.

Student reports dealing with the accounting systems, published reports and interpretation of the accounts of business establishments located in or near the Twin Cities.

32. Pro-Seminar in Labor Problems  
 Six credits (three hours per week); both semesters. Open to seniors and graduate students who have completed Course 13. No credit is given unless both semesters are completed.

Original investigation and research; conducted in co-operation with the various agencies interested in promoting investigation of labor problems, affording training for practical work in the field of the labor problem.

33. Seminar in Agricultural Economics Mr. THOMPSON  
 Six credits (three hours per week); both semesters. Open to graduate students and seniors who have completed Courses 1 and 22. Both semesters must be completed before credit is given.

Research problems in the marketing and distribution of farm products, agricultural credit, farm ownership and tenancy, and agricultural organizations.

34. Economic Conference All the instructors in Economics and  
the Librarian

Once a month (no credit); both semesters.

A monthly meeting of the instructional staff, the scholars, graduate students, and seniors taking majors in Economics. Required of students electing any of the economic seminars. Lectures on bibliographical aids by Mr. Gerould; papers prepared for various advanced courses presented for criticism; reports by members of the conference on current economic events and literature.

POLITICAL SCIENCE

COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
<i>Introductory Course:</i>					
1.	American Government.....	1 or 2	3	Soph., Jr., Sr.	None
<i>General Courses:</i>					
2.	Comparative Government.....	1	3	Jr., Sr.	See statement
3.	Elements of Jurisprudence ....	1	3	Jr., Sr.	See statement
7.	Municipal Administration.....	2	3	Soph., Jr., Sr.	1
*9.	Political Parties.....	1	3	Jr., Sr.	1, and 2 or 15
10.	Diplomacy.....	1	3	Jr., Sr.	1, and 7 or 15
12.	Colonial Administration.....	1	3	Jr., Sr.	1
15.	State and Local Government..	2	3	Soph., Jr., Sr.	1
*17.	Modern Political Thought.....	2	3	Jr., Sr.	1
18.	Comparative Federal Gov't....	2	3	Jr., Sr.	1, and 2 or 15
*20.	Comp. Latin American Gov'ts..	2	3	Jr., Sr.	1
21.	Business Law.....	1, 2	6†	Jr., Sr.	1 or Econ. 1
<i>Special Courses:</i>					
6.	Commercial Law (Engineers)..	2	2	Sr.	None
13.	Government (Teachers') .....	2	1	Jr., Sr.	1 and 2
16.	Amer. Gov't (Engineers) .....	1	2	Jr.	None

\*Starred courses are given in alternate years.

†Both semesters must be completed before credit is given for the first semester.



No.	Title	Semester	Credits	Offered to	Prereq. courses
<i>Advanced and Graduate Courses:</i>					
*4.	Constitutional Law.....	1, 2	6†	Jr., Sr.	1, 2, & 8 or 15
5.	International Law.....	2	3	Jr., Sr.	1, and 2 or 10
8.	Theory of the State.....	2	3	Jr., Sr.	1, & 2 or 7 or 15
11.	Seminar.....	1, 2	6†	Sr., Grad.	12 cred's in Political Science
*14.	Comparative Administration...	1	3	Jr., Sr.	1, and 2 or 15
*19.	The Police Power.....	1	3	Jr., Sr.	6 credits in Political Science

\*Starred courses are given in alternate years.

†Both semesters must be completed before credit is given for the first semester.

1. American Government Messrs. SCHAPER, YOUNG, and ALLIN  
 Three credits (three hours per week); each semester. Open to sophomores, juniors, and seniors.

Intended as a preparation for the advanced courses in Political Science, for teaching in secondary schools, and for good citizenship. Organization and actual workings of the national and local governments; nature and origin of the American governmental system; 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 and three additional credits in the department.

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 Mr. SCHAPER  
 Three credits (three hours per week); first semester. Open to those who have completed Course 1 and three additional credits in the department.

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.; practice in looking up cases and summarizing leading principles. Intended for active citizenship and for the study of law. Text, with lectures and assigned readings.

- \*4. American Constitutional Law Mr. SCHAPER  
 Six credits (three hours per week); both semesters. Open to those who have completed Courses 1, 2, and 8 or 15. Both semesters must be completed before credit is given for the first semester. Offered in 1911-12.

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  
 Three credits (three hours per week); second semester. Open to those who have completed Courses 1 and 2 or 10.

Nature, sources, and sanction of international law; 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. Commercial Law (Engineers) Mr. YOUNG  
Two credits (two hours per week); second semester. Intended primarily for seniors in the College of Engineering.
7. Municipal Administration Mr. SCHAPER  
Three credits (three hours per week); second semester. Open to those who have completed Course 1.  
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 Mr. SCHAPER  
Three credits (three hours per week); second semester. Open to those who have completed Courses 1, and 2 or 7 or 15.  
Modern political theory; the origin, nature, and purpose of the state; fundamental principles common to all states and governments; the leading theories of the individualists, socialists, anarchists, and other groups. A text-book with readings in the sources, and lectures.
- \*9. Political Parties Mr. SCHAPER  
Three credits (three hours per week); first semester. Open to those who have completed Courses 1, and 2 or 15.  
An advanced course in political parties, their origin, development, and function. Methods of making nominations, securing minority representation, the recall, the initiative and referendum, etc. Text, lectures and special topics. Offered in 1912-13.
10. Diplomacy Mr. ALLIN  
Three credits (three hours per week); first semester. Open to those who have completed Courses 1, and 7 or 15.  
Outline of 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; the character and procedure of courts of arbitration. Text, lectures, and supplementary reading.
11. Seminar in Political Science Messrs. SCHAPER, YOUNG, and ALLIN  
Six credits (three hours per week); both semesters. Open to graduate students and seniors of suitable preparation.  
Research in the field of Political Science; the discussion of current problems in politics and administration.
12. Colonial Administration Mr. ALLIN  
Three credits (three hours per week); first semester. Open to those who have completed Course 1.  
The principal classes of colonies; the causes of colonization; the social, economic, and political tendencies of colonial development; imperial relations; preferential trade and independence; the political systems of modern colonial governments; the organization and administration of the Portuguese, Spanish, English, French, Dutch, and German colonies, and American territories and dependencies. Lectures, assigned readings, and special topics.

13. Teachers' Course in Government Mr. SCHAPER  
 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. Comparative Administration Mr. YOUNG  
 Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Courses 1, and 2 or 15.  
 Administration as a science, its origin and development; an analysis of the administrative systems of the United States, England, France, and Germany, with special reference to the law of officers, the merit systems, and the growth of special administrative tribunals. Text, lectures, and cases. Not offered in 1912-13.
15. State and Local Government Mr. YOUNG  
 Three credits (three hours per week); second semester. Open to those who have completed Course 1.  
 A comparative study of our state constitutions; relation of the states to the United States and to the local units of government; recent experiments such as the initiative and referendum, the recall, primary systems of nominating, the preferential plan of voting, modification of the judicial system, and the extension of the police power. Texts, lectures, and special reports.
16. American Government (Engineers) Mr. YOUNG  
 Two credits (two hours per week); first semester. For students in the College of Engineering.
- \*17. Modern Political Thought Mr. YOUNG  
 Three credits (three hours per week); second semester. Open to those who have taken Course 1.  
 Democracy; the reform movements; the decline of individualism; the extension of the sphere of governmental activity and American political ideals and theories. Lectures and assigned readings. Not offered in 1912-13.
18. Comparative Federal Government Mr. ALLIN  
 Three credits (three hours per week); second semester. Open to those who have taken Courses 1, and 2 or 15.  
 Ancient and modern confederations and federal unions, with special attention to the description and analysis of the federal constitutions of the United States, Switzerland, Canada, and Australia, to the South African Union and the proposals for Imperial federation; the nationalistic tendencies of the federal system; the influence of political parties and commercial policies upon federal organization. Lectures, reports, and assigned readings.
- \*19. The Police Power Mr. YOUNG  
 Three credits (three hours per week); first semester. Open to juniors and seniors who have six credits in Political Science.  
 The nature and scope of the police power; the public welfare, including safety, order, morals, and protection against fraud and oppression; the fundamental rights under the police power. Freund's *Police Power*, with lectures, cases, and class reports. Offered in 1912-13.

\*20. Comparative Latin American Governments Mr. SCHAPER  
 Three credits (three hours per week); second semester. Open to those who have taken Course 1.

The governments and political conditions of Brazil, Argentine, Chile, and Mexico. Text, lectures, and assigned reading. Not offered in 1912-13.

21. Business Law Mr. YOUNG  
 Six credits (three hours per week); both semesters. Open to juniors and seniors who have completed Course 1 or Economics, Course 1.

For description see Economics, Course 21, page 65.

EDUCATION

GEORGE F. JAMES, Ph.D., Professor, Head of Department of Education

125 Folwell Hall

ALBERT W. RANKIN, B.A., Professor

125 Folwell Hall

FLETCHER H. SWIFT, Ph.D., Professor

300 Folwell Hall

\*EDWARD G. QUIGLEY, B.A., Assistant Professor

†SAMUEL QUIGLEY, M.A., Assistant Professor

319 Folwell Hall

REQUIREMENTS OF THE DEPARTMENT

For a *Minor*, twelve credits.

For a *Major*, eighteen credits, together with reinforcing subjects (thirty credits) selected from History, Philosophy, Economics, Politics, sciences, and languages according to special aim of the individual.

No.	Title	Semester	Credits	Offered to	Prereq. courses
1.	Hist. of Educ. to Reformation...	1	3	Jr., Sr.	None
2.	Hist. of Mod. Education.....	2	3	Jr., Sr.	None
3.	Brief History of Education....	1 or 2	3	Jr., Sr.	None
4.	Secondary Education.....	1	3	Sr.	None
5.	Prin. and Org. of El. Teaching..	1	3	Jr., Sr.	None
6.	Prin. and Org. of Sec. Teaching..	2	3	Sr.	None
7.	Theory of Education.....	1	3	Jr., Sr.	Phil. 1a or 1b
8.	School Administration.....	1	3	Sr.	1 and 2, or 3
9.	School Supervision.....	2	3	Sr.	See statement
10.	Comp. Study of School Systems..	2	3	Sr.	None
11.	Philosophy of Education.....	2	3	Sr.	1 and 2, or 3 & Phil. 1a or 1b
12.	Current Prob. in Elem. Teaching	1	2	Sr., Grad.	See statement
13.	Educational Classics.....	1	2	Sr., Grad.	1 and 2, or 3
14.	Current Prob. in Sec. Teaching..	2	2	Sr., Grad.	See statement
15.	Problems in School Admin. ....	2	2	Sr., Grad.	1 and 2, or 3
16.	School Sanitation.....	1	3	Sr.	None
17.	Organization of Higher Educ....	2	1	Sr., Grad.	Six credits
20.	History of Religious Educ.....	1	1	Jr., Sr.	None
21.	Principles of Religious Educ....	2	1	Jr., Sr.	None
22.	Classroom Management.....	2	3	Sr.	1 and 2, or 3
23.	Principles and Practice of Industrial Training.....	2	3	Sr., Grad.	Six credits

\*Absent on leave, 1911-13.

†Substitute for 1911-13.

A list of additional courses in education arranged on Saturdays for teachers may be obtained from the head of the department.

1. History of Education to the Reformation Mr. 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 Mr. SWIFT  
 Three credits (three hours per week); second semester. Open to juniors and seniors.

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.

3. Brief History of Education Mr. SWIFT  
 Three credits (three hours per week); each semester. Open to juniors and seniors.

The origin and development of schools, more particularly in the modern period, as a preparation for the understanding of the educational systems, theories, and practices of the present.

4. Secondary Education Mr. JAMES  
 Three credits (three hours per week); first semester. Open to seniors.

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. Lectures, reports, and discussions.

5. Principles and Organization of Elementary Teaching Mr. QUIGLEY  
 Three credits (three hours per week); first semester. Open to juniors and seniors.

The course of study of the elementary school and the best methods of instruction. Lectures, assigned readings, discussions, and reports. For all students who expect to teach in the high schools 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 Mr. RANKIN  
 Three credits (three hours per week); second semester. Open to seniors.

Lectures on the general methods of secondary teaching, assigned readings, reports, and discussions. More particularly for those who expect to teach in high schools.

## 7. The Theory of Education

Mr. QUIGLEY

Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Philosophy 1a or 1b.

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

Mr. RANKIN

Three credits (three hours per week); first semester. Open to seniors who have completed Courses 1 and 2, or Course 3.

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, school buildings, and hygiene. For students without any teaching experience who hope later to do work in supervision.

## 9. School Supervision

Mr. RANKIN

Three credits (three hours per week); second semester. Open to seniors who have completed Courses 1 and 2, or Course 3. Intended for students with experience in teaching.

An advanced course treating of the duties of school principals and superintendents. Credit will not be given both for Course 8 and for Course 9.

## 10. Comparative Study of School Systems

Mr. JAMES

Three credits (three hours per week); second semester. Open to seniors.

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, with emphasis varying in successive years. Lectures, assigned readings, reports, and discussions.

## 11. Philosophy of Education

Mr. QUIGLEY

Three credits (three hours per week); second semester. Open to seniors who have completed Courses 1 and 2 or Course 3 and Philosophy 1a or 1b.

An endeavor to correlate the various educational ideals drawn from biological and psychological studies, with special consideration of recent social phases of education.

## 12. Current Problems in Elementary Teaching

Mr. RANKIN

Two credits (two hours per week); first semester. Open to seniors and graduate students who have completed Course 5 and one other course.

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

Mr. JAMES

Two credits (two hours per week); first semester. Open to seniors and graduate students who have completed Courses 1 and 2 or Course 3.

A seminar course for the reading of selected educational classics and for detailed study of corresponding periods in educational history.

14. Current Problems in Secondary Teaching Mr. RANKIN  
Two credits (two hours per week); second semester. Open to seniors and graduate students who have completed Course 4 and one other course.

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. Lectures, class discussions, readings, and the visiting of schools.

15. Problems in School Administration Mr. JAMES  
Two credits (two hours per week); second semester. Open to seniors and graduate students who have completed Courses 1 and 2 or Course 3.

A research course for advanced students, preferably with teaching experience, who desire to take up the investigation of some question of educational administration. Lectures, class discussions, assigned readings, and, when possible, a study of actual school conditions falling within the proposed field.

16. School Sanitation Mr. RANKIN  
Three credits (three hours per week); first semester. Open to seniors.

Text, lectures, and 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 Mr. JAMES  
One credit (one hour per week); second semester. Open to seniors and graduate students who have six credits in the department.

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 discussion of modes of organization and administration, problems of departmental teaching, and questions of class instruction.

20. History of Religious Education Mr. SWIFT  
One credit (one hour per week); first semester. Open to juniors and seniors.

An introductory study of the development of the religious consciousness and of the aim, means, and methods of religious instruction among certain types selected from ancient and modern civilizations.

21. Principles of Religious Education Mr. SWIFT  
One credit (one hour per week); second semester. Open to juniors and seniors.

A study of the most important principles of education viewed from the standpoint of their relation and application to religious activities and institutions, and also to the means, methods, and materials of religious instruction.

22. Classroom Management Mr. QUIGLEY  
Three credits (three hours per week); second semester. Open to seniors who have completed Courses 1 and 2 or Course 3.

A detailed consideration of the daily practical problems of the schoolroom both in discipline and in instruction, intended for teachers in high schools and high school training departments, and for principals or superintendents. Observation of school work, with reports and discussions.

23. Principles and Practice of Industrial Training Mr. RANKIN  
Three credits (three hours per week); second semester. Open to seniors and graduate students who have six credits in the department.

The principles fundamental to vocational training in the public school system, as affecting the arrangement of school years, the course of study, and the methods of teaching. Lectures, assigned readings on topics, and reports on observations of school work.

## ENGLISH

RICHARD BURTON, Ph.D., Professor, Head of Department of English, 220 Folwell Hall

FREDERICK KLAEBER, Ph.D., Professor, 222 Folwell Hall

HARDIN CRAIG, Ph.D., Professor, 123 Folwell Hall

JOSEPH W. BEACH, Ph.D., Assistant Professor, 207 Library Building

OSCAR W. FIRKINS, M.A., Assistant Professor, 116 Folwell Hall

GEORGE N. NORTHROP, M.A., Instructor, 116 Folwell Hall

## REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, twelve credits, including Course 1.

*For a Major*, Courses 1, 2 (first semester), 5, 7a, 18, and three additional credits, together with reinforcing subjects (twenty-six credits) from Comparative Philology, Rhetoric (not including Course 1), advanced modern languages, ancient languages, Philosophy, History, and additional English.

*For B. A. with Distinction*, the general requirements (page 36) and nine credits in English (three of which shall be in Old English) in addition to the requirements for a major; with the provision that the thirty credits from reinforcing subjects shall include a minor in Rhetoric.

*For a Teacher's Certificate in English*, either a major in English and a minor in Rhetoric, or a major in Rhetoric and a minor in English, with an average grade of *good* in all the work.

## COURSES

No.	Time	Semester	Credits	Offered to	Prereq. courses
1.	Gen. Survey Eng. Literature ..	1, 2	6*	Soph., Jr., Sr.	Rhet. 1
2.	Old English.....	1, 2	6	Soph., Jr., Sr.	None
3.	Middle English.....	1	2	Soph., Jr., Sr.	See statement
4.	Piers the Plowman.....	1	2	Soph., Jr., Sr.	See statement
5.	Chaucer.....	1 or 2	3	Soph., Jr., Sr.	See statement
6.	Spenser.....	2	3	Soph., Jr., Sr.	1'
7a.	Shakespeare.....	1	3	Jr., Sr.	Six credits
7b.	Shakespeare.....	2	3	Jr., Sr.	7a
8.	Milton.....	2	3	Jr., Sr.	Six credits
9a.	18th Century Literature.....	1	3	Jr., Sr., Grad.	1
9b.	Romantic Movement.....	2	3	Jr., Sr., Grad.	1
10.	English Humorists.....	1, 2	6	Jr., Sr., Grad.	1
11.	17th Century Prose.....	1, 2	6	Jr., Sr., Grad.	See statement
12.	19th Century Literature.....	1	3	Jr., Sr.	Six credits
13.	Modern Drama.....	1, 2	6	Sr., Grad.	12 cred. incl. 7a
14.	English Idiom.....	1	3	Jr., Sr.	Six credits
15.	Browning-Tennyson.....	2	3	Jr., Sr.	Six credits
16.	English Novel.....	1	3	Jr., Sr.	Six credits

\*Both semesters must be completed before credit is given for the first semester.



No.	Title	Semester	Credits	Offered to	Prereq. courses
17.	Bible as Literature .....	2	3	Jr., Sr., Grad.	See statement
18.	Hist. of English Language ....	2	1	Soph., Jr., Sr.	2 (1st sem.)
19.	Prin. of Literary Criticism.....	1, 2	6*	Jr., Sr., Grad.	See statement
20.	American Literature.....	2	3	Jr., Sr., Grad.	Six credits
21.	Moral Forces in Eng. Lit.....	2	3	Jr., Sr.	Six credits
22.	Elizabethan Literature.....	2	3	Jr., Sr., Grad.	1
31.	Meredith.....	1, 2	2*	Grad.	See statement
32.	Pre-Shakespearean Drama ....	1, 2	..	Grad.	Major in Eng.
33.	Anglo-Saxon.....	1	..	Grad.	See statement
34.	Beowulf.....	2	..	Grad.	See statement
35.	Drama.....	1, 2*	..	Grad.	Major in Eng.
36.	Prose Fiction.....	1, 2*	..	Grad.	Major in Eng.
37.	The Metaphysical Poets .....	1	1	Grad.	Major in Eng.
38.	Polit. Prose of the Protectorate	2	1	Grad.	Major in Eng.

\*Both semesters must be completed before credit is given for the first semester.

1. General Survey of English Literature (Includes the literature produced in the United States) Messrs. BURTON and CRAIG, with the assistance of other members of the department

Six credits (three hours per week); both semesters. Open to sophomores, juniors, and seniors.

Lectures, recitations, and assigned readings. Designed to cover the whole period in historical outline, and to prepare for a more minute study of special periods. Required for a major, minor, and a teacher's certificate. The class will meet in recitation sections once a week.

2. Old English First Semester, Messrs. KLAEBER, FIRKINS, and BEACH  
Second Semester, Mr. KLAEBER

Six credits (three hours per week); both semesters. Open to sophomores, juniors, and seniors. The first semester is required of those who take a major or obtain a teacher's certificate in English.

A study of the language and reading of representative selections of Old English prose and poetry. The relation to modern English particularly emphasized.

3. Introduction to Middle English and Literature Mr. KLAEBER

Two credits (two hours per week); first semester. Open to sophomores, juniors, and seniors who have taken the first semester of Course 2; alternates with Course 4.

An outline of Middle English grammar, including the interpretation of selected texts.

4. Piers the Plowman Mr. KLAEBER

Two credits (two hours per week); first semester. Open to sophomores, juniors, and seniors who have taken the first semester of Course 2; alternates with Course 3.

A critical study of *Piers the Plowman*. Not given in 1912-13.

5. Chaucer First Semester, Messrs. FIRKINS and BEACH  
Second Semester, Mr. BEACH

Three credits (three hours per week); second semester. Open to sophomores, juniors, and seniors who have completed or are pursuing Course 1 and have completed the first semester of Course 2.

The grammar and literary forms of fourteenth century English, with selected readings from Chaucer's works. Special attention to the *Canterbury Tales*.

6. Spenser Mr. FIRKINS  
 Three credits (three hours per week); second semester. Open to sophomores, juniors, and seniors who have completed or are pursuing Course 1.  
 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 *Faerie Queene*.
- 7a. Shakespeare Messrs. CRAIG and NORTHROP  
 Three credits (three hours per week); first semester. Open to juniors and seniors who have completed a year of work in English. Required of all who take their major or obtain a teacher's recommendation in English.  
 An introductory study of Shakespeare's development as a poet and dramatist, with reading of representative plays.
- 7b. The Later Plays of Shakespeare Mr. NORTHROP  
 Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Course 7a.  
 Intensive class-room analysis of four plays. Comprehensive collateral reading of other plays.
8. Milton Mr. NORTHROP  
 Three credits (three hours per week); second semester. Open to juniors and seniors who have completed one year of work in English.  
 The principal poets of the time of Charles I and the Protectorate with special emphasis upon Milton.
- 9a. Eighteenth Century Literature: The Rise of Naturalism and Romanticism Mr. CRAIG  
 Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Course 1 and to graduate students.  
 Eighteenth century English literature from Pope to Burns, with special reference to the rise and growth of naturalism and romanticism.
- 9b. The Romantic Movement Mr. CRAIG  
 Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Course 1 and to graduate students.  
 The Romantic School of poets from Wordsworth to Keats and the influence of the revolution in France.
10. English Humorists Mr. BEACH  
 Six credits (three hours per week); both semesters. Open to juniors, seniors, and graduate students who have completed Course 1.  
 The manifestations of the comic spirit in modern literature, chiefly in England. An attempt to define humor, wit, comedy, and satire, with special reference to their use in a criticism of life and with extended illustrations from the dramatists, novelists, essayists, and poets.
11. Seventeenth Century Prose Mr. NORTHROP  
 Six credits (three hours per week); both semesters. Open to juniors and seniors who have completed one year in English. Course 2 in History is a desirable prerequisite.

First semester: General survey of the prose of the century to 1660.

Second semester: Literature of the Restoration, with particular study of Dryden.

12. Outline of Nineteenth Century Literature Mr. NORTHROP  
 Three credits (three hours per week); first semester. Open to juniors and seniors who have completed one year of work in English.  
 The main features of Victorian literature, with particular emphasis upon the poetry of Arnold and the prose of Carlyle.
13. The Drama: Structure and Evolution Mr. FIRKINS  
 Six credits (three hours per week); both semesters. Open to seniors who have completed two years of work in English, which must include Course 7a (Shakespeare).  
 First semester: Theory of the drama, and history up to the nineteenth century.  
 Second semester: Recent drama, continental, English. Open only to those who have completed first semester.
14. English Idiom Mr. 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 historic development.
15. Browning and Tennyson Mr. 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.
16. The English Novel Mr. BURTON  
 Three credits (three hours per week); first semester. Open to juniors and seniors who have completed one year of work in English.  
 Principles and personalities in the evolution of the English novel. Written reports required on selected novels.
17. The Bible as Literature Mr. BURTON  
 Three credits (three hours per week); second semester. Open to graduate students who have taken an undergraduate major in English and to juniors and seniors who have completed Course 1.  
 A literary study of the Old Testament with special attention to forms and the critical study of selected readings.
18. History of the English Language Mr. KLAEBER  
 One credit (one hour per week); second semester. Open to sophomores, juniors, and seniors who have completed the first semester of Course 2. Required of all who take their major or obtain a teacher's certificate in English.
19. Principles of Literary Criticism Mr. FIRKINS  
 Six credits (three hours per week); both semesters. Open upon approval of the instructor to juniors, seniors, and graduate students who have completed Course 1.

A brief treatment of elements or forces in literature, e. g., clearness, vigor, beauty, precision, art, taste, humor, ethics, truth, and the like; an exposition of literary types, e. g., the lyric, epic, drama, short story, novel, biography, etc., in relation to the standards and methods of judging each.

## 20. American Literature

Mr. CRAIG

Three credits (three hours per week); second semester. Open in alternate years to juniors and seniors who have completed one year of English study and to graduate students.

Lectures on American literature, with extensive readings from the principal poets and prose writers of this country. Not offered in 1912-13.

## 21. Moral Forces in English Literature

Mr. BEACH

Three credits (three hours per week); second semester. Open to juniors and seniors who have completed one year of work in English.

The moral forces in modern English literature, as seen in individual authors and in literary movements and tendencies, especially in the eighteenth and nineteenth centuries.

## 22. Elizabethan Literature

Mr. CRAIG

Three credits (three hours per week); second semester. Open in alternate years to juniors and seniors who have completed Course 1.

A study of Elizabethan authors exclusive of Shakespeare. Offered in 1912-13.

## 31. Seminar in George Meredith

Mr. BEACH

Two credits (one hour per week); both semesters. Open to seniors and graduate students who have completed Course 1.

Meredith's personality, literary method, and philosophy of life, as seen chiefly in his novels and poems.

## 32. The Drama in England before Shakespeare

Mr. CRAIG

Both semesters. Open to graduate students who have taken an undergraduate major in English; other arrangements may be ascertained upon application to the department.

The various forms of the early drama; sources and texts of medieval plays, medieval players, the stage, and the function of the early drama.

## 33. Anglo-Saxon

Mr. KLAEBER

First semester. Open to graduate students who have taken an undergraduate major in English or modern language. Other arrangements may be ascertained upon application to the department.

## 34. Beowulf

Mr. KLAEBER

Second semester. Open to graduate students who have taken an undergraduate major in English or modern language. Other arrangements may be ascertained upon application to the department.

## 35. The Drama as a Literary Form: Bernard Shaw

Mr. BURTON

Both semesters. Open in alternate years to graduate students who have taken an undergraduate major in English; other arrangements may be ascertained upon application to the department. Offered in 1912-13.

36. Fiction as a Literary Form Mr. BURTON  
Both semesters. Open in alternate years to graduate students who have taken an undergraduate major in English; other arrangements may be ascertained upon application to the department. Not offered in 1912-13.
37. The Metaphysical Poets Mr. NORTHROP  
One credit (one hour per week); first semester. Open to graduate students who have taken an undergraduate major in English. Given in 1912-13 and in alternate years following.  
The religious poetry of the early Stuart period, with particular attention to Crashaw, Donne, and Herbert.
38. Political Prose of the Protectorate Mr. NORTHROP  
One credit (one hour per week); second semester. Open to graduates who have had an undergraduate major in English. Given in 1912-13 and alternate years following.  
Intensive study of Clarendon and of the letters of this period. Students entering this course are strongly urged to take the correlative course in English History, History 19b.

## GEOLOGY AND MINERALOGY

WILLIAM H. EMMONS, Ph.D., Professor, Head of Department of Geology and Mineralogy	108 Pillsbury Hall
EDWARD M. LEHNERTS, M.A., Assistant Professor	107 Pillsbury Hall
FREDERICK W. SARDESON, Ph.D., Assistant Professor	103 Pillsbury Hall
FRANK F. GROUT, M.S., Assistant Professor	102 Pillsbury Hall
OLIVER BOWLES, M.A., Instructor	102 Pillsbury Hall
EDGAR K. SOPER, B.A., Instructor	112 Pillsbury Hall
A. WALFRED JOHNSTON, M.A., Instructor	112 Pillsbury Hall

## REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, twelve credits.

*For a Major*, eighteen credits, with reinforcing subjects (thirty credits) selected from Animal Biology, Botany, Chemistry, Mathematics, Physics, Topographic Drawing, advanced modern languages, and additional Geology, Mineralogy, and Geography.

*For B. A. with Distinction*, the general requirements (page 36) and six credits in addition to the requirements for a major, including Courses 11 and 19, and at least one course in Field Geology or Geography.

*For a Teacher's Certificate*, the same requirements as for a major, with an average of at least good.

Students who desire to take double courses in Geology may do so by electing any of the following combinations, providing they have had prerequisites for both courses: first semester, 1a and 18, 1a and 29a, 7 and 8; second semester, 2 and 3a, 5 and 13a, etc.

## COURSES

## GEOLOGY

No.	Title	Semester	Credits	Offered to	Prereq. courses
1a.	General Geology.....	1	3	Soph., Jr., Sr.	None
1c.	Laboratory Work.....	1	1	Soph., Jr., Sr.	None
2.	Geog. and Geol. of Minnesota.	2	3	Soph., Jr., Sr.	1a
3a.	Historical Geology.....	2	3	Soph., Jr., Sr.	1a
3b.	Historical Geology, Lab.....	2	1	Soph., Jr., Sr.	See statement
4.	Elements of Rock Study.....	1	3	Jr., Sr.	1a, 1b, 19
5.	Petrology.....	2	3	Jr., Sr.	4
6.	Elements of Paleontology.....	1	3	Jr., Sr.	See statement
7.	Paleontology.....	1, 2	6	Jr., Sr.	See statement
8.	Paleontologic Practice.....	1, 2	6	Jr., Sr.	See statement
9.	Paleontologic Geology.....	1 or 2	3	Grad.	1a, 3a, and 7
10.	Advanced Paleontology.....	1, 2	6	Jr., Sr., Grad.	7
11.	Applied Geology.....	1	3	Jr., Sr.	1a, 3a, 18, 19
12.	Ore Deposits.....	1	4	Sr.	1a, 3a, 4, 18, 19
13a.	Special Problems.....	2	2	Sr.	12
13b.	Seminar in Ore Deposits.....	2	3	Grad.	13a
14.	Study of Minerals and Rocks	1, 2	2	Jr., Sr.	1a
15.	Petrographical Problems.....	1, 2	.	Grad.	5
16.	Structural & Metamorphic Geology.....	2	3	Jr., Sr.	3a, 4, 11, 19
17.	Glacial Geology.....	2	.	Grad.	See statement

## MINERALOGY

18.	Elements of Mineralogy.....	1	3	Soph., Jr., Sr.	See statement
19.	Descriptive Mineralogy.....	2	3	Soph., Jr., Sr.	18
20.	Physical Mineralogy.....	1	3	Jr., Sr.	19
21.	Chemical Mineralogy.....	2	3	Jr., Sr.	19
24a.	Morphology of Minerals.....	1	3	Jr., Sr.	18
24b.	Crystal Measurement.....	2	3	Jr., Sr., Grad.	24a
25.	Optical Mineralogy.....	2	3	Jr., Sr.	18
26.	Quantitative Mineralogy.....	2	8	Soph., Jr., Sr.	18
27.	Outline of Mineralogy.....	1, 2	2	Jr., Sr.	None
28.	Original Problems.....	1, 2	.	Grad.	18, 19
40.	Field Geology.....	Summer	6	Jr., Sr.	1a, 3a, 19
41.	Field Geology.....	Summer	.	Grad.	1a, 3a, 19

## GEOGRAPHY

29a.	General Physiography.....	1	3	Jr., Sr.	None
29b.	Physical and Human Geog. ...	1, 2	6	Soph., Jr., Sr.	None
30.	Regional Physiography.....	2	3	Jr., Sr.	1a or 29a
31.	Elements of Meteorology.....	2	3	Jr., Sr.	1a or 29a
32.	Climatology.....	1	3	Sr.	31
33.	Western Hemisphere.....	2	3	Jr., Sr.	29a or 29b
34.	Problems in Geography.....	1	3	Sr.	33
36.	Method and Material of Geog..	1, 2	2	Jr., Sr.	29a
37.	Field and Lab. Practice.....	1, 2	2	Jr., Sr.	29a
38.	Field Work in Geography.....	Summer	6	Jr., Sr.	1a or 29a
39.	Research Course.....	1, 2	6	Grad.	See statement

## 1a. General Geology

Messrs. EMMONS and JOHNSTON

Three credits (three hours per week); first semester. Open to sophomores, juniors, and seniors. The class is divided into four sections. High school or college Chemistry is a desirable antecedent, but is a prerequisite for one section only.

A synoptical treatment of the materials of the earth and of geologic processes; physiographic, structural, and dynamic geology, with a brief introduction to historical geology. Lectures, laboratory work, field excursions, map study, and conferences.

- 1c. Laboratory Work Mr. JOHNSTON and ASSISTANTS  
One credit (two hours per week); first semester. Open to students taking Course 1a.

To supplement Course 1a. The study of rocks and ores, of topographic and geologic maps, with a small amount of reference reading.

2. Geography and Geology of Minnesota Mr. JOHNSTON  
Three credits (three hours per week); second semester. Open to students who have completed Course 1a.

The physical geography of the State in its relations to geological history and industrial development; the principles and facts of pre-Cambrian geology as exemplified in the State and the extension of these into general application; the present problems of the State in agriculture, drainage, water power, mining, quarrying, etc.

- 3a. Historical Geology Mr. SARDESON  
Three credits (three hours per week); second semester. Open to students who have completed Course 1a.

The history of the North American continent; the more important types of fossils in their geological relations. Lectures and demonstrations.

- 3b. Historical Geology (Laboratory work) Mr. SARDESON  
One credit (two hours per week); second semester. Open to students taking Course 3a.

The interpretation of geologic profile sections and maps; general formational relations; fossils and rock specimens.

4. Elements of Rock Study Messrs. GROUT and BOWLES  
Three credits (six hours per week); first semester. Open to juniors and seniors who have completed Courses 1a, 18, and 19.

The composition of the earth's crust; the occurrence and genesis of igneous, sedimentary, and metamorphic rocks; their mineral and chemical composition; their structure, texture, and physical constitution; the alteration of rocks; the classification of igneous rocks; an introduction to the use of the microscope. A laboratory course with reference reading.

5. Petrology Messrs. GROUT and BOWLES  
Three credits (six hours per week); second semester. Open to students who have completed Course 4.

Laboratory work, lectures, and reference reading. The identification of minerals and rocks by optical study; a study of igneous rocks, crystalline schists, and metamorphic rocks; the origin and classification of igneous rocks.

6. Elements of Paleontology Mr. SARDESON  
Three credits (three hours per week); first semester. Open to juniors and seniors who have taken courses in Geology or Biology.

Fossil organisms; the sources and interpretation of paleontologic evidence and the relation to it of theories of evolution. Lectures, demonstrations, and occasional excursions.

7. Paleontology Mr. SARDESON  
Six credits (three hours per week); both semesters. Open to juniors and seniors who have taken or are taking courses in Geology and Biology.

The chief types of organisms as represented by fossils; leading fossils and their phylogenetic history. Lectures and demonstrations.

8. Paleontologic Practice Mr. SARDESON  
Six credits (three hours per week); both semesters. Open to juniors and seniors who have completed Course 7, or may be taken by students who are pursuing Course 7.  
The collection, preparation, and study of materials, examination of collections, and reading with a view to more complete knowledge of the groups of fossil organisms as presented in Course 7.
9. Paleontologic Geology Mr. SARDESON  
Three credits (three hours per week); each semester. Open to students who have completed Courses 1a, 3a, and 7.  
The Ordovician fauna, with special illustrations from the Ordovician of Minnesota and neighboring states.
10. Advanced Paleontology Mr. SARDESON  
Six credits (three hours per week); both semesters. Open to undergraduates and to graduate students who have completed Course 7.  
Selected groups of fossils; forms and literature of the groups. Class work supplemented by a thesis.
11. Applied Geology Mr. SOPER  
Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Courses 1a, 3a, 18, and 19.  
The occurrence, genesis, distribution, and uses of the metals, non-metals, and mineral fuels. Lectures and laboratory work.
12. Ore Deposits Messrs. EMMONS and SOPER  
Four credits (four hours per week); first semester. Open to students who have completed Courses 1a, 3a, 4, 18, 19.  
The nature, distribution, and genesis of metalliferous ore deposits of the United States; relation of ore deposits to geologic structure and the changes which ore deposits undergo through oxidation and related processes. Lectures, laboratory work illustrating the use of mine maps and geologic cross sections through mines, and detailed laboratory studies of reports on mining districts.
- 13a. Special Problems in Ore Deposits Messrs. EMMONS and SOPER  
Two credits (four hours per week); second semester. Open to seniors who have completed Course 12.  
Metallogenic epochs and metallographic provinces, particularly those of the United States. Lectures on field and laboratory methods.
- 13b. Seminar in Ore Deposits Mr. EMMONS  
Three credits (three hours per week); second semester. Open to graduate students of advanced standing who have completed Course 13a or its equivalent.
14. Outline Study of Minerals and Rocks Mr. GROUT  
Two credits (two hours per week); both semesters. Open to those who have completed Course 1a; especially for teachers.  
General principles of petrography and stratigraphy; classification of minerals and rocks; practice in their identification. Conferences, reading, and field work.



15. Petrographical Problems Messrs. GROUT and BOWLES  
Both semesters. Open to graduate students and others qualified.  
Course 5 is a prerequisite.

The genesis of rocks and their chemical and dynamical alterations, illustrated in the gneisses and gabbro schists of the Minnesota River Valley and the granites and basic eruptives of central Minnesota; geology of eastern and northeastern Minnesota, and other problems in the Keweenawan.

16. Structural and Metamorphic Geology Messrs. EMMONS and JOHNSTON  
Three credits (three hours per week); second semester. Open to those who have completed Courses 3a, 4, 11, and 19.

The conditions, processes, and results of metamorphism; structural features resulting from deformation under varying conditions of load; review of the pre-Cambrian geology of the Lake Superior region.

17. Glacial Geology Mr. SARDESON  
Credits according to work; second semester. Open to graduate students of advanced standing in Geology or Geography.

The drift, glacial lakes, the gorge and Falls of St. Anthony, the Dalles of the St. Croix, and other problems. Lectures, reading, and field work.

### MINERALOGY

18. Elements of Mineralogy Messrs. BOWLES and GROUT  
Three credits (six hours per week); first semester. Open to sophomores, juniors, and seniors who have taken high school Chemistry or to those taking college Chemistry.

The systems of crystallization; the morphological, physical, and chemical characters of minerals; classification and description of common minerals; the occurrence, genesis, and uses of minerals. Laboratory work, involving the application of chemical and blow-pipe tests to the identification of species; determination of minerals by physical properties and sight identification.

19. Descriptive Mineralogy Messrs. BOWLES and GROUT  
Three credits (six hours per week); second semester. Open to sophomores, juniors, and seniors who have completed Course 18.

A continuation of Course 18, special attention being given to economic and rock-forming minerals; mineral determination and sight identification; the use of the goniometer and microscope. Laboratory, reference reading, and field excursions.

20. Physical Mineralogy Mr. BOWLES  
Three credits (two lectures and two laboratory hours per week); first semester. Open to those who have completed Course 19.

The form and optical properties of minerals; other physical properties in greater detail than in Course 18; thermal properties, as coefficient of expansion and conductivity; pyroelectricity; cohesion as hardness, percussion, and etch figures; cleavage and gliding planes.

21. Chemical Mineralogy Mr. GROUT  
Three credits (six hours per week); second semester. Open to those who have completed Course 19.

Minerals studied as chemical materials; the preparation and properties of artificial minerals; the limitations of natural chemical action; dimorphism, isomorphism, and similar phenomena; microchemical methods of identification.

24a. Morphology of Minerals

Mr. BOWLES

Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Course 18.

Crystallography, embracing projection and the geometric relations of crystal planes; crystal nomenclature; the relation of optical properties to morphology. The laboratory work embraces a study of crystal models, crystal drawing, identification of minerals from crystal measurement and mathematical calculation.

24b. Crystal Measurement

Mr. BOWLES

Three credits (three hours per week); second semester. Open to juniors, seniors, and graduate students who have completed Course 24a.

The measurement of crystal angles with the two-circle goniometer; gnomonic projection and crystal drawing; the mathematical and graphic determination of crystallographic constants; the determination of minerals by means of crystal measurements.

25. Optical Mineralogy

Mr. GROUT

Three credits (six hours per week); second semester. Open to juniors and seniors who have completed Course 18.

The microscopic structure of crystals and crystal grains; determining minerals by their optical properties; goniometric and stauroscopic practice; the elements of lithology. Lectures and laboratory work.

26. Quantitative Mineralogy

Messrs. APPLEBY and CHRISTIANSON

In the School of Mines. Eight credits (twelve hours per week); second semester. Open to sophomores, juniors, and seniors who have completed Course 18.

Determination of the values of ores, metallurgical products, and bullion. Lectures, recitations, and laboratory work. Identical with Metallurgy 1 in the School of Mines.

27. An Outline of Mineralogy

Mr. GROUT

Two credits (two hours per week); both semesters. Open to juniors and seniors; designed especially for teachers.

Methods of identification of minerals, with their applications. Conferences, reading, and demonstrations.

28. Original Problems in Morphological and Physical Mineralogy

Messrs. GROUT and BOWLES

Hours and credits to be arranged; both semesters. Open to graduates and others by individual arrangement. Courses 18 and 19 are prerequisites.

Any branch of mineralogy and many groups of materials will furnish problems.

## FIELD GEOLOGY

40. Field Geology

Mr. JOHNSTON

Six credits (six weeks in the field). Open to students who have completed Courses 1a, 3a, and 19.

A field course in geologic mapping in the summer vacation period. The fields for 1912 are on the Mesabi and Vermilion Iron Ranges. Credit is given only on completion of a satisfactory report.

#### 41. Field Course in Geology

Open to graduates of advanced standing who have completed Course 40 or its equivalent. To be arranged with individual students upon application to the department.

By action of the Faculty, credit will be given for field work done satisfactorily, as prescribed in the joint announcements of various universities for the summer 1912-13.

### GEOGRAPHY

#### 29a. General Physiography

Mr. LEHNERTS

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

The principles of earth sculpture; structural features of the continents; hydrography and oceanography; planetary relations; climatology; the evolution, uses, and effects of the materials and physical features of the earth.

#### 29b. Physical and Human Geography

Messrs. LEHNERTS and ROBINSON

Six credits (three hours per week); both semesters. Open to sophomores, juniors, and seniors who have not taken Course 29a. Constitutes a unit course for which no credit is allowed until both semesters are completed. May be counted toward a major or a minor in either the Department of Geology and Mineralogy or the Department of Economics and Political Science.

First semester, given by Mr. Lehnerts: Fundamental physiographic facts, processes, and relations, with special reference to their effect on the activities of mankind; planetary relations, climate, land forms, and oceans; rivers, lakes, and waterpowers, ground water, and soils; mountains, plateaus, and plains; deserts, steppes, and prairies. Lectures and laboratory work.

Second semester, given by Mr. Robinson: Economic and political development in relation to nature; meaning of the geographic and economic interpretations of history; economic progress as a phase of adaption to environment, illustrated by reference to the industrial conditions of the leading countries. Text-books, supplemented by lectures and reports on special topics.

#### 30. Regional Physiography

Mr. LEHNERTS

Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Course 1a or 29a.

An application of the principles of physical geography in a study of physiographic provinces; the origin and geographic significance of their physical features; the influence of these on the early settlement of countries and the subsequent industrial and political development of nations.

#### 31. Elements of Meteorology

Mr. LEHNERTS

Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Course 1a or 29a.

The properties and phenomena of the atmosphere, including pressure and temperature, together with a study of the apparatus and practice of a weather bureau office; conditions of climatic changes; the influence of physiographic conditions. Text-book, lectures, and reference reading.

32. Climatology Mr. LEHNERTS  
 Three credits (three hours per week); first semester. Open to seniors who have completed Course 31.  
 Principles of meteorology applied to a study of the climates of the world and the factors on which these climates depend; climatic influences on the distribution and characteristics of plants and animals, and on man's needs and occupations. Lectures, recitations, and reference reading.
33. The Western Hemisphere Mr. LEHNERTS  
 Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Course 29a or 29b.  
 Regional geography of the continents and countries of the Western Hemisphere. Lectures, maps, and library work.
34. Problems in Geography Mr. LEHNERTS  
 Three credits (three hours per week); first semester. Open to seniors who have completed Course 33.  
 The effects of coast lines and harbors, navigable rivers, water powers, mountains, and plains, rock formations, and soils; ground and surface waters for municipal and farm supplies; the utilization and conservation of natural resources. A series of special problems in geography.
36. The Method and Material of Geography Mr. LEHNERTS  
 Two credits (one hour per week); both semesters. Open to juniors and seniors who have completed Course 29a; especially designed for teachers.  
 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 classroom instruction; the method of the recitation.
37. Field and Laboratory Practice Mr. LEHNERTS  
 Two credits (one hour per week); both semesters. Open to juniors and seniors who have completed Course 29a; designed especially for teachers.  
 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 in the laboratory as well as in the field. For teachers and others who wish to learn the methods of field geography and geology.
38. Field Work in Geography Mr. LEHNERTS  
 Six credits; summer session. Open to juniors and seniors and graduate students who have completed Course 1a or 29a.  
 A six weeks' course given during the summer months. Systematic study in the field, of the physical and industrial geography of selected areas in one or more western states. Arrangements may be ascertained upon application to the department.
39. Research Course in Geography Mr. LEHNERTS  
 Six credits (three hours per week); both semesters. Open to graduate students who have completed a major in Geography.  
 Principles and problems in the several fields of geography, mathematical, physical, industrial, and regional. Students will be required to do semi-independent work on selected subjects and problems.

## GERMAN

JOHN G. MOORE, B.A., Professor, Head of Department of German	210 Folwell Hall
*CARL SCHLENKER, B.A., Professor	211 Folwell Hall
HANS JUERGENSEN, M.A., Assistant Professor	215 Folwell Hall
OSCAR C. BURKHARD, M.A., Assistant Professor	214 Folwell Hall
RICHARD WISCHKAEMPER, M.A., Instructor	216 Folwell Hall
ALFRED E. KOENIG, M.A., Instructor	216 Folwell Hall
JAMES DAVIES, Ph.D., Instructor	211 Folwell Hall
LEON METZINGER, Ph.B., Instructor	214 Folwell Hall
THEOPHILUS H. SCHROEDEL, B.A., Instructor	215 Folwell Hall
J. THEODORE GEISSENDOERFER, B.A., Instructor	216 Folwell Hall
ARTHUR C. BURKHARD, B.A., Assistant	

\*Absent on leave, 1912-13.

## REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, twelve credits, not including Course 1.

*For a Major*, eighteen credits, not including Course 1, together with reinforcing subjects (thirty credits) selected from Philology, Anglo-Saxon and Old English, Icelandic, advanced Scandinavian, English, French, Latin, Greek, additional German courses, and related courses in History and Philosophy.

*For B.A. with Distinction*, the general requirements (page 36) and Courses 8, 9, and 10 and any two of Courses 12, 13, 14, 16, and 17.

*For a Teacher's Certificate*, an average of at least good in Courses 2 or 4, 6 or 7, 8, 9, 10, and 11.

For courses in Germanic Philology, see the statement of the Department of Comparative Philology, pp. 56-58.

## COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
1a.	Beginning.....	1, 2	10*†	All	None
1b.	Beginning.....	1, 2	6*†	Engineers	None
2.	Intermediate.....	1, 2	6*	Soph., Jr., Sr.	1
3a.	Scientific Intermediate.....	1, 2	6*	Soph., Jr., Sr.	1
3b.	Scientific Intermediate.....	1, 2	6*	Soph. Eng.	1b
4.	Prose and Poetry.....	1, 2	6*	All	Two yrs. prep. German
5.	Conversation.....	1, 2	4*	All	See statement
6.	Drama.....	1, 2	6*	Soph., Jr., Sr.	1 and 2, or 4
7.	Adv. Scientific Reading.....	1, 2	6*	Soph., Jr., Sr.	2 or 3 or 4
8.	Adv. Conversation.....	1, 2	4*	Soph., Jr., Sr.	See statement
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.	9 or 10
12a.	Reformation.....	1, 2	4*	Sr., Grad.	9 or 10

† Juniors and seniors are allowed only half credit.

\* Both semesters must be completed before credit is allowed for the first semester.



4. Prose and Poetry Messrs. JUERGENSEN, O. C. BURKHARD, SCHROEDEL, WISCHKAEMPER, KOENIG, DAVIES, METZINGER, and A. C. BURKHARD

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. This course may be supplemented by Course 5.

Stern's *Aus deutschen Meisterwerken*; Goethe's *Gedichte*; Heine's *Buch der Lieder*. Geography, history, and legend. Review of German grammar throughout the year.

5. Elementary Conversation and Composition Messrs. JUERGENSEN, O. C. BURKHARD, WISCHKAEMPER, KOENIG, and DAVIES

Four credits (two hours per week); both semesters. Open to those who are taking or have taken Course 2 or 3 or 4; no credit 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 every-day life; narrative and descriptive essays and letter writing.

6. The Drama Messrs. SCHLENKER, JUERGENSEN, O. C. BURKHARD, SCHROEDEL, DAVIES, and GEISSENDOERFER

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. Plays of Hebbel, Hauptmann, or Sudermann. Study of the present-day drama in Germany. Assigned readings and reports. Second semester: Classic drama. Plays of Lessing, Goethe, or Schiller. Study of dramatic structure. History of the German drama in the eighteenth century.

7. Advanced Scientific Reading

Messrs. JUERGENSEN and WISCHKAEMPER

Six credits (three hours per week); both semesters. Open to those who have taken Course 2 or 3 or 4; not open to those who have credit for Course 6; this course may be supplemented by Course 8. Both semesters must be completed before credit is given for the first semester.

Reading of monographs and periodicals.

8. Advanced Conversation, Grammar, and Composition. Messrs. SCHLENKER, JUERGENSEN, O. C. BURKHARD, KOENIG, and GEISSENDOERFER

Four credits (two hours per week); both semesters. Open to those who are taking or have taken Course 6, 7, or 9; 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. Both semesters must be completed before credit is given for the first semester.

Essays on assigned subjects; oral exercises in German by means of discussions on every-day subjects; debates, narration, and the like.

9. German Literature of the Classic Period Mr. MOORE

Six credits (three hours per week); both semesters. Open to those who have completed Course 2 (by special permission) or 6 or 7; required of those who obtain a teacher's recommendation in German. Both semesters must be completed before credit is given for the first semester.

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 II. Second semester: Schiller's ballads and other representative poems of this period. German versification. Reading and discussion of Lessing's more important critiques, the *Luocoon* and *Dramaturgie*. History of German literature of the classic period. Lectures and collateral reading; essays by the class.

10. Modern Authors Messrs. MOORE and SCHLENKER

Six credits (three hours per week); both semesters. Open to those who are taking or have completed Course 9; required of those who obtain a teacher's recommendation in German. Both semesters must be completed before credit is given for the first semester.

First semester: Romantic school and *Junge Deutschland*. Second semester: German literature since 1848.

11. Teachers' Course Mr. MOORE

One credit (one hour per week); second semester. Open to seniors who have completed Course 10 (or 9 by special permission); especially designed for students who expect to become teachers of German in high schools.

12a. History and Literature of the Reformation Mr. MOORE

Four credits (two hours per week); both semesters. Open to seniors and graduate students who have completed Course 9 or Course 10. Both semesters must be completed before credit is given for the first semester.

Brandt, Luther, Hutten, Sachs, Murner, and Fischart. Selections from Jansen and Egelhaaf. Offered in 1912-13.

12b. Faust, Part II Mr. MOORE

Four credits (two hours per week); both semesters. Open to graduate students and seniors who have completed Course 9 or Course 10. Both semesters must be completed before credit is given for the first semester.

Recitations, collateral reading in Faust literature and reports, lectures, and discussions. Given alternate years with Course 12a. Offered in 1913-14.

13a. Middle High German Mr. SCHLENKER

Four credits (two hours per week); both semesters. Open to seniors and graduate students who have completed Course 9. 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 *Armer Heinrich*, *Nibelungen Lied*, *Gudrun*, the poems of Walter von der Vogelweide, *Parsifal*, etc. Course conducted in German. Offered in 1912-13.

13b. The Age of Frederic the Great Mr. SCHLENKER

Four credits (two hours per week); both semesters. Open to graduate students and seniors who have completed Course 9. Both semesters must be completed before credit is given for the first semester.



I. A survey of the literature from the Thirty Years' War to the Age of Frederic.  
 II. A study of the so-called Age of Enlightenment. (Klopstock, Wieland, Lessing, and Herder.) Recitations, readings and reports, lectures. Course conducted in German. Given alternate years with Course 13a. Offered in 1913-14.

## 14. Old High German

Mr. KLAEBER

Four credits (two hours per week); both semesters. Open to seniors and graduate students who have taken Course 9. 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

Mr. SCHLENKER

Two hours per week; both semesters. Open to graduate students and, by permission of the department, to undergraduate students, but without credit.

An outline of the history of the German dramatic literature from its beginning to and including the so-called classic drama. Assigned readings, reports, and discussions.

## 16a. History of the German Language

Mr. O. C. BURKHARD

Four credits (two hours per week); both semesters. Open to graduate students who have completed Course 9.

A survey of its development, with special reference to modern German. Based on Bahagel's *Deutsche Sprache*. Etymology, word formation, syntax, comparison of English and German, etc. Arranged to meet the needs of teachers. Offered in 1913-14.

## 16b. The Drama of Schiller

Mr. O. C. BURKHARD

Four credits (two hours per week); both semesters. Open to graduate students and seniors who have completed Course 9.

I. Schiller's drama as a reflection of the thoughts of his age. II. The plays will be considered in chronological order with reference to the development of the dramatic idea, from the expression of the Storm and Stress movement in the early drama to the classic form of his last works. Given alternate years with Course 16a. Offered in 1912-13.

## 17a. History of German Literature

Mr. JUERGENSEN

Four credits (two hours per week); both semesters. Open to graduate students and seniors who have completed Course 9. Both semesters must be completed before credit is given for the first semester.

The development of German literature from its origin down to the classic period. The class work and lectures in the German language. Offered in 1912-13.

## 17b. German Lyric Poetry of the Seventeenth and Eighteenth Centuries

Mr. JUERGENSEN

Four credits (two hours per week); both semesters. Open to graduate students and seniors who have completed Course 9. Both semesters must be completed before credit is given for the first semester.

Courses conducted in German. Special attention will be given to literary schools and movements. Given alternate years with Course 17a. Offered in 1913-14.

## 18a. Seminar in Philosophic Reading

Mr. JUERGENSEN

Two hours per week; both semesters.

First semester: Schopenhauer as a model of style and philosophic method. Second semester: adapted to students pursuing either the more literary aspect of the subject (Lessing, Herder, Schiller), or the more speculative (Kant, Hegel, *et al.*). Given alternate years with Course 18b. Offered in 1912-13.

18b. Seminar in Scientific Reading Mr. JUERGENSEN  
 Two hours per week; both semesters. Open to graduate students who have completed Course 9 or 10. Both semesters must be completed before credit is given for the first semester.  
 1913-14. The literature of evolution (Haeckel, Reinke, *et al.*).

GREEK

JOHN CORRIN HUTCHINSON, B.A., Professor, Head of Department of Greek 112 Folwell Hall  
 CHARLES ALBERT SAVAGE, Ph.D., Professor 112 Folwell Hall

REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, not less than twelve credits.

*For a Major*, not less than eighteen credits (exclusive of Courses 20, 21, 22) together with reinforcing subjects (thirty credits) selected from Latin, advanced German and French, Philology, English, advanced Rhetoric, Philosophy, Ancient History, and additional Greek.

*For B. A. with Distinction*, the general requirements (page 36) and at least Courses 4, 5, 6, 7, 8 or 9, 10, 12, and one hour per week of seminar work throughout one year.

COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
1.	First Year Greek.....	1, 2	10*	All	None
2.	History and Epic Poetry.....	1, 2	6*	Soph., Jr., Sr.	1
3.	Historical Prose.....	1, 2	6*	All	See statement
4.	Philosophy.....	1	3	Soph., Jr., Sr.	2 or 3
5.	Oratory.....	2	3	Soph., Jr., Sr.	2 or 3
6.	Lyrics.....	1	3	Jr., Sr.	4 or 5
7.	Tragedy.....	2	3	Jr., Sr.	4 or 6
8.	Philosophy (Advanced).....	1	3	Jr., Sr.	4
9.	Oratory (Advanced).....	1	3	Jr., Sr.	5
10.	Epic Poetry (Advanced).....	2	3	Jr., Sr.	7 or 11
11.	Dramatic Poetry.....	1, 2	4	Soph., Jr., Sr.	See statement
12.	Composition.....	1, 2	2*	Jr., Sr.	4 and 5
13.	Later Greek.....	1, 2	6	Jr., Sr.	4
14.	Seminar.....	1	1	Jr., Sr.	4 or 5
15.	Seminar.....	2	1	Jr., Sr.	5
16.	Epic Poetry (Advanced).....	.....	.....	Grad.	.....
17.	Dramatic Poetry (Advanced).....	.....	.....	Grad.	.....
18.	Oratory (Advanced).....	.....	.....	Grad.	.....
19.	Later Greek.....	.....	.....	Grad.	.....

COURSES OPEN TO ALL, NO KNOWLEDGE OF GREEK BEING REQUIRED

20.	Greek Archaeology.....	1, 2	1 or 2	Jr., Sr.	None
21.	Greek Literature and Life.....	2	2	Jr., Sr.	None
22.	Greek Mythology.....	1, 2	1 or 2	Jr., Sr.	None

\*Both semesters must be completed before credit is allowed for the first semester.

1. First Year in Greek Messrs. HUTCHINSON and SAVAGE  
 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.

First semester: The declensions and conjugations and the simpler rules of syntax, together with sentences based on the vocabulary of the *Anabasis*, and translation into Greek of idiomatic English sentences based upon the same text.

Second semester: The *Anabasis* itself, an amount equivalent to about a book; Hadley's *Greek Grammar*; etymology reviewed and syntax studied sufficiently to enable the student to proceed confidently in the translation of the text; translation from English into Greek continued.

†2 History and Epic Poetry: *Anabasis* and *Iliad*

Messrs. HUTCHINSON and SAVAGE

Six credits (three hours per week); both semesters. Open to sophomores, juniors, and seniors who have completed Course 1. Credits allowed only when both semesters are taken.

For students who have begun Greek in the University. Books 2, 3, and 4 of Xenophon's *Anabasis* the first semester, with particular attention to syntax and irregular verbs; selections from Homer's *Iliad* the second semester, with special attention to prosody and to poetical forms and usages.

†3. Historical Prose: Xenophon and Herodotus

Mr. 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. Both semesters must be completed before credit is allowed for the first semester.

Selections from Xenophon's writings the first semester, with special attention to syntax and irregular verbs; selections from Herodotus the second semester, with particular attention to peculiarities of dialect and style; lectures on Greek historiography.

4. Philosophy: Plato's *Apology*, and selections

Mr. HUTCHINSON

Three credits (three hours per week); first semester. Open to those who have completed Course 2 or 3.

The reading of Plato's *Apology*, together with selections from the *Cratylus* and the *Phaedo*; lectures on Greek philosophy.

5. Oratory: Lysias and Demosthenes

Mr. SAVAGE

Three credits (three hours per week); second semester. Open to those who have completed Course 2 or 3.

Readings from the orations of Lysias and Demosthenes; selections from Isocrates; lectures on Greek oratory. Less attention to syntax and more attention to matters of literary interest.

6. Lyrics

Mr. HUTCHINSON

Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Course 4 or 5.

Various forms of Greek poetry other than the epic and dramatic; selections from the elegiac, iambic, lyric, and bucolic poets.

†While the department considers the order of work as laid down in Courses 2 and 3, the most satisfactory for the general student, yet in special cases students who, in the judgment of the department, can with profit do so, may interchange these courses in whole or in part, or take them simultaneously.

7. Tragedy: Aeschylus or Sophocles Mr. SAVAGE  
 Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Course 4 or 6.

The reading of the text is supplemented by intensive study of the play read, with special reference to literary form and dramatic representation.

8. Philosophy (Advanced): Plato's *Republic* Mr. HUTCHINSON  
 Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Course 4. 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 (Advanced): Demosthenes' *De Corona* Mr. SAVAGE  
 Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Course 5. Alternates with Course 8. Not offered in 1912-13.

A careful study of the development of oratorical style among the Greeks, and its culmination in this acknowledged masterpiece.

10. Epic Poetry (Advanced): The *Iliad* Mr. HUTCHINSON  
 Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Course 7 or 11.

The object of this course is to secure as intimate an acquaintance as possible, at first hand, with Homer. The Homeric question given but scanty attention, its place being in the graduate work (Course 19). Literary values receive chief attention, and that these may be realized by the student as much of the text is read as is consistent with careful work.

11. Dramatic Poetry: Euripides and Aristophanes Mr. SAVAGE  
 Four credits (two hours per week); both semesters. Open in the first semester to those who have completed Course 2 or 3, and in the second semester to those who have completed the first semester's work or Course 7.

First semester, one of the plays of Euripides; second semester, the *Frogs* of Aristophanes. Special attention given to metre, literary style, and mythology; supplemented by lectures on the authors studied.

12. Greek Composition Mr. 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.

A systematic review of Greek syntax and the retranslation into Greek of passages translated from various classic authors, illustrative of various styles.

13. Later Greek Mr. HUTCHINSON  
 Six credits (three hours per week); both semesters. Open to juniors and seniors who have completed Course 4.

Selected readings from the Septuagint and the New Testament. Credit will be given for either half of the course.

14. Seminar in Oratory or Philosophy Mr. HUTCHINSON  
 One credit (one hour per week); first semester. Open to juniors and seniors who have completed Course 4 or 5.

The work given in connection with Plato's *Republic*.

15. Seminar in Greek Tragedy Mr. SAVAGE  
One credit (one hour per week); second semester. Open to juniors and seniors who have completed Course 5.
16. Advanced Course in Epic Poetry Mr. HUTCHINSON  
Open to graduate students only. †
17. Advanced Course in Greek Dramatic Poetry Mr. SAVAGE  
Open to graduate students only. †
18. Advanced Course in Greek Oratory Mr. SAVAGE  
Open to graduate students only. †
19. Later Greek (322 B. C. to 200 A. D.) Mr. HUTCHINSON  
Open to graduate students only. †

#### COURSES NOT REQUIRING A KNOWLEDGE OF GREEK

The following courses are particularly desirable for students whose majors are in Language, History, or Philosophy, and for students in Art. The object in general is to make the student acquainted with those characteristics of the Greeks which make them the permanent teachers of the world.

20. Archaeology of Greek Art Mr. HUTCHINSON  
(a) Architecture. One credit (one hour per week); first semester.  
(b) Sculpture. One credit (one hour per week); second semester.  
(c) Vases. One credit (one hour per week); first semester.  
(d) Gems and coins. One credit (one hour per week); second semester.  
Open to juniors and seniors. 20(c) and 20(d) will be offered in 1912-1913.  
Each semester's work is credited independently of the rest. Not more than two credits can be obtained in this course.

21. Greek Literature and Life Mr. SAVAGE  
Two credits (two hours per week); second semester. Open to junior and seniors.

Lectures, text-book work, and illustrative readings; special lectures illustrated by stereopticon views. Recommended to those who intend to teach Greek, Latin, English, or ancient history.

22. Greek Mythology Mr. SAVAGE  
One or two credits (one hour per week); both semesters. Open to seniors and juniors.

Lectures, text-book work, and assigned readings, supplemented by occasional stereopticon illustrations. Recommended to those who are specializing in Languages or Philosophy.

†For further information students are requested to confer with the Professor in charge of the subject.

## HISTORY

*WILLIS MASON WEST, M.A., Professor, Head of Department of History	Library Building
FRANK MALOY ANDERSON, M.A., Professor	Library Building
ALBERT BEEBE WHITE, Ph.D., Professor,	Library Building
WILLIAM STEARNS DAVIS, Ph.D., Professor	Library Building
WALLACE NOTESTEIN, Ph.D., Assistant Professor	Library Building

\*Resigned June, 1912.

## REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, twelve credits, not including Course 1.

*For a Major*, eighteen credits, not including Course 1, together with reinforcing subjects (thirty credits) selected from Economics and Political Science, Sociology, Law, Biological Sciences, languages according to individual needs, and additional History.

*For B.A. with Distinction*, the general requirements (page 36), thirty-six credits in History (nine of which shall be in "intensive courses"), and at least twelve credits in Economics, Political Science, Sociology and Anthropology.

*For a Teacher's Certificate*, twenty-four credits, including at least six credits in "intensive courses." At least the elements of the other social sciences are recommended.

The Departments of Economics and Political Science, History, and Sociology and Anthropology 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.

## COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
1.	Medieval and Modern History..	1, 2	6*	All	None
2.	English Constitutional.....	1, 2	6	All	2 yrs.prep.Hist.
3.	Renaissance & Reformation.....	1	3	Soph., Jr., Sr.	1 or 2 or 8
4.	Europe since 1789.....	1, 2	6	Jr., Sr.	1 or 2 or 8
5.	American to 1840.....	1, 2	6	Soph., Jr., Sr.	2
6.	English History, 1689-1912.....	1, 2	6	Soph., Jr., Sr.	1, 2, or 8
7.	Making of Constitution.....	1, 2	6	Jr., Sr., Grad.	See statement
8.	Amer. Polit. Hist., 1492-1912...	1, 2	6	All	None
9.	American Statesmen.....	2	3	Jr., Sr., Grad.	5
10.	Historical Masterpieces.....	1	3	Jr., Sr., Grad.	3, 4, or 5
11.	American Diplomacy.....	2	3	Jr., Sr., Grad.	5
12.	European Diplomacy.....	2	3	Jr., Sr., Grad.	4

\*Juniors and seniors allowed only half credit.

No.	Title	Semester	Credits	Offered to	Prereq. courses
13.	Colonial Expansion.....	2	3	Sr., Grad.	4 or 5
14.	Authorities for N. E. History...	1, 2	4	Sr., Grad.	See statement
15.	Historical Method.....	2	2	Soph., Jr., Sr.	1 or 2
16.	Teachers' Course.....	2	1	Sr., Grad.	See statement
17.	English Parliament.....	2	3	Jr., Sr., Grad.	2 and 6 credits
18.	English Judiciary.....	2	3	Jr., Sr., Grad.	2 and 6 credits
19.	Cromwellian England.....	1, 2	6	Jr., Sr., Grad.	2 and 6 credits
20.	Church and State.....	1	3	Jr., Sr., Grad.	See statement
21.	History of Greece.....	1, 2	6	Jr., Sr.	1 or 2
22.	Selected Topics in Greek Hist...	2	3	Jr., Sr., Grad.	See statement
23.	Selected Topics in Roman Hist.	2	3	Jr., Sr., Grad.	See statement
24.	History of Rome.....	1, 2	6	Jr., Sr., Grad.	1 or 2
26.	History of Europe since 1878..	1	3	Jr., Sr.	1 or 2

### INTRODUCTORY COURSES

Freshmen who have taken two years of History in the preparatory school (American Government included in the two years, if desired) may omit Courses 1 and 8, and begin with Course 2; and they are strongly advised to do so if they purpose to take a major in History.

#### 1. Medieval and Modern History Mr. DAVIS

Six credits (three hours per week); both semesters. Open to all. Designed especially for freshmen who offer less than two years of preparatory History for admission. Not credited toward a major or minor.

The growth of France, Germany, and Italy from 800 A. D. to the French Revolution, with reference also to social and economic conditions, and to the Medieval Church.

#### 8. American Political History, 1492-1912 Mr. ANDERSON

Six credits (three hours per week); both semesters. Open to freshmen who have not presented Senior American History for admission. Designed (like Course 1) for freshmen who offer less than two years of preparatory History; and not recommended to students who expect to take more than two years of college history.

Brief survey of the colonial and the most recent periods, with fuller treatment for the years 1789-1865. Special attention given to political parties, territorial expansion, slavery, and the Civil War.

#### 2. English Constitutional History to 1689

Mr. WHITE and Mr. NOTESTEIN

Six credits (three hours per week); both semesters. Open to all who present two years of preparatory History for admission (American Government included in that amount, if desired), or to those who have completed Course 1 or 8.

The general political history of England from the earliest times to the Bill of Rights, with special reference to the development of governmental institutions.

### GENERAL COURSES

#### 3. The Renaissance and Reformation Mr. WHITE

Three credits (three hours per week); first semester. Open to those who have completed Course 1 or 2 or 8.

The Renaissance and Reformation as general European movements, with the emphasis upon the work of individual men and upon ideas rather than upon politics and institutions; how the medieval world became the modern world.

4. Europe since 1789 Mr. ANDERSON

Six credits (three hours per week); both semesters. Open to those who have completed Course 1 or 2 or 8.

The history of France, with that of other countries grouped about it; political history of the leading European states. Lectures, recitations, and the study of important historical documents, drawn principally from Anderson's *Constitutions and other Select Documents Illustrative of the History of France, 1789-1907*.

5. American Constitutional History to 1840 Mr. ANDERSON

Six credits (three hours per week); both semesters. Open to those who have completed Course 2; required for Courses 7, 9, 11, and 14, and, therefore, of students who intend to specialize in History; recommended for the sophomore year.

6. English History, 1689-1912 Mr. NOTESTEIN

Six credits (three hours per week); both semesters. Open to those who have completed any introductory course. Especially for students of English Literature, Economics and Political Science. Not given in 1912-13.

a. 1689-1815.

b. 1815-1912.

15. Historical Method and Bibliography Mr. WHITE

Two credits (two hours per week); second semester. Open to those who have completed Course 1 or 2, but designed only for those who intend to specialize in History.

Genesis of the modern historical method and use of the best tools in historical study. Exercises in historical criticism and interpretation; history of historical writings, especially the work of Ranke and his followers and the origin of the seminar system; present methods and advantages of study in Germany and France; existing helps to historical study, such as standard bibliographies, historical magazines, source material, etc.

16. Teachers' Course Mr. ANDERSON

One credit (one hour per week); second semester. Open to seniors and graduate students who have, including courses in progress, twenty-four credits in History; required for those who obtain a teacher's recommendation in History.

To assist those who expect to teach History in high schools. Mr. Anderson will be aided by other members of the department.

21. History of Greece Mr. DAVIS

Six credits (three hours per week); both semesters. Open to juniors and seniors who have completed Course 1 or 2, but not to any who have had a course in Greek History.

The political and social development of the Greek states to the time of their incorporation into the Roman Empire, with special attention to the permanent influence of Greek civilization. To alternate with Course 24. Not given in 1912-13.



22. Selected Topics in Greek History Mr. DAVIS  
Three credits (three hours per week); second semester. Open to juniors and seniors eligible for Course 21 but desiring a shorter course. Given in alternate years. Offered in 1912-13.
23. Selected Topics in Roman History Mr. DAVIS  
Three credits (three hours per week); second semester. Open to students eligible for Course 24 but desiring a shorter course. To alternate with Course 22. Not offered in 1912-13.
24. History of Rome Mr. DAVIS  
Six credits (three hours per week); both semesters. Open to juniors and seniors who have completed Course 2, and, on approval, to those who have taken Course 1.  
Social and political development, with considerable attention to cultural subjects. In alternate years. Given in 1912-13.
26. History of Europe since 1878 Mr. ANDERSON  
Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Course 1 or 2.  
A considerable knowledge of European History for the preceding thirty years is indispensable for an intelligent interest in contemporary European politics. The object of this course is to furnish that knowledge and to develop the habit of observing recent and current political events in an historical spirit. Not given in 1912-13.

#### ADVANCED OR INTENSIVE COURSES

7. The Making of the Constitution Mr. WEST  
Six credits (three hours per week); both semesters. Open to juniors, seniors, and graduate students who have completed Course 5, but only on approval of the instructor.  
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; the accounts of later writers compared with the sources; "we, the people," the "compact" theory, and the province of the Supreme Court as "final arbiter"; the writings of the day and the discussions of the ratifying state conventions.
9. Studies in American Statesmen Mr. 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; the sifting of the materials and the preparation of brief reports in regard to points assigned for investigation; the criticism of these reports and the synthesis of the results thus obtained. Not given in 1912-13.
10. A Critical Study of an Historical Masterpiece Mr. ANDERSON  
Three credits (three hours per week); first semester. Open to those who have completed Courses 3, 4, or 5.  
To develop the habit of reading history critically. Each year a masterpiece of historical literature minutely and critically studied. In 1912-13 Rhodes' *History of the United States from the Compromise of 1850* will be read.

11. The History of American Diplomacy Mr. ANDERSON  
Three credits (three hours per week); second semester. Open to seniors and graduate students 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 Mr. ANDERSON  
Three credits (three hours per week); second semester. Open to seniors and graduate students who have completed or are taking Course 4; ability to read easy French is required.

Critical reading of the principal treaties and numerous state papers dealing with international relations. Not given in 1912-13.

13. Colonial Expansion and Administration Mr. WEST  
Three credits (three hours per week); second semester. Open to seniors and graduate students who have completed Course 4 or 5. In alternate years. Not given in 1912-13.

The history of the colonial acquisitions of the great nations; colonial institutions and governments studied and compared in detail.

14. A Critical Study of Authorities for Early New England History Mr. WEST

Four credits (two hours per week); both semesters. Open to seniors and graduate students who have completed eighteen credits including Course 5. Given in alternate years.

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. A careful comparison of the chief sources with one another; a minute treatment of political, social, and economic development in early New England. The number admitted to the course is limited to seven.

17. Beginnings of Parliament Mr. WHITE

Three credits (three hours per week); second semester. Open to juniors, seniors, and graduate students who have completed twelve credits, including Course 2, and who obtain the permission of the instructor. Students should have a knowledge of at least high school Latin.

Parliamentary beginnings based wholly upon original sources, dealing with the period from the middle of the twelfth to the middle of the fourteenth century. The origins of representation and popular election; the genesis of England's present two-house assembly; its procedure and powers. Given in alternate years with Course 18. Offered in 1912-13.

18. Origin of the English Judicial System Mr. WHITE

Three credits (three hours per week); second semester. Open to juniors, seniors, and graduate students who have completed twelve credits, including Course 2, and who obtain the permission of the instructor. Students should have a knowledge of at least high school Latin.

Detailed studies in the source material of the period from the seventh to the thirteenth century; the origin and early development of the most distinctive features in England's present-day court system and procedure. Given in alternate years with Course 17. Not offered in 1912-13.

19. Cromwellian England Mr. NOTESTEIN

Six credits (three hours per week); both semesters. Open to juniors, seniors, and graduate students who have completed twelve credits in

History, including Course 2. (English 11 is strongly recommended as a desirable reinforcing subject.) Given in two sub-courses, which may be taken independently one of the other.

20. Church and State in the Middle Ages Mr. DAVIS

Three credits (three hours per week); first semester. Open to juniors, seniors, and graduate students who have twelve credits in History exclusive of courses in American History.

Devoted to the study of the institutions of the Holy Roman Empire and the Papacy between the years 918 and 1254 A. D.

## LATIN

JOSEPH B. PIKE, M.A., Professor, Head of Department of Latin

118 Folwell Hall

JOHN S. CLARK, B.A., Professor

111 Folwell Hall

JOHN E. GRANRUD, Ph.D., Professor

126 Folwell Hall

### REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, Courses 1, 2, 3, and 4.

*For a Major*, Courses 1, 2, 3, and 4, together with six additional credits selected from Courses 6 to 14 inclusive, and reinforcing subjects (thirty credits) selected from Greek, advanced modern language, advanced English, Philology, History, Philosophy (Courses 9 and 25), and additional Latin courses.

*For B.A. with Distinction*, the general requirements (page 36) and twelve credits in addition to the requirements for a major, Course 10 being compulsory.

*For a Teacher's Certificate*, Courses 1, 2, 3, 4, 6, and 7 with an average of at least good.

### COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
A.	Cicero or third yr. Latin . . . . .	1, 2	6*	All	2 yrs. Prep.
B.	Virgil . . . . .	1, 2	6*	All	Latin 3 yrs. Prep.
1.	Livy . . . . .	1	3 } *	All	Latin 4 yrs. Prep.
2.	Plautus and Terence . . . . .	2	3 }	All	1
3.	Horace . . . . .	1	3 } *	Soph., Jr., Sr.	1 and 2
4.	Tacitus . . . . .	2	3 }	Soph., Jr., Sr.	1-3
6.	Adv. Caesar . . . . .	1	3	Jr., Sr.	1-4
7.	Adv. Virgil . . . . .	2	3	Jr., Sr.	1-4
8a.	Pliny's Letters . . . . .	1	2	Jr., Sr.	1-4
8b.	Latin Romance . . . . .	1	2	Jr., Sr.	1-4
10.	Composition . . . . .	2	2	Jr., Sr.	1-4
11.	Elegiac Poetry . . . . .	1	3	Jr., Sr.	1-4
12.	Correspondence of Cicero . . . . .	1	3	Jr., Sr.	1-4
14a.	Drama . . . . .	2	3	Jr., Sr.	1-4
14b.	Roman Law . . . . .	2	3	Jr., Sr.	

\*Both semesters must be completed before credit is given for the first semester.

No.	Title	Semester	Credits	Offered to	Prereq. courses
15.	Roman Architecture and Life....	1	1	Jr., Sr.	None
16.	Roman Art.....	2	1	Jr., Sr.	None
17.	Lucretius.....	1, 2	6	Grad.	
18.	Seneca.....	1, 2	6	Grad.	

A. Cicero or Third Year Latin Mr. GRANRUD  
 Six credits (three hours per week); both semesters. Open to those who have completed two years of preparatory Latin.  
 Orations of Cicero or selections from prose writers.

B. Virgil Mr. CLARK  
 Six credits (three hours per week); both semesters. Open to those who have completed three years of preparatory Latin. Course A or B, but not both, may count toward a major.  
 First six books of the Aeneid.

1. Livy: Books I, II, XXI, XXII. Selections Messrs. PIKE, CLARK, and GRANRUD  
 Three credits (three hours per week); first semester. Open to those who have completed four years of Latin in preparatory schools. Course 2 must also be completed before credit is given for this course.  
 Latin composition and review of the principles of Latin syntax.

2. Plautus and Terence. Selections Messrs. PIKE, CLARK, and GRANRUD  
 Three credits (three hours per week); second semester. Open to those who have completed Course 1.  
 The translations of selected plays of Plautus and Terence, with an outline study of the beginnings of the Roman drama.

3. Horace Messrs. PIKE, CLARK, and 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. Tacitus Messrs. PIKE, CLARK, and GRANRUD  
 Three credits (three hours per week); second semester. Open to those who have taken Courses 1, 2, and 3.  
 The Germania and Agricola of Tacitus, with study of the style of Tacitus.

6. Advanced Course in Caesar Mr. 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; the principles of indirect discourse; intermediate Latin composition; class drill work and discussion of various problems connected with secondary school work in Latin.

7. Advanced Course in Virgil Mr. 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 to twelve of the Aeneid; a study of the quantitative method of pronouncing Latin verse; practice in the metrical rendering of selected passages.
- 8a. Pliny's Letters Mr. 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.
- 8b. Latin Romance Mr. PIKE  
 Two credits (two hours per week); first semester. Open to those who have completed Courses 1 to 4 inclusive.  
 The Cena Trimalchionis and the Cupid and Psyche of Apuleius. Courses 8a and 8b are offered in alternate years. Course 8b is offered for 1912-13.
10. Latin Composition Mr. PIKE  
 Two credits (two hours per week); second semester. Open to those who have completed Courses 1 to 4 inclusive; required for degree with distinction.  
 Advanced Latin composition and a study of Latin prose style.
11. Roman Elegiac Poetry Mr. 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 Mr. CLARK  
 Three credits (three 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. Courses 11 and 12 are offered in alternate years. Course 12 is offered for 1912-13.
- 14a. Roman Drama Mr. CLARK  
 Three credits (three hours per week); second semester.  
 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.
- 14b. Roman Law Mr. CLARK  
 Three credits (three hours per week); second semester  
 Translations of the text of the *Institutes of Justinian* and of Robinson's *Selections* with an outline study (1) of the sources and development of Roman Law and (2) of Roman private law. Courses 14a and 14b are offered in alternate years. Course 14a is offered for 1912-13.
15. Roman Architecture and Life Mr. GRANRUD  
 One credit (one hour per week); first semester. Open to juniors and seniors; no knowledge of Latin required.

Rome and the Campagna, the forum, temples, theatres, amphitheatres, circuses, thermae, arches, and tombs. Lectures illustrated by slides. Not credited toward a major or minor, but as a reinforcing subject.

16. Roman Art Mr. GRANRUD

One credit (one hour per week); second semester. Open to juniors and seniors; no knowledge of Latin is required.

Roman and Pompeian sculpture, wall decoration, painting, and minor arts; characteristics of Roman art. Not credited toward a major or minor, but as a reinforcing subject.

17. Lucretius Mr. CLARK

Six credits (three hours per week); both semesters. Open to graduate students; other arrangements may be ascertained upon application to the department.

The reading and interpretation of the text of Lucretius, with a study of his philosophy and its sources.

18. Seneca Mr. PIKE

Six credits (three 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 *Letters* of Seneca with a study of Stoicism at Rome.

MATHEMATICS

JOHN F. DOWNEY, M.A., C.E., Professor, Head of Department of Mathematics	119 Folwell Hall
GEORGE N. BAUER, Ph.D., Professor	100 Folwell Hall
WILLIAM H. BUSSEY, Ph.D., Assistant Professor	122 Folwell Hall
ANTHONY L. UNDERHILL, Ph.D., Assistant Professor	121 Folwell Hall
ROYAL R. SHUMWAY, B.A., Assistant Professor	122 Folwell Hall
*GEORGE P. PAINE, M.A., Assistant Professor	120 Folwell Hall
HERMON L. SLOBIN, Ph.D., Instructor	121 Folwell Hall
JAMES S. MIKESH, B.A., Instructor	123 Folwell Hall
LINCOLN K. ADKINS, M.S., Instructor	123 Folwell Hall

REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, Courses 1, 2, 7, 8, or 3, 4, 7, 8.

*For a Major*, eighteen credits, including Course 9, together with reinforcing subjects (thirty credits) selected from Astronomy, Physics, Mechanics, Logic, advanced German and French (12 credits), and additional Mathematics.

*For B.A. with Distinction*, the general requirements (page 36) and one year of Pure Mathematics in addition to the requirements for a major.

*For a Teacher's Certificate*, an average of at least *good* in Courses 1, 2, 7, 8, 9, or 3, 4, 7, 8, 9, and an entrance credit in Solid Geometry. Course 13 is also recommended.

\*Resigned June, 1912.



4. Logarithms and Trigonometry      Messrs. BAUER, BUSSEY, UNDERHILL, SHUMWAY, PAINE, SLOBIN, and MIKESH  
 Three credits (three hours per week); second semester. Open to those who have completed Course 3.  
 Text, tables, and numerous problems.
7. Analytical Geometry      Messrs. BAUER, BUSSEY, SHUMWAY, PAINE, and SLOBIN  
 Three credits (three hours per week); first semester. Open to those who have completed Course 2 or 4.  
 Rectilinear and polar co-ordinates, producing equations of loci whose law of development is known, constructing and discussing such equations, transformation of co-ordinates, properties of the straight line, the conic sections and higher plane curves by means of their equations.
8. Differential Calculus      Messrs. DOWNEY, BAUER, BUSSEY, SHUMWAY, PAINE, and SLOBIN  
 Three credits (three hours per week); each semester. Open to those who have completed Course 7.  
 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.
9. Integral Calculus      Mr. DOWNEY  
 Three credits (three hours per week); each semester. Open to those who have completed Course 8.  
 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 applications to moment of inertia, areas and volumes.
10. Advanced Course in Plane Analytical Geometry      Mr. BAUER  
 Three credits (three hours per week); first semester. Open to those who have completed Course 8.  
 Supplementary to Course 7, treating more fully of the subjects of that course and taking up additional subjects. Not offered in 1912-13.
11. Solid Analytical Geometry      Mr. BUSSEY  
 Three credits (three hours per week); first semester. Open to those who have completed Course 8.  
 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.
12. Differential Equations      Mr. UNDERHILL  
 Three credits (three hours per week); second semester. Open to those who have completed Course 9.  
 Text and lectures.
13. Teachers' Course      Mr. SHUMWAY  
 One credit (one hour per week); second semester. Open to those who have completed Course 8.



Special attention is paid to the fundamental principles of Algebra and Geometry. Text and assigned readings.

14. Modern Synthetic Geometry Mr. BUSSEY  
 Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Course 8.  
 Based upon the method of central projection without the use of co-ordinates.
20. Method of Least Squares Mr. LEAVENWORTH  
 Two credits (two hours per week); second semester. Open to those who have completed Course 9.  
 The combination and adjustment of observations and the discussion of their precision as applied especially to Engineering, Physics, and Astronomy.
21. Theoretical Mechanics (In College of Engineering)  
 Six credits (three hours per week); both semesters. Open to those who have completed Course 9.  
 Recitations and lectures.
22. Modern Higher Algebra Mr. SHUMWAY  
 Three credits (three hours per week); first semester. Open to seniors and graduate students who have completed Course 9.  
 Not offered in 1912-13.
25. Theory of Numbers Mr. BUSSEY  
 Four credits (two hours per week); both semesters. Open to graduate students who have completed Course 9.  
 Not offered in 1912-13.
26. Infinite Series Mr. BAUER  
 Three credits (three hours per week); first semester. Open to seniors and graduate students who have completed Course 9.
27. Advanced Calculus Mr. BAUER  
 Three credits (three hours per week); second semester. Open to seniors and graduate students who have completed Course 9.  
 This course goes farther into some of the subjects treated in Courses 8 and 9, and takes up some important subjects not included in those courses.
28. Theory of Functions of a Complex Variable Mr. BAUER  
 Six credits (three hours per week); both semesters. Open to graduate students who have completed Course 12.  
 Lectures, readings, and problems. Not offered in 1912-13.
29. Differential Geometry Mr. UNDERHILL  
 Six credits (three hours per week); both semesters. Open to seniors and graduate students who have completed Course 12.
30. Advanced Differential Equations Mr. SLOBIN  
 Six credits (three hours per week); both semesters. Open to graduate students who have completed Course 12.

Ordinary and partial differential equations, including differential equations with infinitesimal transformations; general theory of linear differential equations; the most important partial differential equations of mathematical physics; Gauss's, Legendre's, Laplace's, Lamé's, and Bessel's functions; the elements and applications of the theory of functions which arise in the theory of differential equations. Not offered in 1912-13.

### 31. Theory of Functions of Real Variables and Calculus of Variations

Mr. UNDERHILL

Six credits (three hours per week); both semesters. Open to graduate students who have completed Course 12.

Not offered in 1912-13.

## MILITARY SCIENCE AND TACTICS

\*EDMUND L. BUTTS, Major 25th Infantry, U. S. A., Professor, Head of  
 Department of Military Science and Tactics Armory  
 BERT ROSE, Instructor of Band Armory

### 1. Military Drill

MAJOR BUTTS

Three hours per week; both semesters. Drill is required of all men in the freshman and sophomore classes.

Freshman: Practical instruction in schools of the soldier, company, and battalion; signals, ceremonies; schools of the cannoneer and battery.

Sophomore: 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.

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, modeled after the U. S. Military Academy cadet uniform, and costs in Minneapolis about \$15.

Military Drill 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, a year's drill is allowed to count as a three-hour credit for one semester. Students who voluntarily register for drill beyond the required amount must register for the entire year and be subject to the same regulations as other cadets. No credit will be allowed for such drill for less than one year.

An encampment of cadets, not including incoming freshmen, is held at the beginning of each year. Sophomore cadets attending the encampment are excused from all military drill of the first semester except on Saturdays. Students due but not reporting for encampment are required to report for all military exercises during the semester and, unless excused for satisfactory reasons, will be required to report at the next encampment.

### 2. Military Science

MAJOR BUTTS

Two hours per week; second semester. Optional with juniors and seniors.

\*Term of service expires September 1, 1912.

Instruction in advance and rear guards, outposts, reconnaissance, camping, duties of company commander, articles of war, records.

This work when satisfactorily completed taken in connection with the year's drill will give a four-hour credit for the semester.

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, battalion, and regimental manoeuvres, guards, and the theoretical and practical use of firearms.

On graduation of each class the Commandant will report to the Adjutant General of the Army the names of the graduates who may 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 regulation. In general, the officers are selected from the senior class; the sergeants from the junior class; and the corporals from the sophomore class.

#### THE ROSTER OF THE CORPS OF CADETS

##### CADET COLONEL

R. W. Whittier

##### CADET LIEUTENANT COLONEL

R. B. Robinson

##### CADET MAJORS

Ganssle, W. L.\*

Beyer, W. F.

##### CADET CAPTAINS

Gillam, S. S., Company A

Swanman, I. C., Company K

Bibb, E. S., Company B

Benham, C. F., Company D

Bertram, Edward, Regimental Quartermaster

Gamble, G. H., Company I

Orr, G. M., Company F

Blodgett, H. P., Company M

Sohlberg, Olaf, Company C

Hixon, C. S., Regimental Adjutant

Young, C. N., Company G

Hotchkiss, R. W., Company E

McLeod, J. R., Company H

Stevenson, J. A., Company L

Brooks, R. L., Battery

##### CADET FIRST LIEUTENANTS

Mertz, K. J., Bugle Corps

Harris, S. G., Company M

Clymer, W. R., Company L

Lovering, H. D., Battalion Adjutant, First

Battalion

Bailey, W. H., Battalion Adjutant, Second

Battalion

Mariette, P. A., Company E and Command-

ing Crack Squad

Critchett, E. F., Company K

Villars, H. S., Company H

Dewars, A., Company F

Erickson, V. L., Company K

Haines, A. K., Company G

Doermann, H. J., Company C

Smith, C. W., Company A

Pratt, C. H., Company D

Plaisance, G. P., Battalion Adjutant Third

Battalion

Lambert, H. T., Company I

Quinn, T. F., Company B

Gammell, J. H., Company C

Rehnke, C. A., Company A

Norman, S., Band

Stratte, J., Band

Gilbert, D. D., Battery

Nelson, M. O., Company H and in charge of Make Up Drill

## CADET SECOND LIEUTENANTS

Warner, H. A., Company A	Matchett, H., Company F
Dvoracek, D. C., Company M	Foster, L. W., Company I
Rickel, C. K., Company E	Tibbling, E. F., Company C
Wadsworth, W. M., Company H	Boutell, P. L., Company K
Mahoney, W., Company G	Siverts, J. S., Company F
Boss, L. C., Company B	Nelson, C., Band
Door, L. A., Company D	Veblen, R. N., Battery

## MUSIC

CARLYLE SCOTT, Professor, Head of Department of Music, 315 14th Ave. S. E.

## REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, twelve credits, not including Courses 4, 6, and 7.

*A Major* is not offered.

Students entering the University for the express purpose of studying Music must register for Courses 1 and 4 and 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 perception 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.

## COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
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
5.	Pianoforte, second course.....	1, 2	3 or 6	Jr., Sr.	See statement
6.	Choral Culture.....	1, 2	1 or 2	Jr., Sr.	See statement
8.	History of Music.....	1, 2	2	Jr., Sr.	None

## 1. Harmony

Mr. SCOTT

Four credits (two hours per week); both semesters. Open to juniors and seniors.

The study of chords, their construction, relations, and progressions. The work consists of written exercises on basses, the harmonization of given melodies. Foote and Spaulding's *Modern Harmony* is used as a text-book.

## 2. Counterpoint

Mr. SCOTT

Four credits (two hours per week); both semesters. Open to juniors and seniors who have a thorough knowledge of harmony.

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 Mr. SCOTT  
Two credits (two hours per week); second semester. Open to seniors who have completed Course 1 and the first semester of Course 2; for those specializing in Music and can be taken only with the consent of the instructor.

At the close of the year a program of original composition will be given.

4. Pianoforte Mr. SCOTT  
Three or six credits (one and a half or three hours per week); both semesters. Open to juniors and seniors who have mastered technical difficulties of the degree of Czerny's *School of Velocity* and the easier Haydn and Mozart sonatas; for those who intend to pursue the higher branches of the pianoforte, the art of playing, or to fit themselves for piano teachers. The fee is thirty-two or sixty-four dollars per semester.

5. Pianoforte, second course Mr. SCOTT  
Three or six credits (one and a half or three hours per week); both semesters. Open to seniors who have completed Course 4. The fee is thirty-two or sixty-four dollars per semester.

6. Choral Culture Mr. SCOTT  
Two credits (one hour per week); both semesters. Open to juniors and seniors. A single credit may be secured for chorus work. Students may pursue the chorus work without credit by 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 studied and analyzed. (Chorus a capella, motet, cantata, oratorio.)

8. History of Music Mr. SCOTT  
Two credits (one hour per week); both semesters. Open to juniors and seniors.

A literary course. Lectures are given on the development of Music from the time of Palestrina to the present day.

## PHILOSOPHY AND PSYCHOLOGY

NORMAN WILDE, Ph.D., Professor, Head of Department of Philosophy and Psychology	323 Folwell Hall
DAVID F. SWENSON, B.S., Assistant Professor	320 Folwell Hall
JAMES BURT MINER, Ph.D., Assistant Professor	317 Folwell Hall
HERBERT H. WOODROW, Ph.D., Assistant Professor	318 Folwell Hall
CARL L. RAHN, Ph.B., Instructor	320 Folwell Hall
AUSTIN S. EDWARDS, Ph.D., Instructor	316 Folwell Hall

## REQUIREMENTS OF THE DEPARTMENT

For a *Minor*, twelve credits.

For a *Major*, eighteen credits, together with reinforcing subjects (thirty credits) selected, according to the needs of the individual, from Greek, Latin, Mathematics, Physics, Biology, the social sciences, English, Education, modern languages, and additional Philosophy and Psychology.

For *B.A. with Distinction*, the general requirements (page 36) and six credits in addition to the requirements for a major, at least six of twenty-four credits in the department being from intensive courses.

The courses offered by the department fall into three groups:

1. *Introductory Courses*: 1a, 1b, and 2. Course 1a or 1b is required for all advanced work in Psychology, and either 1a or 1b or 2 for all work in Philosophy.

2. *General Courses*.

3. *Advanced Intensive Courses*. These courses are open only to graduate students and advanced undergraduates.

The courses may also be grouped according to their purpose as follows:

1. Of special value for Education: 1a, 11, 13, 15, and 16.
2. Fundamental courses in Psychology: 1a, 4, 5, 16, 17, and 21.
3. Fundamental courses in Philosophy: 1b, 2, 9, 10, 11, and 14.

## COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
1a.	General Psychology.....	1, 2	6†	Soph., Jr., Sr.	None
1b.	Elements of Psychology.....	1 or 2	3	Soph., Jr., Sr.	None
2.	Logic.....	1 or 2	3	Soph., Jr., Sr.	None
4.	Exp. Psych.: The Senses.....	1	3	Jr., Sr.	1a
5.	Exp. Psych.: Higher Mental Processes.....	2	3	Jr., Sr.	4
6.	Philosophy of 19th Century..	2	3	Sr., Grad.	12 credits
7.	Psychological Interpretation .	1	3	Jr., Sr.	6 credits
8.	Aesthetics.....	2	3	Jr., Sr.	6 credits
9.	Ancient and Med. Philosophy	1	3	Jr., Sr.	6 credits
10.	Modern Philosophy.....	2	3	Jr., Sr.	6 credits
11.	Ethics.....	1 or 2	3	Soph., Jr., Sr.	1a or 1b or 2
12.	Philosophy of Religion.....	2	3	Jr., Sr.	1a or 1b or 2
13.	Psych. of Moral and Religious Development.....	1	3	Jr., Sr.	6 credits
14.	Logic of Science.....	2	3	Jr., Sr.	1a or 1b and 2
15.	Mental Retardation.....	1	3	Jr., Sr., Grad.	1a
16.	Advanced Educational Psych.	2	3	Sr., Grad.	1a
17.	Seminar in Psychology.....	1, 2	6†	Sr., Grad.	12 credits
21.	Psychological Principles.....	1	3	Jr., Sr., Grad.	1a or 1b, and 2
*22.	Seminar in Philosophy.....	1, 2	6	Sr., Grad.	12 credits
*25.	Philosophy of Plato.....	1	3	Sr., Grad.	9 or 10 or 6
*26.	Nervous System and Mental Life.....	2	3	Jr., Sr., Grad.	1a

†Both semesters must be completed before credit is given for the first semester.

\*Open to students only upon approval of the department.

## INTRODUCTORY COURSES

1a. General Psychology Messrs. MINER, WOODROW, RAHN, and EDWARDS

Six credits (three hours per week); both semesters. Open to sophomores, juniors, and seniors. This course is strongly advised as an introduction for all who can give a year to the subject; either 1a or 1b is required for the teacher's certificate. Both semesters of 1a must be completed before credit is given for the first.

The aims and methods of Psychology, the facts and laws of mental life and the functions of the various mental processes in the adjustment of man and his environment; the study of mental development and the learning process in relation to training and instinct

1b. Elements of Psychology Messrs. SWENSON and RAHN

Three credits (three hours per week); each semester. Open to sophomores, juniors, and seniors.

For those who do not expect to take further work in Psychology, but wish a brief outline of the subject, either as preparatory for work in Philosophy or as part of their general education. The significance of mental facts for the problems of Philosophy will be noted.

2. Logic Messrs. SWENSON and RAHN

Three credits (three hours per week); each semester. Open to sophomores, juniors, and seniors.

The nature of knowledge, the 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

4. Experimental Psychology Mr. WOODROW

Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Course 1a.

To develop ability in the use of psychological methods and to give first-hand familiarity with the most important results. Experiments by the members of the class, upon each other, in attention, comparison and discrimination, sensation, affection, imagination, association, perception of space and time, rhythm, memory, judgment, emotion and suggestion, and in the measurement of various aspects of each of these mental processes; the relationship of these processes to educational procedure, such as the transference of training, work and fatigue, the formation of habits, the learning process, the conditions of attention, individual differences, the measurement of intelligence, and the diagnosis of mental abnormalities and defects. One hour of class discussion and two double hour laboratory periods.

5. Experimental Psychology Mr. WOODROW

Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Course 1a.

The continuation of Course 4.

6. The Philosophy of the Nineteenth Century Mr. WILDE

Three credits (three hours per week); second semester. Open to seniors who have twelve credits in the department.

The natural conclusion of Course 10 which should, if possible, be taken before, or along with it. The Idealism of Fichte and Hegel, the Pessimism of Schopenhauer and Von Hartmann, the Associationalism of Hartley, James, and John Stuart Mill, the Philosophy of Evolution, the Positivism of Comte, Pragmatism, Materialism, the New Realism.

#### 7. Psychological Interpretation

Mr. MINER

Three credits (three hours per week); first semester. Open to juniors and seniors who have six credits in the department.

Unusual and pathological mental states studied for the light they throw upon normal mental life; the psychological explanation of characters in history and literature; the subconscious, dreams, suggestibility, telepathy, nervous disorders, insanity, secondary personalities, and the crowd.

#### 8. Aesthetics

Mr. SWENSON

Three credits (three hours per week); second semester. Open to juniors and seniors who have six credits in the department.

An introduction to the history and theory of aesthetics, including a psychological analysis of the consciousness of beauty and of the aesthetic impulse and some consideration of the main historic theories of beauty.

#### 9. Ancient and Medieval Philosophy

Mr. WILDE

Three credits (three hours per week); first semester. Open to juniors and seniors who have six credits in the department.

This and the two following courses 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 the first semester the main work is upon the philosophies of Plato and Aristotle, but the later development is traced as far as the Renaissance.

#### 10. Modern Philosophy

Mr. WILDE

Three credits (three hours per week); second semester. Open to juniors and seniors who have six credits in the department.

Lectures on the representative systems of modern philosophy from the Renaissance to the beginning of the nineteenth century, 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.

#### 11. Ethics

Mr. WILDE

Three credits (three hours per week); each semester. Open to sophomores, juniors, and seniors who have completed Course 1a or 1b or Course 2.

The principles of morals; sketch of the historical development of morality followed by an analysis of its meaning, showing the elements in human nature upon which it is based and the ground of its authority; the nature of goodness, the authority of conscience, moral knowledge, duty and responsibility; the application of moral principles to certain unsettled problems of moral life.

#### 12. Philosophy of Religion

Mr. WILDE

Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Course 1a or 1b or Course 2.

To enable the student to take an intelligent attitude toward the present-day problems of religious theory; the work largely historical, tracing the development of the idea of God from its simplest beginnings through the changes undergone in Greek, Jewish, and Christian thought and discussing the nature and validity of the idea in view of modern scientific and philosophic theories.



13. Psychology of Moral and Religious Development Mr. RAHN  
 Three credits (three hours per week); first semester. Open to juniors and seniors who have six credits in the department.

A psychological analysis of moral and religious experience; the usual course of development in the individual of these forms of experience; the application of these facts to moral and religious education.

14. Logic of Science Mr. SWENSON  
 Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Courses 1a or 1b and 2.

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.

#### ADVANCED INTENSIVE COURSES

15. Mental Retardation Mr. WOODROW  
 Three credits (three hours per week); first semester. Open to juniors, seniors, and graduate students who have completed Course 1a.

The nature and conditions of retarded and perverted development in children; the detection of mental defects and the devising of special methods for the training of backward children. Specially designed for those contemplating teaching or social work. The observation of backward children forms a part of the work.

16. Advanced Educational Psychology Mr. MINER  
 Three credits (three hours per week); second semester. Open to seniors and graduate students who have completed Course 1a.

The experimental and statistical methods used in the study of problems in development and education, together with the results of researches in these lines; training for independent psychological investigation of such problems.

17. Seminar in Psychology Messrs. MINER and WOODROW  
 Six credits (three hours per week); both semesters. Open to seniors and graduate students who have twelve credits in Psychology. 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.

21. Psychological Principles Mr. RAHN  
 Three credits (three hours per week); first semester. Open to juniors, seniors, and graduate students who have completed Courses 1a or 1b, and 2.

An advanced course treating in detail some of the more important theoretical problems connected with Psychology. 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.

22. Seminar in Philosophy Messrs. WILDE and SWENSON  
 Six credits (three hours per week); both semesters. Open to graduate students and to approved seniors who have twelve credits in the department.

Individual investigation in the field of philosophy. Studies in the history of either ancient or modern philosophy and ethics; critical and constructive studies in the field of logic, metaphysics, or ethics. The character of the work and the general topic for the year can be ascertained by consultation with the department.

25. The Philosophy of Plato Mr. WILDE

Three credits (three hours per week); first semester. Open to seniors and graduate students who have taken, or are taking, Course 9 or 10 or 6.

The reading and discussion of the principal dialogues with a view to understanding the problem and method of Greek philosophy as illustrated in the writings of Plato.

26. The Nervous System and Mental Life Mr. JOHNSTON

Three credits (three hours per week); second semester. Open to juniors, seniors, and graduate students by consent of the instructor. Given in the neurological laboratory of the College of Medicine and Surgery and recommended for advanced students in Psychology and Education.

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 localizations, and the neural basis of elementary phenomena of consciousness.

### CLINIC IN MENTAL DEVELOPMENT

A free clinic for the study of irregular mental development has been organized by the department. Dr. J. P. Sedgwick, of the Medical College, has charge of the physical examinations. Besides the diagnosis of physical and mental condition, treatment is outlined and methods of training are suggested or carried out under the direction of Mr. Miner and Mr. Woodrow. The clinic is of special advantage to those who are studying retardation.

## PHYSICAL TRAINING

### FOR MEN

LOUIS J. COOKE, M.D., Director	Armory
WILLIAM K. FOSTER, LL.M., Assistant Director	Armory

A well-equipped gymnasium in charge of a professional medical director is open for the men. The training and exercise are under the immediate oversight and authority of the medical director and are wholly with a view to the healthful physical development of the whole student body.

All 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 conditions 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 on personal hygiene during the first semester.

Squad leaders who take work three hours per week through one year beyond the required work are granted two credits; provided that no student may receive more than a total of six credits for elective work in both physical training and drill.

### FOR WOMEN

Physical training for women students is under the direction of a Health Officer—a woman trained in medicine, but not engaged in practice—who will have general oversight of the health of the women students. She will have as an assistant a specialist in physical training, who will have charge of the games and other exercises prescribed.

Among the duties of the Health Officer will be the following: To give a physical examination to all women students at the beginning of each year; to prescribe for each the type and amount of exercise that should be taken; to receive at regular intervals reports from each as to her exercise and physical condition; to give instruction in hygiene to the entering class; to give sanitary inspection to lodging houses; to examine into cases of illness in the dormitory and lodging houses; to cooperate with the Women's Athletic Association in providing tennis, basket ball, hockey, aesthetic dances, skating, etc.

The department possesses corrective apparatus, and physically defective women students are required to take, under supervision, suitable corrective exercises.

Indoor physical training for women in large classes, which has been elective during the past year, is discontinued until adequate floor space, dressing rooms, and baths can be provided. The same expenditure of money will be made and as great care will be exercised as heretofore, but along different lines. It is believed that care for all the women students in the manner proposed will be better than care for part of them in the inadequate quarters at their disposal in the past.

### PHYSICS

JOHN ZELNY, Ph.D., Professor, Head of Department of Physics	
	15 Physics Building
ANTHONY ZELNY, Ph.D., Professor	20 Physics Building
HENRY E. ERIKSON, Ph.D., Assistant Professor	18 Physics Building
ALOIS F. KOVARIK, Ph.D., Assistant Professor	18 Physics Building
LOUIS W. McKEEHAN, Ph.D., Instructor	19 Physics Building

RUFUS C. SHELLNBARGER, M.A., Instructor 19 Physics Building  
 JAMES C. SANDERSON, Ph.D., Instructor 32 Physics Building  
 PAUL E. KLOPSTEG, B.S., Assistant

*For a Minor*, twelve credits.

*For a Major*, eighteen credits, not including Courses 1, 2, 3, and 4, together with reinforcing subjects (thirty credits) selected from Mathematics, Mechanics, Astronomy, advanced modern languages, and additional Physics.

*For B. A. with Distinction*, the general requirements (page 36) and Courses 5, 6, 7, and 8, and twelve credits in other courses open to juniors and seniors, together with Mathematics 8 and 9, work being pursued in the department during the senior year.

*For a Teacher's Certificate*, Courses 5, 6, 7, 8, and 22, and six credits in Chemistry.

Students should begin the study of Physics with Course 5. Courses 1 and 3 are elementary in character and do not prepare the student for other courses in the department except Courses 2, 4, 11, and 22.

COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
1.	Gen. Physics.....	1	3	Soph., Jr., Sr.	Math. 4 or 2
2.	Gen. Lab. Practice.....	1	1	Soph., Jr., Sr.	See statement
3.	Gen. Physics.....	2	3	Soph., Jr., Sr.	1
4.	Gen. Lab. Practice.....	2	1	Soph., Jr., Sr.	See statement
5.	Mechanics of Solids and Fluids...	1	4	Soph., Jr., Sr.	Math. 4 or 2
6.	Heat, Magnetism, and Electrostatics.....	2	4	Soph., Jr., Sr.	5
7.	Electrokinetics.....	1	4	Jr., Sr.	6
8.	Sound and Light.....	2	4	Jr., Sr.	5
9.	Advanced Electrical Measurements.....	2	2	Jr., Sr.	7
10.	Physical Manip. and Lab. Technique.....	1	3	Jr., Sr.	5 and 6
11.	Mechanics.....	1, 2	6	Jr., Sr.	1 and 3, or 5 and 6, and Math. 8 and 9
12.	Adv. Physical Measurements...	1 or 2	3	Jr., Sr., Grad.	5 and 6
13.	Adv. Physical Measurements...	1 or 2	6	Jr., Sr., Grad.	5 and 6
14.	Advanced Optics.....	2	3	Grad.	8 and Math. 8 and 9
15.	Elect. Meas. of Precision.....	1	3	Sr., Grad.	9
16.	Radioactivity.....	1	3	Sr., Grad.	5, 6, 7 and 8
17.	Adv. Phys. Measurements.....	1 or 2	3	Sr., Grad.	5, 6, 7 and 8
18.	Adv. Phys. Measurements.....	1 or 2	6	Sr., Grad.	5, 6, 7 and 8
19.	Kinetic Theory of Gases.....	2	3	Sr., Grad.	5 and 6 and Math. 8 and 9
20.	Discharge of Elect. through Gases.....	1	3	Grad.	6 and 7 and Math. 8 and 9
21.	Math. Theory of Electricity and Magnetism.....	1	3	Grad.	6 and 7 and Math. 8 and 9
22.	Teachers' Course.....	2	1	Sr.	1-4 or 5-8 incl





For electrical engineering and scientific students who desire to specialize in electrical work of the highest precision. 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.

## 16. Radioactivity

Mr. KOVARIK

Three credits (three hours per week); first semester. Open to seniors and graduate students who have completed Course 5, 6, 7, and 8.

Lectures, experimental and descriptive; the various theories and methods of investigation.

## 17. Advanced Physical Measurements

Mr. JOHN ZELENY

Three credits (six hours per week); first or second semester. Open to seniors and graduate students who have completed Courses 5, 6, 7, and 8.

The experimental study of some physical phenomena, the nature or laws of which are not yet understood.

## 18. Advanced Physical Measurements

Mr. JOHN ZELENY

Six credits (twelve hours per week); first or second semester. Open to seniors and graduate students who have completed Courses 5, 6, 7, and 8.

The same as Course 17, except that twice as much time is devoted to the subject.

## 19. The Kinetic Theory of Gases

Mr. ERIKSON

Three credits (three hours per week); second semester. Open to graduate students who have completed Courses 5 and 6, and Mathematics 8 and 9 (Calculus).

A study of Meyer's *Kinetic Theory of Gases*.

## 20. Discharge of Electricity through Gases

Mr. JOHN ZELENY

Three credits (three hours per week); first semester. Open to graduate students who have completed Courses 6 and 7, and Mathematics 8 and 9 (Calculus).

Lectures, with experimental illustrations, on the conduction of electricity through gases; the conductivity imparted to gases by the action of X-rays, ultra-violet light, radioactive substances, and glowing metals; the discharge of electricity from points and in vacuum tubes; the spark and arc discharges; the methods of measuring the velocity of the ions and the charges carried by them.

## 21. The Mathematical Theory of Electricity and Magnetism

Mr. ANTHONY ZELENY

Three credits (three hours per week); first semester. Open to graduate students who have completed Courses 6 and 7, and Mathematics 8 and 9 (Calculus).

The study of J. J. Thomson's *Elements of the Mathematical Theory of Electricity and Magnetism*.

22. Teachers' Course Mr. ANTHONY ZELENY  
 One credit (one hour per week); second semester. Open to seniors who have completed Courses 1 to 4 or 5 to 8 inclusive.  
 Methods of presentation and the selection of lecture and laboratory experiments.

### RHETORIC AND PUBLIC SPEAKING

JOSEPH M. THOMAS, Ph.D., Professor, Head of Department of Rhetoric and Public Speaking	310 Folwell Hall
*ADA L. COMSTOCK, M.A., Professor	313 Folwell Hall
MARGARET SWEENEY, Ph.D., Professor	313 Folwell Hall
FRANK M. RARIG, M.A., Assistant Professor	309 Folwell Hall
EDWARD A. COOK, B.L., Assistant Professor	314 Folwell Hall
HENRY A. BELLOWS, Ph.D., Assistant Professor	314 Folwell Hall
DANIEL FORD, M.A., Assistant Professor	304½ Folwell Hall
CHARLES W. NICHOLS, M.A., Assistant Professor	410 Folwell Hall
WILFORD O. CLURE, B.A., LL.B., Instructor	312 Folwell Hall
HALDOR GISLASON, B.A., LL.B., Instructor	309 Folwell Hall
CHARLES E. SKINNER, M.A., Instructor	304½ Folwell Hall
WARREN T. POWELL, M.A., Instructor	410 Folwell Hall
ANNA H. PHELAN, Ph.D., Instructor	313 Folwell Hall
HELEN A. WHITNEY, M.A., Instructor	312 Folwell Hall

### REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, twelve credits, including Course 2a or 2b, in addition to Course 1.

*For a Major*, eighteen credits, including Course 2a or 2b, in addition to Course 1, together with reinforcing subjects (thirty credits) selected from English, Philology, Philosophy, Latin, Greek, advanced modern language, History, the social sciences, and additional Rhetoric and Public Speaking.

*For B.A., with Distinction*, the general requirements (page 36) and six credits in the department in addition to the requirements for a major; with the provision that the thirty credits from reinforcing subjects shall include a minor in English.

*For a Teacher's Certificate in English*, either a major in English and a minor in Rhetoric, or a major in Rhetoric and a minor in English, with an average grade of *good* in all the work.

### HONORS IN PUBLIC SPEAKING

Students who have won honors in debate or oratory, if the department deems them worthy, may receive honorable mention on the Commencement program. To be eligible for such distinction students must (1) have represented their class in the freshman-sophomore debate, or won a place in the freshman-sophomore oratorical contest; (2) have taken part in an inter-society debate; (3) have represented the University in an inter-collegiate debate, or have won a place in the Pillsbury oratorical contest.

\*Resigned June, 1912.



## COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
1.	Composition and Rhetoric.....	1, 2	6	Fresh.	None
2a.	Exposition, Descrip., Narration	1, 2	6	Soph., Jr., Sr.	1
2b.	Exposition and Argument.....	1, 2	6	Soph., Jr., Sr.	1
3.	Advanced Rhetoric.....	1, 2	6	Jr., Sr.	1 and 2
5.	Analysis of Prose.....	1	3	Jr., Sr.	1 and 2
6.	Short-Story Writing.....	2	3	Jr., Sr.	1 and 2
7.	Essay Writing.....	1, 2	6	Jr., Sr.	1 and 2
9.	Seminar in Rhetoric.....	1, 2	4	Sr., Grad.	Statement
10.	Seminar in Composition.....	1, 2	4	Sr., Grad.	Statement
15.	English for Engineers.....	1, 2	8	Fresh. Eng.	None
20.	Public Speaking.....	1, 2	6	Soph., Jr., Sr.	1
21.	Interpretative Reading.....	1, 2	6	Jr., Sr.	1 and 20
22.	Argumentation and Debate ...	1, 2	6	Jr., Sr.	1 and 20
23.	Oratorical Composition.....	1, 2	6	Jr., Sr.	1 and 20
24.	Advanced Debate.....	1	3	Statement	Statement

## RHETORIC

1. Composition and Rhetoric Messrs. THOMAS, COOK, BELLOWS, FORD, CLURE, PERCIVAL, and POWELL, Miss SWEENEY, Mrs. PHELAN, and Miss WHITNEY

Six credits (three hours per week); both semesters. Required of freshmen.

Practical training in the art of writing, study of the principles of structure, and analysis of specimens of good prose.

- 2a. Exposition, Description, and Narration. Messrs. THOMAS, COOK, CLURE, and PERCIVAL, Mrs. PHELAN, and Miss WHITNEY

Six credits (three hours per week); both semesters. Open to those who have completed Course 1. Students who take both 2a and 2b will receive credit for only one.

In the first semester the analysis of specimens of exposition; short themes and fortnightly essays, with emphasis on careful planning and amplification. In the second semester, the same general plan applied to description and narration.

- 2b. Exposition and Argument. Messrs. BELLOWS and FORD

Six credits (three hours per week); both semesters. Open to those who have completed Course 1. Students who take both 2a and 2b will receive credit for only one.

In the first semester, exposition; the second semester, argument. The study of a text and the analysis of specimens, accompanied by weekly essays and shorter themes.

3. Advanced Rhetoric Mr. FORD

Six credits (three hours per week); both semesters. Open to juniors and seniors who have completed Courses 1 and 2.

Structure and style, theoretically and practically considered; the oral presentation of topics. In the composition work the student is allowed to select his own subjects and methods of treatment.

5. Analysis of Prose Mr. THOMAS

Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Courses 1 and 2.

The principles of structure, diction, and style, which underlie the work of leading English writers; application of these principles in both imitative and original compositions.

6. Short-Story Writing Mr. THOMAS

Three credits (three hours per week); second semester. Open to juniors and seniors who have shown exceptional proficiency in Course 2a.

Analytical studies in the technique of the short story, accompanied by constructive work in story writing.

7. Essay Writing Mr. COOK

Six credits (three hours per week); both semesters. Open to juniors and seniors who have completed Courses 1 and 2.

Practice in the writing of such forms of the essay as the didactic, the biographical, the critical, the informal; opportunity for extended composition. About three essays a semester written. Individual aid given to the student in the gathering of material, the planning of each paper, and the criticism of each essay. Analysis of a considerable body of modern essays.

9. Seminar in Rhetoric Mr. THOMAS

Four credits (two hours per week); both semesters. Open to seniors and graduate students who have completed Courses 1 and 2 and at least one other course.

For those who are specializing in Rhetoric and Composition. Lectures, reports, and theses on special problems of rhetorical theory.

10. Seminar in Composition Mr. THOMAS

Four credits (two hours per week); both semesters.

For a limited number of advanced students who write with facility, and who desire personal criticism and direction. Criticism of manuscripts submitted for inspection, with lectures upon the fundamental principles of English composition.

15. English for Engineers Messrs. NICHOLS and POWELL

Eight credits (four hours per week); both semesters. In the College of Engineering.

### PUBLIC SPEAKING

20. A General Course in Public Speaking Messrs. RARIG and GISLASON

Six credits (three hours per week); both semesters. Open to those who have had Rhetoric 1.

The fundamentals of effective speaking; study and practice of the principles of breathing, voice-production, enunciation, and action; delivery of extracts from the works of well-known writers and speakers; the principles underlying the making of the speech applied in both oral and written compositions.

21. Interpretative Reading Mr. RARIG

Six credits (three hours per week); both semesters. Open to those who have had Rhetoric 1 and 20.

Aims to develop intelligent, suggestive, sympathetic reading. The text used is Shakespeare's plays.

22. Argumentation and Debate Mr. GISLASON

Six credits (three hours per week); both semesters. Open to those who have had Rhetoric 1 and 20.

The science of argumentation and the art of debate; the processes of reasoning and their application to written and spoken argument; argumentative writings analyzed and briefed; illustrative debates, including the Lincoln-Douglas debates, carefully studied; practical exercises in debate and forensics.

### 23. Oratorical Composition

Mr. RARIG

Six credits (three hours per week); both semesters. Open to those who have had Rhetoric 1 and 20.

The distinctive characteristics of oratorical style; analysis of the masterpieces of representative orators and application of the principles of style thus discovered in original orations.

### 24. Inter-Collegiate Debate and Oratory

Messrs. GISLASON and RARIG

Three credits (three hours per week); first semester. Open to those awarded places on the inter-collegiate debating squad. The question for inter-collegiate debate studied and briefed, and frequent practice debates held.

## ROMANCE LANGUAGES

CHARLES W. BENTON, Litt.D., Professor, Head of Department of Romance Languages	200 Folwell Hall
CHARLES M. ANDRIST, M.L., Professor	228 Folwell Hall
JULES T. FRELIN, B.A., Assistant Professor	228 Folwell Hall
*EMMA BERTIN, Assistant Professor	223 Folwell Hall
CARL M. MELOM, M.A., Instructor	225 Folwell Hall
LUTHER WOOD PARKER, M.A., Instructor.	
RUTH SHEPARD PHELPS, M.A., Instructor	223 Folwell Hall
RENE M. DELAMARE, B.L., Instructor	
HYME LOSSE, B.A., Assistant	

## REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, in French, twelve credits, not including Course 1.

*For a Major*, in French, Courses 2 or 3, 5, and 7, together with reinforcing subjects (thirty credits) selected from Philology, Latin, Italian, Spanish, English, Greek, German, advanced Scandinavian, Philosophy, History, and additional French; in Spanish, eighteen credits, together with reinforcing subjects (thirty credits) selected from French, Philology, Latin, Italian, English, Greek, advanced German, advanced Scandinavian, and History.

*For B.A. with Distinction* (in French only), the general requirements page (36) and Courses 8 and 9 in addition to the requirements for a major.

*For a Teacher's Certificate*, an average of at least *good* in Courses 2 or 3, 4, 5, 6, 7, and 8.

\*Until June, 1912.



5. The Classical Period of French Literature      Messrs. BENTON, ANDRIST,  
and FRELIN

Six credits (three hours per week); both semesters. Open to those who have completed Course 2 or 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, Moliere, La Fontaine, *et al.* Compositions.

6. Advanced French Conversation      Mr. BENTON

Four credits (two hours per week); both semesters. Open to those who have completed Course 2 or 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      Mr. BENTON

Six credits (three hours per week); both semesters. Open to those who have completed Course 2 or 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      Mr. 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.

Special practice in pronunciation. Discussion in French of methods of teaching the French language and literature.

9. Romance Philology      Mr. 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. Beginning Italian      Miss PHELPS

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.

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.

12. Elementary Spanish Conversation      Mr. MELOM

Four credits (two hours per week); both semesters. Open to those who have completed Course 11.

13. 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.
14. Advanced Spanish Mr. MELOM  
Six credits (three hours per week); both semesters. Open to those who have completed Course 11 and 13. Both semesters must be completed before credit is given for the first semester.  
Lectures and collateral readings of representative Spanish authors.
15. Romance Languages: Old French Mr. BENTON  
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 languages 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.
16. History of French Literature Mr. BENTON  
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.
17. Italian Literature Miss PHELPS  
Two credits (one hour per week); both semesters. Open to juniors, seniors, and graduate students who have completed Course 10. Both semesters must be completed before credit is given for the first semester.  
History of Italian Literature; special, *The Divine Comedy*.

## SCANDINAVIAN

GISLE BOTHE, M.A., Professor, Head of Department of Scandinavian Languages	218 Folwell Hall
ANDREW A. STOMBERG, M.S., Professor	217 Folwell Hall

## REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, twelve credits, not including Courses 1 and 3.

*For a Major*, eighteen credits, not including Courses 1 and 3, together with reinforcing subjects (thirty credits) selected from Philology, advanced German, Anglo-Saxon and Old English, Latin, Greek, advanced English, and additional Scandinavian.

*For B.A. with Distinction*, the general requirements (page 36) and one year of Scandinavian in addition to what is required for a major.

## COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
1.	Elementary Norwegian.....	1, 2	10*†	All	None
2.	Advanced Norwegian.....	1, 2	6*	Soph., Jr., Sr.	1
3.	Elementary Swedish.....	1, 2	10*†	All	None
4.	Advanced Swedish.....	1, 2	6*	Soph., Jr., Sr.	3
5.	Old Norse (Icelandic).....	1, 2	4	Jr., Sr., Grad.	1 & 2, or 3 & 4
6.	Modern Norwegian Literature..	1, 2	6*	Jr., Sr., Grad.	1 and 2
7.	Swedish Literature.....	1, 2	6*	Jr., Sr., Grad.	3 and 4
8.	Henrik Ibsen.....	2	2	Jr., Sr., Grad.	6
9.	History of Northern Europe. .	1, 2	6	Jr., Sr., Grad.	See statement
10.	Early Norwegian Literature....	1	2	Jr., Sr., Grad.	6
11.	Mod. Danish Literature.....	1, 2	2	Jr., Sr., Grad.	1 & 2, or 3 & 4
12.	Swedish Lang. and Literature..	..	..	Grad.	1 & 2, or 3 & 4
13.	Hist. Scand. Lang.....	1, 2	2	Grad.	5
14.	Advanced Old Norse.....	1, 2	4*	Grad.	5
15.	Strindberg.....	1	2	Sr., Grad.	3, 4, and 7

\*Both semesters must be completed before credit is given for the first semester.

†Juniors and seniors receive only half credit.

### 1. Elementary Norwegian Mr. 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 Mr. 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 Mr. 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 Mr. 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 instructor. Both semesters must be completed before credit is given for the first semester.

First semester: Grammar, composition, and conversation. Prose texts will be read. Second semester: An elementary study of the literature of Sweden and reading of Tegner's *Frithjofs Saga*.

### 5. Old Norse (Icelandic) Mr. BOTHNE

Four credits (two hours per week); both semesters. Open to juniors, seniors, and graduate students who have completed Courses 1 and 2, or 3 and 4.

Grammar and reading. *Gunnlaugs Saga Ormsvinnu*

6. Modern Norwegian Literature Mr. BOTHNE  
Six credits (three hours per week); both semesters. Open to juniors, seniors, and graduate students 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.
7. Swedish Literature Mr. STOMBERG  
Six credits (three hours per week); both semesters. Open to juniors, seniors, and graduate students who have completed Courses 3 and 4. Both semesters must be completed before credit is given for the first semester.  
History of Swedish literature from 1719 to the present time. History of the literature and study of modern authors, including Selma Lagerlöf, Geijerstam, Strindberg.
8. Ibsen Mr. BOTHNE  
Two credits (two hours per week); second semester. Open to juniors, seniors, and graduate students who have completed Course 6.  
Lectures, reading, and interpretation.
9. History of Northern Europe Mr. STOMBERG  
Six credits (three hours per week); both semesters. Open to juniors, seniors, and graduate students who have completed Course 1 or 3 or the equivalent, or Course 1, 2, or 3 in History.  
History of the Scandinavian countries from the earliest period to recent times. First semester: The archaeology of the Scandinavian countries and the Viking expeditions and settlements. Second semester: Sweden's role as a leading power of Europe in the sixteenth and seventeenth centuries; political and administrative changes in Denmark, the growth of nationality in Norway.
10. Early Norwegian Literature Mr. BOTHNE  
Two credits (two hours per week); first semester. Open to juniors, seniors, and graduate students who have completed Course 6.  
Selected sagas, Norwegian and Danish folk-songs, Holberg, Wessel.
11. Modern Danish Literature Mr. BOTHNE  
Two credits (two hours per week); second semester. Open to juniors, seniors, and graduate students who have completed Courses 1 and 2, or 3 and 4.  
From Oehlenschlaeger to the present time.
15. Strindberg Mr. STOMBERG  
Two credits (two hours per week); first semester. Open to seniors and graduate students who have completed Courses 3, 4, and 7.  
Lectures, reading, and interpretation.

## FOR GRADUATES

12. Modern Swedish Language and Literature Mr. STOMBERG  
Four credits (two hours per week); both semesters. Open to graduate students who have completed Courses 1 and 2, or 3 and 4.  
This course is based upon Schuck and Warburg's *Illustrated Svensk Litteraturhistoria*, and includes a study of special authors.



13. History of the Scandinavian Languages Mr. BOTHNE  
Two credits (one hour per week); both semesters. Open to graduate students who have completed Course 5.

14. Old Norse (advanced course); The Elder Edda Mr. BOTHNE  
Four credits (two hours per week); both semesters. Open to graduate students who have completed Course 5.

For courses in Scandinavian Philology, see statement of the Department of Comparative Philology.

### SOCIOLOGY AND ANTHROPOLOGY

SAMUEL G. SMITH, Ph.D., LL.D., Professor, Head of Department of Sociology and Anthropology	14 Folwell Hall
ALBERT ERNEST JENKS, Ph.D., Professor	13 Folwell Hall
SAMUEL N. REEP, Ph.D., Assistant Professor	13 Folwell Hall

### GENERAL LECTURES IN SOCIOLOGY

President Vincent will lecture to the students in the Department of Sociology and Anthropology from time to time during the year on Social Theories and Methods of Investigation.

### REQUIREMENTS OF THE DEPARTMENT

*For a Minor*, twelve credits.

*For a Major*, eighteen credits, together with reinforcing subjects, (thirty credits) selected from Animal Biology, Economics and Politics, Geology, History, Psychology, and additional Sociology and Anthropology.

*For B. A. with Distinction*, the general requirements (page 36) and six credits in addition to the requirements for a major, with the provision that six credits shall be from advanced courses and one course shall be accompanied by individual work under the special direction of the department.

*For Recommendation for Teacher's Certificate*, an average of at least *good* in four courses, one of which must be Course 2.

*For Recommendation for Social Work*, an average of at least *good* in not less than four courses, two of which must be Courses 4 and 14.

The statement of prerequisites for courses in Sociology and Anthropology as given below will not become effective until September, 1913, in cases where they differ from those given in the Bulletin for 1911-12.

### COURSES

No.	Title	Semester	Credits	Offered to	Prereq. courses
<i>Introductory Courses:</i>					
1.	Descriptive Sociology.....	1 or 2	3	Soph., Jr., Sr.	None
2.	Elements of Sociology.....	1 or 2	3	Soph., Jr., Sr.	None
3.	Culture Anthropology.....	1	3	Jr., Sr.	None
<i>General Courses:</i>					
4.	Social Pathology.....	1	3	Jr., Sr.	1 or 2
5.	Social Groups.....	2	3	Jr., Sr.	1 or 2

No.	Title	Semester	Credits	Offered to	Prereq. courses
6.	Ethnology.....	2	3	Jr., Sr.	1
7.	Institutions.....	1	3	Jr., Sr.	1 or 2
8.	Social Psychology.....	1	3	Jr., Sr.	2 or Gen. Psychology
<i>Advanced Courses:</i>					
9.	Social Theory.....	2	3	Jr., Sr., Grad.	See statement
10.	Biblical Sociology.....	1	3	Jr., Sr., Grad.	1 or 2, and 4
11.	Philippine People.....	2	3	Jr., Sr., Grad.	See statement
12.	Physical Anthropology.....	2	3	Jr., Sr., Grad.	See statement
13.	American Negro.....	2	3	Jr., Sr., Grad.	See statement
14.	American People.....	1	3	Jr., Sr., Grad.	See statement
15.	American People (Cont.).....	2	3	Jr., Sr., Grad.	14
16.	Modern Social Institutions.....	1	3	Jr., Sr., Grad.	See statement
17.	Social Evolution.....	2	3	Jr., Sr., Grad.	See statement
18.	Seminar.....	1	3	Sr., Grad.	Four co-ordinated courses for seniors

INTRODUCTORY COURSES

1. Descriptive Sociology Mr. JENKS  
 Three credits (three hours per week); each semester. Open to sophomores, juniors, and seniors.  
 Concrete data concerning human association, showing groups of peoples living in the four grades of culture called savagery, barbarism, civilization, and enlightenment; the activities and institutions natural and peculiar to the several groups studied. Text-book, lectures, and assigned readings.
2. Elements of Sociology Mr. REEP  
 Three credits (three hours per week); each semester. Open to sophomores, juniors, and seniors.  
 To give a general knowledge of the field of modern sociology, for such special sociological investigations as students may wish to make. Text-book, lectures, assigned readings.
3. Culture Anthropology Mr. JENKS  
 Three credits (three hours per week); first semester. Open to juniors and seniors.  
 An elementary course. The essential characteristics of mankind and the general features of the several races of men; 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.

GENERAL COURSES

4. Social Pathology Mr. SMITH  
 Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Course 1 or 2.  
 Charities and corrections, dealing especially with problems of poverty, crime, insanity, and social degeneration; a discussion of the child problem and methods of social amelioration.
5. Social Groups Mr. REEP  
 Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Course 1 or 2.  
 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. Ethnology

Mr. JENKS

Three credits (three hours per week); second semester. Open to juniors and seniors who have completed Course 1.

The different races of men natural to America, Europe, Asia, Africa, and Oceania; the various historical classifications of men into races; the causes of the origin and distribution of several races and subraces; the future development of races; ethnological problems. Text-books, lectures, assigned readings, and thesis.

## 7. The Study of Institutions

Mr. SMITH

Three credits (three hours per week); first semester. Open to juniors and seniors who have completed Course 1 or 2.

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.

## 8. Social Psychology

Mr. REEP

Three credits (three hours per week); first semester. Open to juniors, seniors, and graduate students who have completed Course 2 or General Psychology.

The social mind, public opinion, impulsive and rational social action, fashion, convention and custom, the mob and the crowd; an examination of the theories of Giddings, Tarde, Baldwin, Ross and McDougall.

## ADVANCED COURSES

## 9. Social Theory

Mr. REEP

Three credits (three hours per week); second semester. Open to juniors, seniors, and graduate students who have completed Course 2 or 8, and one other course.

A study of the foundations of sociology. 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.

## 10. Biblical Sociology

Mr. SMITH

Three credits (three hours per week); first semester. Open to juniors, seniors, and graduate students who have completed Course 1 or 2, and 4.

The development of Hebrew institutions, especially the church, the family, and the state; a comparison of similar institutions among people of like condition of culture; the effect upon Israel of the geography of Palestine; an account of its contact with other peoples; and the development of its religious ideas.

## 11. The Philippine People

Mr. JENKS

Three credits (three hours per week); second semester. Open to juniors, seniors, and graduate students who have completed Course 1 or 2, and one other course.

The geography, natural resources, and ethnology of the Philippine Islands; comparative study of the four large ethnic and culture groups of people; tropical influences; the present policy of the Insular Civil Government so far as it tends to modify the natural characteristics and modern culture of the inhabitants, and to effect American home interests in the Orient. Lectures, illustrated lectures, assigned readings, and thesis.

12. Physical Anthropology Mr. JENKS

Three credits (three hours per week); second semester. Open to juniors, seniors, and graduate students who have completed Course 7 or Course 1 in Animal Biology, and one other course in the department.

The physical variations in the human body, with special attention to those variations which distinguish one race or group of men from another; the cause and significance of such variations; the physical evolution of the human body and forecast of its future. 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. Text-book, lectures, laboratory work, assigned readings, and thesis.

13. The American Negro Mr. JENKS

Three credits (three hours per week); second semester. Open to juniors, seniors, and graduate students who have completed Course 1 or 2, and one other course.

The negro's African tribal kinsmen, and the rise and development of the American negro race from the birth of American slavery; the present characteristics, traits, and conditions of the negro; the developing tendencies and the probable future of the American negro race. Text-book, lectures, assigned readings, and thesis.

14. The American People Mr. JENKS

Three credits (three hours per week); first semester. Open to juniors, seniors, and graduate students who have completed Course 1 or 2, and one other course.

The distribution in the United States of the different peoples of the world found here; the natural genius of the peculiar home development of these peoples, and the modifications of this development in America; the dominant physical, mental, moral, and cultural characteristics of each people, and their relative importance to the nation. Text-book, lectures, assigned readings, and thesis.

15. The American People (Continued) Mr. JENKS

Three credits (three hours per week); second semester. Open to juniors, seniors, and graduate students who have credit for Course 14.

A continuation of Course 14. The facts and forces of amalgamation and assimilation in America; essential and unique historical Americanisms and their value and virility for the future; America's ethnic problems. Lectures, assigned readings, and thesis.

16. Modern Social Institutions Mr. REEP

Three credits (three hours per week); first semester. Open to juniors, seniors, and graduate students who have completed Course 1 or 2, and one other course.

The fundamental social institution, the family, and the development of modern industrial, political, educational, and ecclesiastical institutions in their relation to human progress.

17. Social Evolution Mr. REEP

Three credits (three hours per week); second semester. Open to juniors, seniors, and graduate students who have completed Course 1 or 2, and one other course.

Evolution in its relation to social progress; the factors which compose a standard of social progress; the direction of social progress. The comparative study of the different standards and rational sanctions by which social progress may be determined.

## 18. Seminar in Sociology and Anthropology

Messrs. SMITH, JENKS, and REEP

Three credits (three hours per week); first semester. Open to seniors, having twelve hours of correlated work, and to graduate students. An advanced course of method and independent research.

# STUDENTS

## GRADUATE STUDENTS

The names of graduate students taking courses listed in this Bulletin will be found in the Bulletin of the Graduate School.

### SENIORS—260

Aldrich, Irma, Fairmont  
Aldworth, Harold R., Rochester  
Allen, Nellie, Red Wing  
Ames, Georgiana, Minneapolis  
Amundson, Mark H., Alexandria  
Anderson, Alice E., Minneapolis  
Anderson, Carolyn M., Smith Mill  
Anderson, N. Philip, St. Paul  
Appleby, Curtis W., Minneapolis  
Babcock, Marjorie R., Winnipeg, Man.  
Baillie, Earle C., Minneapolis  
Baird, Edna E., Graceville  
Barber, Marty B., Minneapolis  
Beehler, Irma A., Minneapolis  
Berg, David E., Minneapolis  
Bibb, Frank L., Minneapolis  
Bingenheimer, Margaret, Mandan, N. D.  
Bjeldanes, M. Augusta, Madison  
Blegden, Theodore C., Minneapolis  
Bonniwell, Donna, Minneapolis  
Borst, Homer W., Minneapolis  
Bowman, Clementine, Minneapolis  
Branham, Alice, Minneapolis  
Brecht, Bertha M., Minneapolis  
Breen, Genevieve R., Minneapolis  
Broderick, Thomas M., Minneapolis  
Brossard, Frances M., Farmington  
Brown, Caroline O., Minneapolis  
Brown, Vesta R., Minneapolis  
Buckley, Catherine F., Farmington  
Burns, Mary L., St. Paul  
Bush, Leila M., Dover  
Cammack, Gertrude E., St. Paul  
Campbell, Lowell M., Minneapolis  
Carr, Edna M., St. Paul  
Casey, Nellie, St. Paul  
Cater, E. Grace, St. Cloud  
Chalfant, Hallie, Minneapolis  
Chapin, George G., St. Paul  
Chilton, Alice N., Howard Lake  
Chrischilles, Theodore H., Algona, Iowa  
Christ, Lydia B., Minneapolis  
Cirkel, Florence A., Minneapolis  
Clifford, C. May, West Concord  
Clifford, Ralph E., Minneapolis  
Colgrove, Laura M., Minneapolis  
Collins, Elsie M., Crookston  
Collins, H. Harrison, Minneapolis  
Conley, Alva A., Cannon Falls  
Connelly, John R., Savage  
Crary, Josephine S., Minneapolis  
Current, Edith, New Ulm  
Dahl, Borghild M., Minneapolis  
Davis, Grace O., Minneapolis  
De La Barthe, Suzanne, St. Paul  
Denneen, Marie B., New Richmond, Wis.  
Doherty, Fayette C., Tracy  
Door, Blanche E., Mankato  
Door, Lester A., Mankato  
Dorn, Helena, Minneapolis  
Dowdall, Augustus, S., Jr., Minneapolis  
Downing, Harold L., Minneapolis  
Drechsler, Alice F., St. Paul  
Dunlap, Alpha J., Mandan, N. D.  
Dwyer, Mary A., Minneapolis  
Ebel, Gertrude, Minneapolis  
Edgerly, Hattie, Minneapolis  
Egan, John K., St. Paul  
Emerson, Hazel, Minneapolis  
Engle, Eloise C., Minneapolis  
Erickson, Victor L., Cloquet  
Everts, Carolyn L., Minneapolis  
Fabian, John H., Campbell  
Faegre, A. Leonard, Minneapolis  
Filk, Anna M., Biscay  
Fitzsimmons, Helena, Minneapolis  
Fleming, Geraldine F., Brainerd  
Flinn, Irma L., Minneapolis  
Forrer, Minnie, Minneapolis  
Francis, Llewellyn H., Creswell, Ore.  
Franklin, Nathaniel, Minneapolis  
Frazer, W. Marc, Lyle  
Freeman, Neda B., Minneapolis  
Freeman, Theodore W., Minneapolis  
Frisch, Leonard H., Minneapolis  
Gamble, George H., Rochester  
Ganßle, Grace W., Minneapolis  
Ghostley, George F., Rogers  
Gillam, Stanley S., Windom  
Gould, Della F., Glencoe  
Griffin, Elsie H., Brooklyn, N. Y.  
Gude, Therese M., Duluth  
Guthrie, Geraldine, Blooming Prairie  
Guy, Ann E., Minneapolis  
Hadler, J. Jacob, Ada  
Halgren, John A., Waseca

- Harroun, Mary G., Minneapolis  
 Hartig, Hugo J. A. J., Minneapolis  
 Hartman, Laura J., Minneapolis  
 Harwood, Laura B., Minneapolis  
 Hastings, Ellen M., Elk River  
 Haugen, Nina S., Pelican Rapids  
 Heilig, Charles A., Milaca  
 Hendrickson, Gilbert, Christine, N. D.  
 Hermansen, Hermina, Wahpeton, N. D.  
 Hilyer, Gale P., Minneapolis  
 Hixon, Charles S., Minneapolis  
 Hobe, Ragnhild, Bald Eagle Lake  
 Hodge, Edwin T., Minneapolis  
 Hoff, Borghild A., Duluth  
 Holden, Cora B., Minneapolis  
 Holzschuh, Alma, Minneapolis  
 Hotchkiss, Robert W., Minneapolis  
 Hugunin, Hester B., St. Paul  
 Humphrey, Kittie, Minneapolis  
 Hutchinson, Emmajean, Faribault  
 Jesness, Ingwold G., Fosston  
 Jewett, Helen E., Minneapolis  
 Johnson, Anne M., Minneapolis  
 Jones, Gladys, Cedar Falls, Iowa  
 King, William, Chippewa Falls, Wis.  
 King, Zerah P., Minneapolis  
 Kiplinger, Carl T., Freeport, Ill.  
 Kjerland, Gratia R., Minneapolis  
 Kneebone, Rubina, Chisholm  
 Kvitrud, Gilbert, Minneapolis  
 Lamb, Frances, Moorhead  
 Lane, Eva E., Minneapolis  
 Larson, Hattie L., Minneapolis  
 Larson, Nettie, Ivanhoe  
 Leavenworth, Richard O., Minneapolis  
 Leonard, Alice, Minneapolis  
 Leonard, F. Perry, Minneapolis  
 Leonard, Faith, Minneapolis  
 Leonard, Gladys, Minneapolis  
 Lillehei, T. August, Minneapolis  
 Lindem, Zelma M., Herman  
 Linton, Hildur T., Minneapolis  
 Littel, Josephine T., Minneapolis  
 Loberg, Nellie M., Minneapolis  
 Loyhed, Lois D., Faribault  
 Lyon, Marion E., Minneapolis  
 McBean, Alan J., Minneapolis  
 MacCallum, Marion S., Minneapolis  
 McCawley, Anna K., Stillwater  
 McCulloch, Hazel, Minneapolis  
 MacEwen, Nora H., St. Paul  
 McHale, William J., Preston  
 McHugh, M. Helen, Goodhue  
 McKeon, Joseph O., Montgomery  
 McMahon, Lynnferd L., Fergus Falls  
 MacMullan, Rita D., Minneapolis  
 Magelssen, Solveig M., Minneapolis  
 Major, Laura L., Minneapolis  
 Marks, Edna A., Minneapolis  
 Mason, Adelaide E., Minneapolis  
 Matteson, Pearl, Summit, S. D.  
 Mattson, Gustav J., Renville  
 Meili, Irma, St. Paul  
 Menefee, Guy C., Albert Lea  
 Miller, Eva S., Long Prairie  
 Miller, Lucille C., Minneapolis  
 Morell, Clifford F., Verndale  
 Morris, Mary, Minneapolis  
 Morse, Willard A., Minneapolis  
 Myers, Thomas, St. Paul  
 Neely, Ora A., Bemidji  
 Nehls, Marie Christ, Minneapolis  
 Nelson, Eleanor V., Mora  
 Ney, B. Irene, Minneapolis  
 Nichols, Flora A., Minneapolis  
 Nicholson, Kathleen, Minneapolis  
 Northey, Beatrice, Minneapolis  
 Nye, Katherine A., Minneapolis  
 Oberg, Laura A., Minneapolis  
 O'Brien, Julia I., Brainerd  
 Odell, Corinne V., Minneapolis  
 Odland, Henry, Hurley, S. D.  
 Olson, Florence G., St. Paul  
 Ostergren, Ralph C., Gladstone  
 Paine, Ruth M., Glencoe  
 Parsons, Nina L., St. Paul  
 Paulsen, Walter H., Pipestone  
 Payne, Catharine B., Minneapolis  
 Pellatt, Amy R. A., Minneapolis  
 Pendergast, Bernice B., Bemidji  
 Petersen, Laura M., Minneapolis  
 Peterson, Harry T., Mora  
 Phillips, Charles, Minneapolis  
 Phillips, Mellie R., Minneapolis  
 Piemeisel, Robert L., Jordan  
 Pierson, Teckla, Minneapolis  
 Plummer, Winnie A., Minneapolis  
 Powers, Harry W., St. Paul  
 Prisk, Ethel, Ely  
 Ramstad, Otto, Thief River Falls  
 Ray, Philip L., Minneapolis  
 Reely, M. Katharine, Hopkins  
 Rogers, Helen L., Faribault  
 Rude, Emil, Tarsus, N. D.  
 Russell, Jean, Minneapolis  
 Ryan, Clara M., Freeport, Ill.  
 Rypins, Stanley I., St. Paul  
 Sawanobori, George T., Minneapolis  
 Sawyer, Eldreth L., Minneapolis  
 Saxton, Florence, Minneapolis  
 Schons, Wilhelmina, St. Paul  
 Schroeder, John H., Minneapolis  
 Schroeder, Mayme F., Perham  
 Scully, Helen L., Stillwater  
 Sears, Lester M., Minneapolis  
 Sefton, Beatrice, St. Paul  
 Simpson, Charles D., West Concord  
 Sinclair, Gregg M., Minneapolis  
 Slade, Verna M., Minneapolis  
 Solberg, Olaf I. A., St. Paul

Soloway, Saul S., Minneapolis  
 Sommermeyer, Louise W., Minneapolis  
 Spaulding, Marjorie, Minneapolis  
 Stafford, Russell H., Minneapolis  
 Staples, Alice M., St. Paul  
 Starr, Elizabeth, Excelsior  
 Stellwagen, Grace, Minneapolis  
 Stemm, Martha O., Robbinsdale  
 Stokes, Ralph S., St. Paul  
 Stone, Harold W., Caldwell, Idaho  
 Stratte, Joseph J., Dawson  
 Sumner, Louise M., St. Paul  
 Sutton, George E., Prior Lake  
 Sutton, Harris R., Prior Lake  
 Swanman, Ira C., Minneapolis  
 Swanson, Stedy R., Minneapolis  
 Terry, Florence M., Minneapolis  
 Thompson, Edith B., Houston  
 Thomson, Margaret M., Minneapolis  
 Tollefson, Dagna J., Rochester  
 Trezona, Edith M., Ely  
 Tschida, Katherine A., St. Paul

Turnquist, Myrtle, Minneapolis  
 Utne, Theodore O., Dalton  
 Vaaler, Christopher L., Spring Grove  
 Vander Hiden, Alice, St. Paul  
 Vaughan, Catherine, Minneapolis  
 Viesselman, Percival W., Minneapolis  
 Walker, James C., Jr., Minneapolis  
 Warmington, Leone, Dubuque, Iowa  
 Welch, Nellie L., St. Paul  
 Wellman, Leslie H., Monona, Iowa  
 West, Elizabeth C., Minneapolis  
 West, Walter M., Minneapolis  
 Wheeler, Henrietta M., St. Paul  
 Wilk, Harry, Eveleth  
 Will, Tillie, Minneapolis  
 Williams, Elizabeth, Minneapolis  
 Willius, Frederick A., St. Paul  
 Wold, Karl C., St. Paul  
 Woodward, Floyd O., Minneapolis  
 Wright, Florence M., St. Cloud  
 Wyckoff, George S., Worthington  
 Zellar, Enza A., St. Paul

## JUNIORS—318

Ahern, Hazel I., Minneapolis  
 Allen, Olive, Minneapolis  
 Ames, Bertha J., St. Paul Park  
 Anderson, Edward D., Minneapolis  
 Anderson, Margaret, Minneapolis  
 Anderson, William, Minneapolis  
 Andrews, Rose M., St. Paul  
 Armstrong, Anna E., Smith Lake  
 Armstrong, E. Leslie, Minneapolis  
 Armstrong, Joseph J., St. Paul  
 Armstrong, Mabel A., Minneapolis  
 Bakalyar, Stephen A., Lakefield  
 Baker, James H., Jr., Mankato  
 Baker, Virginia L., Brownton  
 Bank, Harry E., Minneapolis  
 Baumgartner, Elsie A., Dubuque, Iowa  
 Bell, Dorothy I., Minneapolis  
 Berge, Mabel H., Minneapolis  
 Bishop, Elda B., Minneapolis  
 Bliss, Corinne, Minneapolis  
 Bolstad, Sigvard, Dawson  
 Borgman, Melville B., Minneapolis  
 Borreson, Baldwin, Davenport, N. D.  
 Boss, Leigh C., Minneapolis  
 Bowling, Stacy A., St. Cloud  
 Brandt, Hazel M., Minneapolis  
 Brecke, Oscar A., Minneapolis  
 Brekke, John A., Wallace, S. D.  
 Brown, Doris, Minneapolis  
 Brown, Dorothy W., Minneapolis  
 Brown, Marion H., St. Paul  
 Brown, Ray A., Minneapolis  
 Bryant, Mary L., St. Paul  
 Burgstahler, Herbert J., Minneapolis  
 Burtness, Ruby, Enderlin N. D.

Bussey, Luella, Minneapolis  
 Byrnes, Martica, Minneapolis  
 Camp, Evalyn A., Minneapolis  
 Carlson, Lilly E., Stillwater  
 Caster, Elisabeth J., Minneapolis  
 Cates, Helen M., Minneapolis  
 Chamberlain, Ralph, Minneapolis  
 Chapman, V. Dorothy, Minneapolis  
 Chase, Virginia M., Minneapolis  
 Cheney, Marie, Minneapolis  
 Christensen, Dagmar, Foreston  
 Christenson, Mabel C., Minneapolis  
 Clarke, Gladys R., Stillwater  
 Coffin, Lela, St. Paul  
 Cole, Mary A., Faribault  
 Condit, Ralph G., Rock Elm, Wis.  
 Cook, Robert C., Langford, S. D.  
 Cowin, Carl C., Adrian  
 Crolius, Hazel M., Minneapolis  
 Curry, Vernie I., Minneapolis  
 Curtis, Doris C., St. Paul  
 Danek, Otto L., Glencoe  
 Davis, Constance E., St. Paul  
 Davis, Esther, Minneapolis  
 Davis, Marjorie, Duluth  
 Davis, Lloyd T., Akeley  
 Dawson, Bertha L., Minneapolis  
 Doermann, Henry J., St. Paul  
 Donaldson, Jessie L., Minneapolis  
 Dunn, James N., Minneapolis  
 Dwan, John C., Two Harbors  
 Dyer, Lilian A., Two Harbors  
 Edgar, Mary W., Minneapolis  
 Egan, Florence A., Minneapolis  
 Eilertsen, Marion K., Minneapolis



- Elliott, Edwin E., Minneapolis  
 Emery, Frances J., Fargo, N. D.  
 Enches, Eugenia W., Minneapolis  
 Enches, Helen G., Minneapolis  
 Erdall, Arthur C., Minneapolis  
 Erie, Angela H., Kinbrae  
 Fagerstrom, Lawrence F., Minneapolis  
 Farnam, Laura M., Minneapolis  
 Fee, Marion P., Duluth  
 Ferguson, Anne, Minneapolis  
 Finney, Bertha A., Minneapolis  
 Fletcher, Margaret N., Minneapolis  
 Forbes, Erma A., Minneapolis  
 Ford, Florence E., Minneapolis  
 Franzen, Lillie J., St. Paul  
 Fuglesteen, Dora, Jackson  
 Fuller, Harrison, St. Paul  
 Gardner, Frances E., Minneapolis  
 Gibson, Dorothy G., Great Falls, Mont.  
 Gilbert, Donald D., Monona, Iowa  
 Gilman, Louise, Minneapolis  
 Ginsberg, William, St. Paul  
 Glaessner, Fredericke, Minneapolis  
 Grant, Vera E., Cloquet  
 Graupman, Lillian E., St. Paul  
 Greaves, Miriam C., Glencoe  
 Greeley, Nellie, Stillwater  
 Greer, Margaret R., Minneapolis  
 Green, Everett E., Le Sueur  
 Griep, John B., Glencoe  
 Griswold, Frances E., Minneapolis  
 Guinn, Rose S., Duluth  
 Gulstine, Edna M., Madison, S. D.  
 Gunderson, Walter B., Minneapolis  
 Gustafson, Carl W., Chisago City  
 Habberstad, May, Hutchinson  
 Hamill, Ruth E., Minneapolis  
 Hannaway, Dorothy M., Brainerd  
 Hansen, Harold M., Minneapolis  
 Hansen, Erling W., Minneapolis  
 Hansen, Theodore L., Albert Lea  
 Hanson, Ruth, Minneapolis  
 Harp, Stella K., St. Paul  
 Harrison, Helen, Minneapolis  
 Harrington, Zeta R., Stillwater  
 Harsha, Muriel K., Minneapolis  
 Harvey, Sydne E., Rochester  
 Haskell, Abe, Minneapolis  
 Haugen, Albert I., Elbow Lake  
 Hedding, Lucinda A., Minneapolis  
 Helme, Marcia, Sioux Falls, S. D.  
 Herber, Jessie A., Minneapolis  
 Hewitt, Marjorie, Minneapolis  
 Hill, Dianah M., Minneapolis  
 Hillesheim, Gertrude, Sleepy Eye  
 Hirsch, Stella M., St. Paul  
 Hockenberger, Franc C., Kenosha, Wis.  
 Hodson, William W., Minneapolis  
 Holbrook, Franklin F., Minneapolis  
 Holtan, Marie A., Kenyon  
 Holm, George A., Minneapolis  
 Hovda, Henry O., Mt. Vernon, S. D.  
 Hughes, Elizabeth, New Richmond, Wis.  
 Humpfner, Hilda P., Minneapolis  
 Hutchinson, Charles J., Minneapolis  
 Jackson, Edith R., Alden  
 Jaques, Lawrence, Duluth  
 Jenswold, John D., Duluth  
 Johnson, Ada F., Benson  
 Johnson, Agnes F., Albert Lea  
 Johnson, Chester W., Lyle  
 Johnson, Florence A., Renville  
 Johnson, Florence I., Minneapolis  
 Johnson, Irene B., Minneapolis  
 Johnson, Nelle F., Oskaloosa, Iowa  
 Johnson, Reuben A., Minneapolis  
 Jones, Carl F., Minneapolis  
 Jones, Cecil M., Frazee  
 Jones, Louise I., Minneapolis  
 Jules, Carla H., Minneapolis  
 Karpen, John P., Hastings  
 Keller, Grover J., St. Paul  
 Kernan, James W., Two Harbors  
 King, Mary E., Ellendale, N. D.  
 Koehler, Earl S., Winona  
 Kolars, Mary B., Le Sueur Center  
 Kreis, Foster H., Minneapolis  
 Lajord, Carrie, Minneapolis  
 Lambert, Howard T., Minneapolis  
 Lansing, Alice, Iowa Falls, Iowa  
 Larsen, Roy W., Crookston  
 Larson, Carl A., Echo  
 Laurell, Jonas J., Minneapolis  
 Lauritzen, Lucia M., Fergus Falls  
 Lee, Colice M., Rush City  
 Lee, Henry O., Mankato  
 Lemstrom, Ammy B., Minneapolis  
 Linnell, Ethel C., Minneapolis  
 Linstrom, Hjalmar A., Castlewood, S. D.  
 Loken, Carrie O., Minneapolis  
 Loken, Lawrence J. G., Minneapolis  
 Lovdahl, Mabel V., Crosby  
 Lynch, Bessie, Staples  
 McAdams, Georgia J., Minneapolis  
 McCanna, Mable, Minneapolis  
 McElroy, Mary K., Minneapolis  
 McFarland, Arthur H., St. Paul  
 McGee, Katharine F., St. Paul  
 McGilvra, Eunice, Milaca  
 McGowan, Louise H., Janesville, Wis.  
 McKelvey, Estelle, Rock Rapids, Iowa  
 McNally, Miles H., New Richmond, Wis.  
 McPherson, Sadie J., Aberdeen, S. D.  
 Mach, Frank B., New Prague  
 Mahoney, Dan L., Virginia  
 Maney, Charles A., Minneapolis  
 Marcus, Mae, Minneapolis  
 Marshall, Ruth E., Minneapolis  
 Martin, Kate K., Minneapolis  
 Martin, Ruth, Minneapolis

Martinson, Carl J., Stillwater  
 Mears, Henrietta, Minneapolis  
 Medberry, M. Mildred, Dexter  
 Mellem, Lulu E., St. Paul  
 Miller, Ray H., Big Stone City, S. D.  
 Moe, Nellie A., Strandburg, S. D.  
 Mohl, Ruth, St. Paul  
 Molunby, Loy J., Elkader, Iowa  
 Morgan, Cornelia E., Minneapolis  
 Mortland, Marjorie A., Minneapolis  
 Moss, Gladys, Minneapolis  
 Muckley, Augustina, Minneapolis  
 Murphy, Frank G., Mapleton, N. D.  
 Mylenbusch, Elva E., Minneapolis  
 Nachtrieb, Margaret, Minneapolis  
 Nass, Thomas, Kyoto, Japan  
 Nelson, Carmen R., Maple Plain  
 Nelson, Carroll F. E., Granite Falls  
 Nelson, John H., Minneapolis  
 Nichols, H. Adelaide, Estherville, Iowa  
 Nissen, Dagny E., Minneapolis  
 Nissen, Sophus B., Winona  
 Noice, Russell R., Minneapolis  
 Nordbergh, Ruth, Minneapolis  
 Norelius, Edna M., Luverne  
 Nutter, Bernice K., St. Peter  
 O'Connell, Aurelia M., St. Paul  
 O'Dea, Aurelia, St. Paul  
 Odegard, Nettie E., Minneapolis  
 Olson, Oscar B., Litchfield  
 Orbeck, Anders J., Eau Claire, Wis.  
 Oswald, Helen, Perham  
 Owen, D. Spencer, Minneapolis  
 Parker, Erwin C., Browns Valley  
 Parker, Florence E., Minneapolis  
 Partridge, Jessie R., Owatonna  
 Peavey, Roger, Faribault  
 Peterson, Alvin A., Mora  
 Peterson, Evelyn M., Minneapolis  
 Peterson, Harold R., Minneapolis  
 Phipps, Dencie E., Minneapolis  
 Piatt, Elizabeth A., Minneapolis  
 Plant, Dorothy B., St. Paul  
 Poole, Bertha D., St. Paul  
 Pratt, Maud M., Pipestone  
 Pressnell, Myrna C., Duluth  
 Prest, Marion, St. Paul  
 Preston, Gertrude, Minneapolis  
 Preston, Paul J., Luverne  
 Pyke, Emily L., Minneapolis  
 Quayle, Mellie D., Minneapolis  
 Quinn, Thomas F., St. Paul  
 Raine, Nellie I., Minneapolis  
 Ramsey, Florence, Minneapolis  
 Rand, Florence, Minneapolis  
 Randall, Arthur, Robbinsdale  
 Rasmussen, Peter L., St. Paul  
 Reed, Leslie E., St. Paul  
 Reed, Wilma L., Minneapolis  
 Rehfeld, Herbert G., Browns Valley  
 Rehnke, Clinton A., Kenyon  
 Rhodes, Mary E., Minneapolis  
 Rice, Freda M., Park Rapids  
 Rice, Jerome J., Minneapolis  
 Rickard, Marion, Minneapolis  
 Roberts, Earle, Oskaloosa, Iowa  
 Roberts, Edward B., Minneapolis  
 Roberts, Lyle J., Omaha, Neb.  
 Robinson, Charles A., Missouri Valley, Ia.  
 Robinson, Charles J., Minneapolis  
 Robinson, G. Virginia, Montevideo  
 Roskilly, Gerald C., Virginia  
 Rowe, Marjorie, St. James  
 Rutledge, Jeannette W., Minneapolis  
 Sands, Grayce E., Minneapolis  
 Schaller, Josephine M., Hastings  
 Schaller, Marion E., Hastings  
 Schow, Jennie E., Minneapolis  
 Schroeder, Herman W., Minneapolis  
 Selleseth, Ivor P., Glenwood  
 Shaughnessey, Clark D., St. Paul  
 Shiely, Albert R., St. Paul  
 Sinclair, Mary B., Fairmont  
 Smaltz, Alfred G., Minneapolis  
 Smith, Carl W., St. Paul  
 Smith, Lee W., Wabasha  
 Stadig, Erick, Minneapolis  
 Staska, Joe, Angus  
 Steinke, William M., Sleepy Eye  
 Stockwell, Charlotte, Minneapolis  
 Strong, Hazel M., St. Paul  
 Strehlow, Lillian S., Casselton, N. D.  
 Swanson, Gertrude T., Minneapolis  
 Swearingen, Nina M., Fairmont  
 Sweatt, Harold W., Minneapolis  
 Swedberg, Hulda C., Luverne  
 Swenson, Alma M., Minneapolis  
 Swift, Vivian J., St. Paul  
 Swift, Winifred C., Minneapolis  
 Swinburne, Adelaide, Minneapolis  
 Tennant, Gertrude E., Fergus Falls  
 Thielman, Adelaide, St. Cloud  
 Thompson, Lydia D., St. Peter  
 Trautman, Lucille I., Winthrop  
 Trieflof, Harriet L., Carver  
 Tunell, Winifred A., Minneapolis  
 Vaughan, M. Bernard, St. Paul  
 Veblen, Rolf, Minneapolis  
 Villars, Horace S., Minneapolis  
 Wagner, Archibald F., Minneapolis  
 Walker, Arthur W., St. Croix Falls, Wis.  
 Walker, Keith M., Moorhead  
 Wanless, Luceille I., Minneapolis  
 Ward, Percy A., Zumbrota  
 Warner, Harry A., Minneapolis  
 Watts, Anna M., Crookston  
 Webster, Arlene, Waucoma, Iowa  
 Weida, Lucille E., Caledonia  
 West, David R., Minneapolis  
 Williamson, Ralph, Minneapolis

Willson, Marguerite P., Minneapolis  
 Wind, Anna C., Lake Benton  
 Winterer, Franceska, Valley City, N. D.  
 Wood, Pearl E., Minneapolis

Woolsey, Edith, Minneapolis  
 Wright, Barbara H., Minneapolis  
 Zanger, Julia, Minneapolis  
 Zelle, Edgar F., New Ulm

## SOPHOMORES—437

Ackerman, Joseph W., Minneapolis  
 Acomb, Helen L., Minneapolis  
 Ahlers, Harriet H., St. Cloud  
 Ainsworth, George R., Moline, Ill.  
 Aiton, Elizabeth, Minneapolis  
 Aker, Emil, Minneapolis  
 Allen, Hazel, Duluth  
 Allison, Marguerite H., Minneapolis  
 Alm, Oscar E., Winthrop  
 Altman, Harry L., Duluth  
 Anderholm, Fritz J., Hibbing  
 Anderson, Edna O., Alexandria  
 Anderson, Ruth M., Litchfield  
 Armstrong, Agnes M., Minneapolis  
 Ash, Ruth, Des Moines, Iowa  
 Aune, Charlotte, M., Dawson  
 Babcock, Lucile, Minneapolis  
 Babcock, Willoughby M., Jr., Minneapolis  
 Baker, Morris T., Minneapolis  
 Bancroft, George V., Stillwater  
 Barke, Ralph J., Fergus Falls  
 Barker, Helen C., Minneapolis  
 Barnes, Beulah, Minneapolis  
 Barnard, Charles D., Spencer, Iowa  
 Barnhart, Eleanor J., Minneapolis  
 Barrett, Claire M., Minneapolis  
 Barrett, E. Blois, Browns Valley  
 Beck, Martha F., Hutchinson  
 Beckman, Ruth V., Minneapolis  
 Beebe, Viola P., New Richmond, Wis.  
 Belknap, Lawrence, Minneapolis  
 Bell, John W., Minneapolis  
 Bell, Leslie J., Minneapolis  
 Bennett, Helen L., Minneapolis  
 Bennett, Le Moyne B., Aberdeen, S. D.  
 Bensen, J. Arthur, St. Cloud  
 Benson, Eva, Appleton  
 Bergan, Laura, Sacred Heart  
 Berkeley, Martha S., Valley City, N. D.  
 Berry, Alice L., Minneapolis  
 Binet, Henry E., Bovey  
 Birkeland, Martha B., Houston  
 Bisbee, Ardelia R., Madelia  
 Blanchette, George E., Anoka  
 Blase, Susan A., St. Paul  
 Blodgett, Geneva, Minneapolis  
 Blumenfeld, Albert, South St. Paul  
 Bohan, Florence M., Minneapolis  
 Borom, Mildred L., Minneapolis  
 Boutell, Francis L., Sauk Centre  
 Boyce, Ruth L., Hopkins  
 Boyle, Bess M., Rush City

Boyle, C. Lawrence, Duluth  
 Boyson, Sadie B., Minneapolis  
 Brawthen, Florence M., Minneapolis  
 Briggs, Douglas E., Minneapolis  
 Broberg, Agnes A., Blue Earth  
 Broberg, Gail R., Blue Earth  
 Brockway, Clara E., Royalton  
 Brodeen, Elsie, Stillwater  
 Brosius, Rudolph F., Minneapolis  
 Buckbee, Margaret M., Minneapolis  
 Buehler, J. Edwin, Minneapolis  
 Bulen, Ruth, Minneapolis  
 Bullis, Elmer R., Sandstone  
 Burg, E. Lloyd, Duluth  
 Bush, Ada, Duluth  
 Byers, Ruth, M., Minneapolis  
 Byrnes, William A., Minneapolis  
 Cadwell, Nellie M., Minneapolis  
 Cady, Laurence H., Minneapolis  
 Cammack, Edward A., St. Paul  
 Camp, L. Hester, Minneapolis  
 Campbell, D. Ross, Cloquet  
 Capps, Leah M., Minneapolis  
 Carlson, Lawrence M., Renville  
 Cartwright, William H., Minneapolis  
 Castner, Minnie E., Minneapolis  
 Catherine (Jennings), Sister, St. Paul  
 Cayott, Franklyn E., Stewart  
 Chaffee, Harry P., Carrington, N. D.  
 Chaplin, Edith L., St. Paul  
 Chapman, Royal N., Minneapolis  
 Chesnut, Mae P., Minneapolis  
 Childs, George H., Minneapolis  
 Clark, Carolyn M., Minneapolis  
 Clemens, Louise M., Minneapolis  
 Colter, Alice M., St. Paul  
 Conner, Marian R., Minneapolis  
 Conners, Grace E., Chippewa Falls, Wis.  
 Connolly, Carl T., Devils Lake, N. D.  
 Cooper, Walter W., Minneapolis  
 Cords, Elmer H., Elkader, Iowa  
 Corkrey, Margaret Q., Minneapolis  
 Cox, Lydia G., Cloquet  
 Craig, Florence M., Minneapolis  
 Cramer, Isabel M. J., Minneapolis  
 Crawford, Matthew D., Minneapolis  
 Crilly, Hale L., Minneapolis  
 Crounse, Robert M., Minneapolis  
 Culligan, Anna, St. Paul  
 Currie, Paul M., Minneapolis  
 Curry, Ethel A., Minneapolis  
 Curtis, Vera A., Valley, Neb.

Cuzner, Hazel, Minneapolis  
 Dahlberg, Edwin T., Minneapolis  
 Dampier, Edith C., St. Paul  
 Daniels, J. Horton, Minneapolis  
 Davis, Dorothy, Duluth  
 Davis, Eleanor, Winona  
 Day, Pearl M., Farmington  
 Dollenmayer, Dorothy E., Minneapolis  
 Domeier, Albert L., Sleepy Eye  
 Donohue, Florence M., St. Paul  
 Donohue, Grace M., St. Paul  
 Drew, Helen L., St. Paul  
 Dunn, Harold F., Weeping Water, Neb.  
 Dunn, Marshall L., Minneapolis  
 Duxbury, Alta, St. Paul  
 Eastman, Elma L., Minneapolis  
 Eggar, Kathleen E., St. Paul  
 Eggen, Ethel, Fargo, N. D.  
 Eichhorn, Myrtle H., Minneapolis  
 Elwell, Elizabeth, Minneapolis  
 Elwell, Ruth, Minneapolis  
 Erickson, Alice F., Minneapolis  
 Erickson, Florence A. M., St. Paul  
 Erixon, Agnes O., Anoka  
 Evans, Charles G., Duluth  
 Evans, Grace, Minneapolis  
 Evans, Mary, Minneapolis  
 Fillebrown, Arthur K., St. Paul  
 Fitzpatrick, Julia A., Rochester  
 Flinders, Arthur C., Sutherland, Iowa  
 Ford, Nina M., Hutchinson  
 Franzen, Signe M., St. Paul  
 Frenzel, Frank M., St. Paul  
 Frisch, Jeanette F., Minneapolis  
 Gallagher, Bernard J., Waseca  
 Gamble, J. William, Rochester  
 Gates, Leo V., Elgin  
 Gilbert, Alcetta, Minneapolis  
 Gilbert, Dorothy A., Minneapolis  
 Gilroy, Earl W., Minneapolis  
 Gilroy, Francis R., Minneapolis  
 Gipson, Corwin E., Minneapolis  
 Glessner, Lillian H., Minneapolis  
 Glynn, James R., Maple Lake  
 Goggin, John G., Rochester  
 Goldberg, Florence R., Minneapolis  
 Gonska, Clara, Duluth  
 Goode, Delmer M., South Haven  
 Goodwyn, Gwendoline, Minneapolis  
 Coss, H. Leroy, Minneapolis  
 Gray, Edna R., Minneapolis  
 Griffin, Angela, St. Paul  
 Griffith, Genevieve, Minneapolis  
 Griggs, Stella M., Minneapolis  
 Grimm, Bessie A., Ashland, Wis.  
 Grinager, Ada J., Minneapolis  
 Groth, H. Genevieve, Minneapolis  
 Gunderson, H. Spurgeon, Kenyon  
 Hagen, Cora, Minneapolis  
 Hall, Levi M., Minneapolis  
 Hall, Sophia, Minneapolis  
 Halvorson, Walter, Mora  
 Hamblin, Ethel, Minneapolis  
 Hamblin, Gladys M., Minneapolis  
 Handy, Edna L., Minneapolis  
 Hankey, Elsie, Minneapolis  
 Hansen, Ivan O., Churchs Ferry, N. D.  
 Harbo, Harold E., Minneapolis  
 Harris, Abraham L., Minneapolis  
 Harrison, Gladys A., Minneapolis  
 Hauenstein, Harold A., St. Paul  
 Haugen, Lauritz G., Northwood, Iowa  
 Haugen, Wilbur C., Pelican Rapids  
 Hawkins, Vincent J., Jr., St. Paul  
 Heighstedt, Effie D., Minneapolis  
 Heinemann, Margaret E., St. Paul  
 Hendrickson, Clara, Willmar  
 Hickman, John H., Jr., St. Paul  
 Hicks, Celia V., Grand Marais  
 Hicks, George M., Thief River Falls  
 Higbie, Everett C., Minneapolis  
 Hilger, Robert, St. Paul  
 Hodapp, Henry G., Minneapolis  
 Hodgins, Earl, Chippewa Falls, Wis.  
 Hoovel, Velma C., Jackson  
 Hopperstad, Edith L., Minneapolis  
 Hosken, Mary E., Minneapolis  
 Howard, Ethel T., Wells  
 Hubbell, Nellie M., St. Paul Park  
 Hubman, Sophia A., Stillwater  
 Huff, Susie, Minneapolis  
 Hughes, Walter J., Minneapolis  
 Hultkrans, Hilding E., Minneapolis  
 Hunter, Vivian S., St. Paul  
 Hurley, Harriet G., Bovey  
 Hutchinson, Margaret, Minneapolis  
 Hyland, Julia G., Minneapolis  
 Ives, Clifford A., Minneapolis  
 Iverson, Louis, Badger  
 Jacobs, Agnes, Forest City, Iowa  
 James, Linda, St. Paul  
 Jerdee, Theodore R., Minneapolis  
 John, Meta A., Minneapolis  
 Johnson, C. Marie, St. Paul  
 Johnson, Carolyn A., St. Paul  
 Johnson, Herman F., Minneapolis  
 Johnson, Josephine, Sioux City, Iowa  
 Johnson, Ralph E., Duluth  
 Johnson, Ruth A., Minneapolis  
 Johnson, Ruth P., Casselton, N. D.  
 Johnston, Marie, Minneapolis  
 Johnstone, Esther V., Minneapolis  
 Juel, Cora A., Canton, S. D.  
 Keeler, Florence A., Minneapolis  
 Kelehan, Charles M., Granite Falls  
 Kelly, Margaret H., St. Paul  
 Kelly, Maud, Minneapolis  
 Kelly, Winifred I., Minneapolis  
 Kennedy, Dorothy L., St. Paul  
 Kennedy, Walter J., St. Paul

- Kennicott, Kenneth B., Luverne  
 Kesson, Bessie E., Byron  
 Kimball, Eva R., Minneapolis  
 King, Stafford, Deer River  
 King, Owen, Minneapolis  
 Kirlin, Leota, Watertown, S. D.  
 Klein, George F., Minneapolis  
 Klima, William W., Silver Lake  
 Klengen, Oscar M., Minneapolis  
 Knowlton, Helen, Minneapolis  
 Knowlton, Ruth, Minneapolis  
 Kopplin, Celia J., Litchfield  
 Kranz, Irene O., Holstein, Iowa  
 Krauch, Elsa P., St. Paul  
 Kulberg, Gertrude, Minneapolis  
 Kunzie, Hazel E., Minneapolis  
 Kurvinen, Florence H., Ely  
 Ladd, Valeria G., Minneapolis  
 Lampert, Leonard, Minneapolis  
 Lang, Walter B., St. Paul  
 Langtry, Mildred M., Minneapolis  
 La Plant, Ruth E., Anoka  
 Larson, Clara A., Minneapolis  
 Lawrence, Alice, Winthrop  
 Leahy, Alice, Minneapolis  
 Le Borious, Mabel, St. Paul Park  
 Leck, Grace M., Minneapolis  
 Lein, Charles R., Duluth  
 Leland, Catherine, Minneapolis  
 Lembke, Carl, Neche, N. D.  
 Levin, Oscar S., Hoffman  
 Lewis, Addison, Minneapolis  
 Lewis, Florence H., Minneapolis  
 Lindeman, Frances, Minneapolis  
 Little, Mary L., Appleton  
 Lloyd, Margaret, Mankato  
 Loomis, Mildred, Owatonna  
 Lord, Eleanor, St. Paul  
 Lovgren, Nat, Red Wing  
 Loux, Mata C., Taconite  
 Lowell, Frances E., Minneapolis  
 Ludwig, Edith M., Minneapolis  
 Luehrs, Leslie, Pipestone  
 Lund, Boleta M., Vining  
 Lydon, May H., Minneapolis  
 Lyman, Blanche E., Minneapolis  
 Lynch, Margaret C., St. Paul  
 Lyon, Dwight E., Verdigre, Neb.  
 McAlmon, George, Minneapolis  
 McCabe, Jessie, Duluth  
 McCarthy, Genevieve M., Coleraine  
 McCord, Russell D., Minneapolis  
 McDonald, Ruth A., Annandale  
 MacDonald, Veronica, Stillwater  
 McEwan, John J., Alexandria  
 McGee, John P., St. Paul  
 McGee, Marguerite E., Minneapolis  
 McGuire, Herman, Minneapolis  
 McLane, Genevieve M., Minneapolis  
 McLeod, Howard L., White Bear  
 McQuaid, Edward S., Minneapolis  
 McQuilkin, Margaret, Minneapolis  
 Madsen, Edwin C., Minneapolis  
 Martin, Louis W., Hector  
 Maxwell, Georgia, Faribault  
 Mayer, Roland G. L., New Ulm  
 Meland, Marie, Red Wing  
 Melin, E. Eleanor, Minneapolis  
 Mellem, Ethel M., St. Paul  
 Melody, Margaret A., Minneapolis  
 Mendowitz, Hymen Z., Minneapolis  
 Methven, Theron G., Minneapolis  
 Meyer, Helen B., Minneapolis  
 Miller, Arthur B., Heron Lake  
 Miller, Isalinda H., Minneapolis  
 Miner, Viola F., Minneapolis  
 Mitchell, Norman S., St. Paul  
 Mix, Marjorie, Minneapolis  
 Monroe, Nettie D., Minneapolis  
 Moore, Allen L., Minneapolis  
 Moore, Gertrude, St. Paul  
 Morrill, Lowell L., Minneapolis  
 Morrison, Harold E., Minneapolis  
 Moyer, Glenn D., Minneapolis  
 Moynihan, Estelle M., Minneapolis  
 Munson, Arthur E., Minneapolis  
 Nash, Caryl D., Tracy  
 Nelson, Arthur P., Minneapolis  
 Nelson, Imogene C., Minneapolis  
 Nesbitt, Hazel, Alexandria  
 Neustadt, Jean R., La Salle, Ill.  
 Nippert, Lilian E., Minneapolis  
 Noll, Alfred J., Big Stone City, S. D.  
 Nootnagel, Edith, Minneapolis  
 Noreen, Harold A., Minneapolis  
 Oberg, Orrelle B., St. Cloud  
 O'Brien, Gerald R., St. Paul  
 O'Connor, Myrtle, Granite Falls  
 O'Gordon, Clarence, Minneapolis  
 Olsen, Edwin R., Stillwater  
 Oredalen, Julia, Kenyon  
 Osbeck, Charles, Lake Benton  
 Owen, F. Mae, Minneapolis  
 Owens, Laura L., North St. Paul  
 Pagenhart, Elsie N., Rochester  
 Pardee, Esther M., Minneapolis  
 Partington, Florence, Minneapolis  
 Partington, A. Lorraine, Minneapolis  
 Patchin, Sydney A., Rochester  
 Pattee, Gladys, Minneapolis  
 Patten, Harold W., Minneapolis  
 Paulson, Clotilde E., Minneapolis  
 Paulson, Emma, Two Harbors  
 Paulson, Henry T., Minneapolis  
 Paulson, Myrtle N., Minneapolis  
 Peachey, Arline M., Minneapolis  
 Pearson, Albert E., St. Paul  
 Pecor, Barbara, Duluth  
 Pender, Nellie M., St. Paul  
 Perry, Hazel F., Minneapolis

Peterson, Edna F., Red Wing  
 Peterson, Effie E., Minneapolis  
 Pffner, Myrtle, Inver Grove  
 Phillips, Jessie H., Minneapolis  
 Phipps, Marion M., St. Paul  
 Plummer, Maude, Eau Claire, Wis.  
 Pomeroy, Donald L., Minneapolis  
 Porter, Robert E., Fairmont  
 Potts, Alta M., St. Paul  
 Pratt, C. Harlow, Minneapolis  
 Prindle, Gertrude, Minneapolis  
 Pritchard, Elizabeth, Minneapolis  
 Qualee, Jeanette G., Adams  
 Quigley, Jo Evelyn, Bird Island  
 Raadquist, C. Simon, Warren  
 Radabaugh, Rudolph C., Zumbro Falls  
 Ralke, Carl H., Excelsior  
 Raymond, Elizabeth, Minneapolis  
 Reeck, Edwin B., Waseca  
 Reid, Roberta, Minneapolis  
 Richardson, Edward W., Hawkins, Wis.  
 Richardson, Mildred M., Fairmont  
 Ricker, Donald H., Minneapolis  
 Ringstrom, Hugo, Sunrise  
 Ritter, Herbert L., Little Falls  
 Rivet, Sarah T., Minneapolis  
 Robertson, Carl J., Litchfield  
 Robertson, Jean, Minneapolis  
 Robinson, Florence J., Minneapolis  
 Robinson, Zora I., Minneapolis  
 Rosenthal, Boleslaus A., St. Paul  
 Rowe, Paul H., Casselton, N. D.  
 Rud, George M., Kenyon  
 Rundquist, Ella A., Minneapolis  
 Russell, Reuben C., Minneapolis  
 Rypins, Harold L., St. Paul  
 Salisbury, Kenneth B., Minneapolis  
 Sarazin, Katherine B., Minneapolis  
 Sauby, Orvin, Elbow Lake  
 Savidge, Myrtle E., Stewartville  
 Sawatzky, William A. C., Shakopee  
 Sawyer, Emmons W., Minneapolis  
 Saxe, W. Earle, Minneapolis  
 Schaetzel, Marie, Minneapolis  
 Schmidt, Irvin A., Chaska  
 Schmitz, Frances M., Thief River Falls  
 Schoonmaker, Guy D., Riceville, Iowa  
 Schulze, Marjorie F., Decorah, Iowa  
 Scott, Jeannette H., Minneapolis  
 Seham, Ruby G., Minneapolis  
 Sevatson, Lillian, Minneapolis  
 Shannessy, Earl V., Minneapolis  
 Shannon, Clarence A., Bemidji  
 Shannon, W. Raymond, Minneapolis  
 Shapere, Abe, St. Paul  
 Shenehon, Eleanor N., Minneapolis  
 Shol, Esther N., Minneapolis  
 Siedenber, Alfred H., Elk Mound, Wis.  
 Siedenber, Arthur G., Elk Mound, Wis.  
 Sieberg, Edward M., Oakes, N. D.  
 Siems, Will P., Swanville  
 Simmons, Emily R., Minneapolis  
 Sinclair, Lucien D., Minneapolis  
 Smedberg, Katherine F., Minneapolis  
 Smith, Harlan M., Minneapolis  
 Smith, Lucile, Minneapolis  
 Smith, Mildred M., Carrington, N. D.  
 Snodgrass, Thomas J., Minneapolis  
 Solem, Oscar M., Minneapolis  
 Sommers, Ned F., Annandale  
 Speier, Vera, Minneapolis  
 Spencer, Cassie R., Park Rapids  
 Stadsfold, Francis H., Fosston  
 Starrett, Mark L., Minneapolis  
 Steadman, Marja B., Livingston, Mont.  
 Stein, Emma B., Minneapolis  
 Stellwagen, Seiforde M., Minneapolis  
 Stevens, Willimina C., Minneapolis  
 Stevens, Marion R., Minneapolis  
 Stone, Mary S., Minneapolis  
 Stoner, Harry L., Lake Park  
 Stoner, Matie E., Lake Park  
 Storlie, Carl J., Lanesboro  
 Strand, Alma, Minneapolis  
 Sturtevant, R. Ardelle, Minneapolis  
 Sullivan, Joseph D., Madison Lake  
 Sullivan, Katherine E., Stillwater  
 Summerfield, Arthur W., St. Paul  
 Sund, Adolph G., Minneapolis  
 Sunwall, James O., Minneapolis  
 Swanson, Florence H., Stillwater  
 Swift, F. Clare, Cresbard, S. D.  
 Tanner, Elsie K., St. Paul  
 Taylor, Gladys C., Minneapolis  
 Tenold, Adeline, Northwood, Iowa  
 Thoen, Hazel V., Taylors Falls  
 Thompson, Aaron W., Eau Claire, Wis.  
 Thompson, Minnie A., Appleton  
 Thomson, Metellus, Jr., Minneapolis  
 Thorp, Bertha H., Willmar  
 Thorp, Ella A. M., Minneapolis  
 Travis, Bernice M., Minneapolis  
 Travis, Gladys L., Minneapolis  
 Treibel, Emma A., St. Paul  
 Trieloff, Anna M., Carver  
 Trumble, Mildred B., Minneapolis  
 Tryon, Fred G., Minneapolis  
 Tupper, Ruth F., Minneapolis  
 Turner, Marguerite, Faribault  
 Valesh, Frank, Graceville  
 Vandyke, Ruth, Coleraine  
 Van Tuyl, Ruth, Minneapolis  
 Viets, J. Jay, Minneapolis  
 Vogtel, Melvin A., New Ulm  
 Vondrak, Emma, Minneapolis  
 Walters, Bessie, Minneapolis  
 Walters, Ethel L., Minneapolis  
 Wanous, Hylda E., Hutchinson  
 Ware, Josephine, St. Paul  
 Warner, Ellsworth B., Minneapolis

Warren, Vera M., St. Paul  
 Webster, Bennett A., Waucoma, Iowa  
 Webster, Kathryn, Minneapolis  
 Werring, Mildred, Sleepy Eye  
 Westman, Agnes, Alexandria  
 White, Ida C., Minneapolis  
 White, Margaret J., Minneapolis  
 Wienir, Eimon, Superior, Wis.  
 Wijje, Reuel, Moorhead  
 Wilcox, Blanche A., Virginia  
 Wilcox, Grace E., Virginia

Ziegler, Mildred R., Minneapolis

Wilson, Byron R., Royaltan  
 Winter, A. Prescott, Granite Falls  
 Wipperman, Mrs. P. W., Minneapolis  
 Wisner, Gilman H., Eldora, Iowa  
 Wolf, Martha F., St. Paul  
 Worlitssek, Stephanie M., St. Paul  
 Wright, Vera L., Minneapolis  
 Yerxa, Stella G., Minneapolis  
 Yoerg, Luise M., St. Paul  
 Young, Temple F. M., Minneapolis  
 Yukel, Frank, Silver Lake

#### FRESHMEN—613

Abbett, Gladys, Anoka  
 Abeles, Emmons L., Minneapolis  
 Abrahamson, Helen, Houston  
 Abrahamson, Louise, Houston  
 Abramson, Earl L., Minneapolis  
 Abramson, Ethel V., Minneapolis  
 Acton, Harry J., Madison  
 Agnew, Allen T., Vincennes, Ind.  
 Akenson, Grace, Minneapolis  
 Albrecht, Ione A., Minneapolis  
 Alexander, Marion C., St. Paul  
 Allison, Sadie E., Milaca  
 Ames, Alice H., St. Paul Park  
 Andersen, Helen S., Minneapolis  
 Anderson, Freda, Mankato  
 Anderson, Mamie E., Grantsburg, Wis.  
 Anderson, Raymond W., St. Paul  
 Anderson, Frank J., Ellsworth, Wis.  
 Andrews, Raymond C., Lindstrom  
 Annon, Walter T., Anoka  
 Archambo, Maybell A., Minneapolis  
 Armstrong, Victor S., Minneapolis  
 Arnson, Johan M., Eau Claire, Wis.  
 Atwood, Ethel E., Graceville  
 Augustin, C. Howard, Glenwood City, Wis.  
 Back, William F., Red Wing  
 Baer, Fernand B., St. Paul  
 Baer, Jerome B., St. Paul  
 Baker, Fannie E., Granite Falls  
 Balch, Earle, St. Paul  
 Ballard, Grace M., St. Paul  
 Barker, Georgia M., Minneapolis  
 Barnard, Margaret H., Minneapolis  
 Barnes, George A., Wells  
 Barron, Lazarus, Minneapolis  
 Bartholet, Frank T., Bird Island  
 Bartholet, Julia C., Bird Island  
 Bartlett, Mary E., Minneapolis  
 Batchelder, Kathryn, Faribault  
 Bates, Sybil P., Minneapolis  
 Beckett, Leighton D., Northwood, Iowa  
 Belyea, Aileen, Little Falls  
 Benedix, Cedric H., Mantorville  
 Benepe, Helen A., St. Paul

Bengston, Ruth C., Minneapolis  
 Bennett, Muriel, Minneapolis  
 Berg, Emelia, Minneapolis  
 Berg, Lillie M. E., Rush City  
 Bertrand, Marie, Minneapolis  
 Bessler, Philip, Minneapolis  
 Billman, Joseph E., Minneapolis  
 Birkland, Olav N., Red Wing  
 Bishop, Morlan H., Thief River Falls  
 Blanchett, Leo M., Minneapolis  
 Blank, Etta, Minneapolis  
 Blase, Esther, St. Paul  
 Boobar, Ethel F., Anoka  
 Borry, Alf. J., Thief River Falls  
 Bowe, Regina M., Waseca  
 Boyer, Joseph A., Minneapolis  
 Braithwaite, Gale B., Minneapolis  
 Brandmier, John F., Superior, Wis.  
 Bregel, Fred L., Fairfa  
 Brennan, Lester L., Minneapolis  
 Briggs, Claude E., Princeton  
 Briggs, Mildred F., Blue Earth  
 Bright, Katharine C., Minneapolis  
 Brodrick, M. Helen, Minneapolis  
 Broker, Walter S., Minneapolis  
 Brown, Edwin S., Minneapolis  
 Brown, Lucile, International Falls  
 Brown, R. J. Carroll, Minneapolis  
 Brown, Lyle L., Crookston  
 Bruchholz, Frederick A., Minneapolis  
 Buell, Clyde W., Minneapolis  
 Bullis, Daisy E. N., Sandstone  
 Burgstahler, Alice, Minneapolis  
 Burns, Robert W., Minneapolis  
 Burr, Raymond A., St. Paul  
 Buscher, Herbert, Lester Prairie  
 Byrnes, Lillian, Barry  
 Callaway, William L., Minneapolis  
 Campbell, H. Dean, Minneapolis  
 Carleton, Frank H., Jr., Minneapolis  
 Carlson, Olga J., Deephaven  
 Carlson, Thorgay C., Minneapolis  
 Carpenter, Helen J., Minneapolis  
 Carufel, Mary, Faribault

- Casey, Bessie M., New Richmond, Wis.  
Casey, Gertrude V., Minneapolis  
Cates, Catherine B., Minneapolis  
Caughren, Pearle, Sauk Centre  
Cauley, Elizabeth C., Graceville  
Chamberlain, Ruth, Minneapolis  
Champlin, Bessie E., Minneapolis  
Chapin, Le Roy D., Sloan, Iowa  
Chapman, Gladys M., Minneapolis  
Chase, Florence, Minneapolis  
Chatman, Gladys D., Osage, Iowa  
Chisholm, Reginald, Chippewa Falls, Wis.  
Christensen, Eleanor, Minneapolis  
Christensen, Iolean, Minneapolis  
Churchill, Josie, Great Falls, Mont.  
Churchill, Nellie, Minneapolis  
Clark, Helen A., Minneapolis  
Cliff, Earl V., Ortonville  
Clyborne, H. Virginia, Minneapolis  
Colahan, Irene E., Minneapolis  
Colahan, Wayne J., Minneapolis  
Cole, Cash, Juneau, Alaska  
Collins, Helen L., Minneapolis  
Cosler, Mildred H., Minneapolis  
Courtenay, Helen C., Minneapolis  
Cowan, Kathleen M., Devils Lake, N. D.  
Cowdin, Thomas H., Jr., Harvey, N. D.  
Cowin, Edith B., Minneapolis  
Craig, George O., Chippewa Falls, Wis.  
Crane, Helen D., Minneapolis  
Crosbie, James E., St. Paul  
Crosby, John U., Minneapolis  
Cupp, Wanda H., Mora  
Cuskelly, Joseph R., Dickinson, N. D.  
Cuvellier, J. Holden, Minneapolis  
Dahl, Dagmar, Virginia  
Dahl, Dagny I., Minneapolis  
Dahl, Esther D., Minneapolis  
Dahlberg, Andrew H., Hopkins  
Dahlberg, Arthur, Kennedy  
Dahlberg, Oke, Kennedy  
Dale, Charles M., Minot, S. D.  
Danz, Beatrice, Minneapolis  
Davis, Harry W., Duluth  
Dawson, Hazel I., Appleton  
Deane, Hazel M., Minneapolis  
DeMouilly, Oliver, Lake Crystal  
Desky, Clarence H., Blue Earth  
Dix, Margaret E., Minneapolis  
Dockstader, Harold J., Hastings  
Donnelly, Katherine, St. Paul  
Donovan, Dayne, Minneapolis  
Douglass, Ray O., St. Paul  
Dowling, Effie E., Minneapolis  
Doyle, John B., St. Paul  
Drew, Albert S., St. Paul  
Drum, William F., Owatonna  
Dunn, Helen, Minneapolis  
Dunnigan, Myrtle C., Minneapolis  
Dunphy, George B., St. Paul  
Eckhoff, Alma M., Twin Lakes  
Edelstein, David E., North Branch  
Edwards, Edna H., New Ulm  
Eisenberg, David, Minneapolis  
Erdmann, Clara A., Minneapolis  
Erickson, Laurence, Litchfield  
Erstad, A. Hildegard, Princeton  
Eustis, Ralph W., Owatonna  
Evans, Winifred, Tracy  
Falk, Herbert A., Norwood  
Fellows, David M., Riceville, Iowa  
Fiewles, Louis, Minneapolis  
Pink, Regina, St. Paul  
Fischer, Albert L., Bird Island  
Fjellman, Philip C., Minneapolis  
Flaskerud, Agnes, Calmar, Iowa  
Fleischer, Clarence A., West Duluth  
Fleming, Sybil I., Lakeville  
Fletcher, Olive C., Minneapolis  
Flinn, Helen M., Minneapolis  
Ford, Burton C., Brainerd  
Ford, Madge C., Minneapolis  
Ford, Paul G., Owatonna  
Frank, Wilfred R., Minneapolis  
Fredell, Lydia M. W., Minneapolis  
Freed, Oscar J. R., Watertown  
Frey, Henry J., Hinckley  
Frost, Celia F., Willmar  
Frost, Harlan M., Minneapolis  
Gale, Mary R., Minneapolis  
Garlough, Leslie, St. Paul  
Gates, Frederick H., Spring Park  
Gausemel, Selmer D., Kenyon  
Gausewitz, Alfred L., Minneapolis  
Gaver, Carl L., St. Paul  
Gavin, Ethel, Minneapolis  
Gaylord, Russell, Minneapolis  
Geer, Everett K., St. Paul  
Geib, Arthur J., St. Paul  
Geldman, Charles, Minneapolis  
Gellerman, Louise, St. Paul  
George, Harry E., Lyle  
Getchell, Hazel, Minneapolis  
Gibson, Beatrice M., Minneapolis  
Gill, John J., Minneapolis  
Gille, Madell, St. Paul  
Gillespie, Clyde M., Minneapolis  
Glaeser, Ida E., New Ulm  
Gloege, Arthur J., Bellingham  
Goldsworthy, Edith, Red Oak, Iowa  
Gongle, Harriet M., Minneapolis  
Gordon, George M., Clear Lake  
Gordon, Helen C., St. Paul  
Gordon, Roy T., Browns Valley  
Gow, Arthur S., Minneapolis  
Graber, Evelyn K., Minneapolis  
Graber, Ralph B., Minneapolis  
Grant, Donald, Jr., Faribault  
Grant, Lyle G., Minneapolis  
Green, Barbara, Minneapolis



- Greenwald, Merry G., Minneapolis  
 Grimm, Marguerite A., Minneapolis  
 Griswold, Ruth H., Minneapolis  
 Groebner, Otto A., New Ulm  
 Hagy, Gertrude H., Minneapolis  
 Hain, Eleanor, Minneapolis  
 Hale, Quincy H., Spring Valley  
 Hall, Carl L., Winnipeg, Man.  
 Hall, Catherine A., St. Paul  
 Hall, Howard L., Minneapolis  
 Hamill, Dorothy, Minneapolis  
 Hamilton, Rebecca, Coleraine  
 Hamm, William, St. Paul  
 Hammond, Ethel, Osage, Iowa  
 Hardick, Edith, St. Paul  
 Hardy, Ethel W., St. Paul  
 Hardy, Helen W., St. Louis Park  
 Hario, Esther I., Minneapolis  
 Harper, Stanley J., Excelsior  
 Harris, Carleton, Minneapolis  
 Harris, J. Morrison, Minneapolis  
 Hart, Maud P., Minneapolis  
 Harwood, Ethel M., Minneapolis  
 Hassett, William L., St. Paul  
 Hatch, Susie L., Battle Lake  
 Hauer, Walter C., Minneapolis  
 Hauge, Norman J., Minneapolis  
 Haupt, Alma C., Minneapolis  
 Hauser, Ethel A., Minneapolis  
 Haverstock, Henry W., Minneapolis  
 Healey, Barbara, Minneapolis  
 Healey, Evelyn M., Minneapolis  
 Heimbach, Edwin R., Anaconda, Mont.  
 Heintz, Howard W., Rochester  
 Heitsmith, Althea C., Minneapolis  
 Henton, Gladys M., Minneapolis  
 Herrick, Hazel R., Minneapolis  
 Herrick, Julia F., North St. Paul  
 Herring, Dan W., Central Point, Ore.  
 Herrmann, Edgar T., St. Paul  
 Herwig, Aletha, Canby  
 Higgins, Virginia, Minneapolis  
 Hill, Harry H., Caledonia  
 Hixon, Catherine L., Minneapolis  
 Hobbs, Ruth, Minneapolis  
 Hochmuth, George C., Gladstone  
 Hoffert, Clara E., Mora  
 Holen, Lawrence I., Minneapolis  
 Holt, May F., Minneapolis  
 Hovde, Rolf, Duluth  
 Hooker, Mary, St. Paul  
 Horn, Mildred E., Minneapolis  
 Hoss, John A., Minneapolis  
 Hougen, Helmer J., Nerstrand  
 Hubachek, Frank B., Minneapolis  
 Hulett, Florence G., Minneapolis  
 Hurlburt, Alice D., Minneapolis  
 Hyde, Ora A., St. Paul  
 Ilse, Richard J., Brainerd  
 Ingham, Margaret, Minneapolis  
 Ingram, Roswell P., Ortonville  
 Jalma, Michael M., Minneapolis  
 James, Eloise V., Tracy  
 Jenkins, Philip J., Minneapolis  
 Jesmore, Ruth, Eveleth  
 Jewell, Emma, Decorah, Iowa  
 John, Alfred C., St. Paul  
 Johnson, Arthur O., Minneapolis  
 Johnson, Buford P., Minneapolis  
 Johnson, Carl, Tyler  
 Johnson, Cora H., Fargo, N. D.  
 Johnson, Ella L., New Rockford, N. D.  
 Johnson, Ida, Excelsior  
 Johnson, Lyle K., Minneapolis  
 Johnson, Mabel E., Lime Springs, Iowa  
 Johnson, Ruth V., Minneapolis  
 Johnson, William A., Cloquet  
 Johnston, Elizabeth, Minneapolis  
 Johnston, Harold, Glenwood City, Wis.  
 Jones, Ethel S., Minneapolis  
 Joseph, Roland H., Owatonna  
 Joyce, Alfred M., South Park  
 Jude, David E., Maple Lake  
 Judge, Owen J., Hastings  
 Juel, Martin O., Canton, S. D.  
 Kauffman, Cyrus S., St. Paul  
 Keating, Maurice, St. Paul  
 Keenan, Addie, Austin  
 Keller, Carl H., Slayton  
 Kennedy, William H., St. Paul  
 Kennicott, Robert H., Luverne  
 Keogan, Irvin J., Minneapolis  
 Kirk, Bessie L., Minneapolis  
 Kirkpatrick, Frederick K., Parkers Prairie  
 Klippstein, Elsa O., New Ulm  
 Kohler, Karl R., Hutchinson  
 Kook, Viola C., Minneapolis  
 Kraft, Dorothy E., Minneapolis  
 Kreitlow, Emil C., Howard Lake  
 Kremer, Henrietta V., Grand Rapids  
 Kristensen, Herbert G., Duluth  
 Kuppinger, Marjorie, Mason City, Iowa  
 Kurz, Edward L., Annaandale  
 Lagro, Greta C., Minneapolis  
 Lalin, Helen M., Floodwood  
 Lane, Bessie B., Minneapolis  
 Larson, G. Arthur, Taunton  
 Lasley, Mildred, Minneapolis  
 Leavitt, John A., St. Paul  
 Lee, Lillian B., Minneapolis  
 Lehmann, Grace E., St. Paul  
 Lealie, Frank P., Minneapolis  
 Levin, Sadie Z., Minneapolis  
 Lewis, Alice G., Minneapolis  
 Lewis, Olive B., St. Paul  
 Lindsay, Dalie, Virginia  
 Lindstrom, Emil, Anoka  
 Locke, Eva, St. Paul  
 Lowe, Thomas A., Hadley  
 Lowell, Clarence T., St. Paul

- Lucas, Harriet M., Minneapolis  
 Lund, Lawrence L., Minneapolis  
 Lundsten, Donald B., Hutchinson  
 Lussier, Earl F., Minneapolis  
 Lynch, Jeannette C., St. Paul  
 Lyness, Ida, Fessenden, N. D.  
 McArdie, Helene, Minneapolis  
 McCabe, Rapsaella, Minneapolis  
 McCall, Helen, St. Paul  
 McCanna, David T., Minneapolis  
 McCanna, Reuben W., Minneapolis  
 McCoy, Carrie F., Minneapolis  
 McCullough, J. Renwick, Minneapolis  
 McCune, Mary M., Minneapolis  
 McElroy, Margaret, Minneapolis  
 McEnary, Mildred, Minneapolis  
 McPadden, Frank, St. Paul  
 McGarvey, Florence I., Minneapolis  
 McGee, Helen E., Lake Preston, S. D.  
 McGilvra, Louise E., Milaca  
 McGrath, Ralph W., Stillwater  
 McGraw, James C., St. Paul  
 McGregor, Catherine, Minneapolis  
 McIlvaine, Ruth M., Omaha, Neb.  
 McKee, John C., St. Paul  
 McKeon, George J., Montgomery  
 McKinley, J. Charnley, Minneapolis  
 McKinney, Richard E., Minneapolis  
 McLaughlin, Lillian S., Minneapolis  
 McNeely, Alice M., St. Paul  
 Mack, Rellie G., Loyal, Wis.  
 Madigan, T. Irving, Maple Lake  
 Mallon, Alfred E., Minneapolis  
 Manderfeld, Laura H., St. Paul  
 Manley, Laura L., Minneapolis  
 Mann, Grace V., Worthington  
 Marlow, Nellie E., Watertown, S. D.  
 Mason, Bonnie, Minneapolis  
 Matheny, Carlos W., Redfield, S. D.  
 Mathews, Elizabeth M., Eyota  
 Mayer, Olga A., New Ulm  
 Mealey, Clara A., Minneapolis  
 Mealey, Howard G., Monticello  
 Medley, Faye, Little Falls  
 Merritt, Callie, Duluth  
 Michel, Teresa, St. Paul  
 Michelson, Arnold, Bismarck, N. D.  
 Millar, George D., Minneapolis  
 Miller, Frank L., Buffalo, N. D.  
 Miller, Janet, Minneapolis  
 Miller, Stella F., Buffalo, N. D.  
 Mitchell, William R., Amiret  
 Molander, Herbert A., St. Paul  
 Morgan, George T., Stillwater  
 Moriarty, Cecelia, St. Paul  
 Morse, Ella T., Minneapolis  
 Morse, Minerva, Minneapolis  
 Morton, Percy W., Minneapolis  
 Mulrean, Theresa, Minneapolis  
 Munson, Anna, Minneapolis  
 Murphey, Clair H., Minneapolis  
 Murphy, Daniel J., Minneapolis  
 Murray, Leonard, Minneapolis  
 Murray, Lillian, Minneapolis  
 Nelson, Georgia, Moberly, Mo.  
 Nelson, Irving A., Lake Mills, Iowa  
 Nelson, Lester E., Litchfield  
 Nelstead, Rudolph, Brainerd  
 Ness, Selma, Minneapolis  
 Newcomb, Lucile E., Minneapolis  
 Nickels, Martha G., Minneapolis  
 Nichols, Alma P., Pipestone  
 Nichols, Jean H., Frazee  
 Nides, H. Louis, Hibbing  
 Nordby, Walter A., Minneapolis  
 Noreen, Nana B., Brainerd  
 Nordin, Gustaf T., Minneapolis  
 Novotny, George A., Maple Lake  
 Ober, Marguerite F., Minneapolis  
 O'Brien, Rupert D., Duluth  
 O'Brien, Thomas J., Hudson, Wis.  
 O'Connell, Agnes, Minneapolis  
 Odell, Bert, Watertown  
 O'Hearn, Thomas L., Two Harbors  
 Okuda, George H., Kobe, Japan  
 Olsen, Almyra C., Minneapolis  
 Olsen, Mae G., Minneapolis  
 Olson, Oscar E., Minneapolis  
 Orton, Wanda N., Minneapolis  
 Ostby, Aslack J., Minneapolis  
 Ostby, Carl M., McIntosh  
 Ostergren, James B., Gladstone  
 Ott, Alfred C., Duluth  
 Otterness, Marie, Spring Grove  
 Ouren, Selma, Hanska  
 Overn, Alfred V., Albert Lea  
 Packer, Bert I., Delano  
 Painter, Carl W., Minneapolis  
 Papas, George, Minneapolis  
 Parent, John E., Parent  
 Patridge, Vivian, Tracy  
 Payne, Archer E., Red Oak, Iowa  
 Pearce, Esther E., Minneapolis  
 Pearson, Fritz R., Hudson, Wis.  
 Pearson, Lulu A., Roseau  
 Peavey, Louis L., Faribault  
 Peck, Anna E., Minneapolis  
 Pederson, Nellie C. E., Minneapolis  
 Peitzke, Robert H., Riceville, Iowa  
 Peteler, Roland O., Minneapolis  
 Peterson, Agnes S., Crookston  
 Peterson, Carl J., Red Wing  
 Peterson, Jay B., Minneapolis  
 Peterson, Marie C., St. Paul  
 Peterson, Reno I., Litchfield  
 Petri, Ruth J., Minneapolis  
 Pierce, Galen H., Mondovi, Wis.  
 Pierce, Helen K., Harlan, Iowa  
 Plankers, Arthur G., St. Paul  
 Plant, Jean S., St. Paul

- Plant, Julie, St. Paul  
 Polak, Richard R., Minneapolis  
 Power, John E., Duluth  
 Prescott, Gertrude, Minneapolis  
 Proshek, Charles E., New Prague  
 Purple, Gertrude, Minneapolis  
 Rader, William M., Canby  
 Ralston, Frank L., La Grande, Ore.  
 Rank, Theron L., Dover  
 Ravicz, Minnie, Minneapolis  
 Rayley, John G., Sioux City, Iowa  
 Regan, Jean, Minneapolis  
 Rehfeld, Selma A., Minneapolis  
 Reid, Elizabeth, Minneapolis  
 Rice, Carl J., Adrian  
 Rich, Helen, Minneapolis  
 Riley, Gladys M., St. Cloud  
 Roach, Mrs. Hannah, Minneapolis  
 Robb, Maugridge S., Detroit  
 Robbins, Helen E., Minneapolis  
 Robertson, Albert J., Minneapolis  
 Robertson, Helen L., Minneapolis  
 Robertson, Henry W., Minneapolis  
 Robinson, Ethel M., Montevideo  
 Rochford, Ruth, Minneapolis  
 Rogers, Leila E., Delhi  
 Root, Harrison, Minneapolis  
 Ross, Helen, Minneapolis  
 Ross, Herrmann, Minneapolis  
 Roth, Walter C., Lewiston  
 Rouhoff, Earl M., Mantorville  
 Rucker, William H., Wibaux, Mont.  
 Ryan, Edward B., St. Paul  
 Safford, Robert R., Aitkin  
 Salzer, Florence, Minneapolis  
 Sanders, Hazel A., Elbow Lake  
 Sapero, Esther, Chisholm  
 Sardeson, Daphne D., Minneapolis  
 Sather, Einer, Litchfield  
 Sauer, Eleanor E., Balfour, N. D.  
 Saxerud, Alvin N., Lake Mills, Iowa  
 Schaap, Arie, Sheldon, Iowa  
 Schaefer, Freda M., Minneapolis  
 Scheldrup, Elsa J., Minneapolis  
 Schibsby, Fanny, Minneapolis  
 Schmidt, Elizabeth, New Ulm  
 Schmidt, George J., Lake City  
 Scholtes, Harry J., Wabasha  
 Schriber, Ruth, St. Paul  
 Schutt, Ray, Bremerton, Wash.  
 Schwartz, David P., St. Paul  
 Schwartz, David, Minneapolis  
 Schwerin, Mabel E., Minneapolis  
 Schwobel, Florence, New Rockford, N. D.  
 Scofield, Robert J., Zumbrota  
 Scott, Alvin E., Minneapolis  
 Scott, Margaret E., Sandstone  
 Scott, Sibyl, Minneapolis  
 Scrugham, Elizabeth, Minneapolis  
 Segog, Gladys, Duluth  
 Senti, John, Brainerd  
 Seyfried, Lillian M., St. Paul  
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 Shapiro, Morse J., Minneapolis  
 Sharbach, Ward J., Minneapolis  
 Shaw, Mabel, Minneapolis  
 Shearer, Dorothy G., Minneapolis  
 Shelp, Charline L., St. Paul  
 Shepard, David J., St. Paul  
 Shepard, Floyd W., Kenyon  
 Sheridan, Helen, Minneapolis  
 Sherman, Ralph H., Minneapolis  
 Sherwin, Ruth M., Monticello  
 Shields, Florence, St. Paul  
 Shoemaker, Ralph H., North Redwood  
 Shook, Margaret E., Aitkin  
 Shorba, Marie, Minneapolis  
 Shoresman, Rose, Coleraine  
 Shultz, Gwendolen, St. Paul  
 Shumaker, Ferdinand H., Minneapolis  
 Sibley, Josephine, Minneapolis  
 Sibley, L. Beth, Minneapolis  
 Sibley, Theresa, Minneapolis  
 Silliman, Vincent B., Husdon, Wis.  
 Simerman, George A., St. Paul  
 Smersh, Jerome F., Owatonna  
 Smith, James T., Minneapolis  
 Smith, Selden S., Minneapolis  
 Smith, Verna M., Austin  
 Soloway, Herman M., Minneapolis  
 Spaeth, G. Howard, St. Paul  
 Spehr, Luman, Minneapolis  
 Spies, Anna E., St. Paul  
 Spiller, Guy L., Pembina, N. D.  
 Squier, Laurence R., Minneapolis  
 Stamm, Gustave W., St. Paul  
 Standenmaier, W. Walter, Trosky  
 Steele, Harold, St. Paul  
 Steiner, Allen N., Independence, Wis.  
 Steinman, Bernhard, Minneapolis  
 Sterns, Frank C., St. Paul  
 Stevens, Charlotte E., Minneapolis  
 Stiles, Hazel L., Minneapolis  
 Stone, Archie A., Morris  
 Stout, Helen K., Minneapolis  
 Stowe, Walter H., Waterville  
 Stowell, Donald D., St. Paul  
 Swanson, Edwin O., Brainerd  
 Swartzell, Clifford E., St. Paul  
 Swenson, Adolph G., Enfield  
 Swenson, Rinehart J., Ellsworth, Iowa  
 Sweetser, Theodore H., Minneapolis  
 Tanner, Chester O., Fairmont  
 Taylor, Paul S., Minneapolis  
 Templeton, James B., Brainerd  
 Thayer, Muriel K., Minneapolis  
 Thiele, Ruth M., St. Paul  
 Thomas, Ethel C., Minneapolis  
 Thomas, Paul C., Bald Eagle Lake  
 Thompson, Robert R., Minneapolis

Timm, John A., Utica  
 Toombs, Frank, Minneapolis  
 Towle, Ida M., Minneapolis  
 Traub, Paul, Minneapolis  
 Turner, Alice A., Minneapolis  
 Vance, Ethel G., Crookston  
 Vander Horck, Viola, Minneapolis  
 Van Doren, Linton, Minneapolis  
 Van Duzee, Harold O., Minneapolis  
 Van Norman, Louena M., Minneapolis  
 Vuohtoniemi, Clemens, Minneapolis  
 Warner, H. Allyn, White Bear Lake  
 Warner, Lawrence, Minneapolis  
 Warner, Olive W., Minneapolis  
 Waterous, M. Irene, St. Paul  
 Watson, Florence, Sauk Rapids  
 Weber, Rosetta C., Minneapolis  
 Weersing, Frederic J., St. Paul  
 Weidt, Anna C., Merriam Park  
 Weisman, Sam A., Minneapolis  
 Welch, Elizabeth J., Minneapolis  
 Wells, Ellen, Minneapolis  
 Wells, Florence E., Oakland, Neb.  
 White, Lila I., Minneapolis  
 Wheelock, William C., Minneapolis  
 Whitlock, Mary S., Belle Plaine  
 Wilcox, Blanche, Minneapolis  
 Wilcox, Enid I., Virginia  
 Wilk, Erma Z., Minneapolis  
 Wilkes, Roswell S., Minneapolis  
 Williams, Edson A., Minneapolis  
 Williams, Marjorie, Minneapolis  
 Williams, Trevor G., St. Paul  
 Wilson, Irene, Minneapolis  
 Wippermann, Ella, Hankinson, N. D.  
 Witherstine, Glenn S., Rochester  
 Wold, Kathryn O., Princeton  
 Wolfson, Burnett, Minneapolis  
 Wood, Margaret, Minneapolis  
 Woodis, Margaret I., Amboy  
 Wright, Mildred M., Minneapolis  
 Young, Henry G., Benson  
 Young, Ruth E., Minneapolis  
 Zeien, Maurice B., North Branch  
 Zetterstrom, Henrik, Princeton

## UNCLASSED—80

Alberta (Lee), Sister, St. Paul  
 Avin, Elijah, Minneapolis  
 Azaria, Sister, St. Paul  
 Berg, Hilda O., Minneapolis  
 Busian, Zella, Minneapolis  
 Butter, Archibald B., Minneapolis  
 Butts, Lillian H., Minneapolis  
 Channon, Julia H., Minneapolis  
 Chapman, Madge, Minneapolis  
 Conley, Mrs. J. T., Minneapolis  
 Cooperman, Oscar, Minneapolis  
 Cullen, Elizabeth, Minneapolis  
 Decker, Genet, Minneapolis  
 Dominica (Schmitz), Sister, St. Paul  
 Downey, Mrs. John F., Minneapolis  
 Dunn, Ella M., Minneapolis  
 Ebba, Sister, St. Paul  
 Eleanor, Sister, Minneapolis  
 Flagstad, Carl O., Minneapolis  
 Foster, William K., Minneapolis  
 Frary, Mrs. Francis, Minneapolis  
 Freeman, Lily J., St. Louis Park  
 Goude, Edna M., Minneapolis  
 Grant, Dick, Minneapolis  
 Griffith, Charles A., Minneapolis  
 Guden, Theodore G., Champlin  
 Harrison, Kenneth S., Minneapolis  
 Hartzell, Thomas B., Minneapolis  
 Herr, Louis A., Minneapolis  
 Hewitt, Helen, Minneapolis  
 Hilary, Sister, St. Paul  
 Hildrup, Helen L., Minneapolis  
 Hill, Margaret, Minneapolis  
 Hoppock, Eleanor R., Minneapolis  
 Howard, Margaret L., Minneapolis  
 Hyde, Sophie, Minneapolis  
 Johnson, Dora U., Minneapolis  
 Kelly, Katherine, Minneapolis  
 Kilgore, Alice, Minneapolis  
 Kohler, Katherine, Minneapolis  
 Kraemer, Elizabeth, Minneapolis  
 Leavenworth, Jennie C., Minneapolis  
 Lerman, Baruch, Minneapolis  
 Mary Eugene, Sister, St. Paul  
 Maves, Herman A., Minneapolis  
 Melom, Carl M., Minneapolis  
 Merrill, Laura A., Minneapolis  
 Michaelson, L. Mathilde, Minneapolis  
 Moorhead, Donaldson S., Minneapolis  
 Morris, Walter, Minneapolis  
 Murray, Albert S., South Stillwater  
 Niedner, Frederic, St. Paul  
 Nilsen, Nora A., Minneapolis  
 Nutter, Mrs. Carrie A., Minneapolis  
 Orton, Mrs. Adah H., Minneapolis  
 Orton, Forrest H., Minneapolis  
 Ostergren, Mabel C., Gladstone  
 Oswald, Mae B., Minneapolis  
 Paulson, Edna A., Minneapolis  
 Pike, Mrs. J. B., Minneapolis  
 Reppy, Mrs. E. Netta, Flandreau, S. D.  
 Reynolds, George W., Minneapolis  
 Rodenbaeck, Alwina K., Minneapolis  
 Roll, William A., Minneapolis

Rooney, Isabel, Minneapolis  
Rowley, Frank B., Minneapolis  
Rudolph, Charles E., Minneapolis  
Sanderson, Mrs. James C., Minneapolis  
Sevatson, Carrie, Minneapolis  
Shenon, Mrs. Kate C., Minneapolis  
Silloway, Alice, Minneapolis  
Smith, Alice M., Minneapolis

Van Cleve, Williams, Minneapolis  
Walton, Matilda K., Minneapolis  
West, C. Rowland, Minneapolis  
Weswig, Carl M., St. Paul  
Wilson, Justina L., Minneapolis  
Young, John I., Minneapolis  
Yvonne, Sister, Minneapolis  
Zierold, Arthur A., Minneapolis

## INDEX

Admission . . . . .	16-20
By Examination . . . . .	16
By Certificate . . . . .	16-19
To Combined Academic-Medical Courses . . . . .	19
From Normal Schools . . . . .	19
To Advanced Standing . . . . .	20
As Unclassed Students . . . . .	20
To Music Course . . . . .	20
Animal Biology . . . . .	43
Anthropology . . . . .	132
Art . . . . .	47
Astronomy . . . . .	47
Board of Regents . . . . .	8
Botany . . . . .	48
Buildings and Grounds . . . . .	21
Calendar . . . . .	4
Catalogue of Students . . . . .	137
Chemistry . . . . .	53
Class Routine . . . . .	27
Collections . . . . .	21
Committees: Faculty . . . . .	15
Comparative Philology . . . . .	56
Courses of Study . . . . .	32
For B. A. . . . .	32
For B. A. with Distinction . . . . .	36
For B. A. and M. D. . . . .	37
For B. S. and M. D. . . . .	38
For B. A. and D. D. S. . . . .	39
For B. A. and LL. B. . . . .	39
For Admission to College of Medicine . . . . .	37
For Admission to College of Law . . . . .	39
Special Pre-Legal Course . . . . .	40
Credits, Defined . . . . .	32
Number required for graduation . . . . .	32
Curriculum. See Courses of Study . . . . .	32
Danish . . . . .	129
Debate . . . . .	123
Degrees, Requirements for . . . . .	32
Departmental Statements . . . . .	43-136
Drawing . . . . .	47

Economics and Political Science . . . . .	58
Education . . . . .	71
English . . . . .	75
Entrance Requirements . . . . .	16-20
Equipment . . . . .	21
Examinations:	
Entrance . . . . .	16
Semester . . . . .	27
Executive Officers . . . . .	8
Expenses . . . . .	24
Faculty Committees . . . . .	15
Faculty of Instruction . . . . .	9
Fees . . . . .	24
French . . . . .	126
Freshman Year . . . . .	33
General Information . . . . .	24
Geology and Mineralogy . . . . .	80
German . . . . .	88
Gilfillan Trust Fund . . . . .	25
Graduate School . . . . .	7
Club . . . . .	30
Courses. See Departmental Statements . . . . .	43-136
Greek . . . . .	93
Grounds and Buildings . . . . .	21
Gymnasium . . . . .	117
History . . . . .	97
Italian . . . . .	133
Junior Year . . . . .	35
Lambda Alpha Psi . . . . .	31
Latin . . . . .	102
Law:	
Courses for Seniors . . . . .	39
Special Pre-Legal Course . . . . .	40
League, The Woman's . . . . .	29
Libraries . . . . .	21
Literary Societies . . . . .	30
Literature . . . . .	75
Loan Funds . . . . .	25
Major, Defined . . . . .	32
Masquers, The . . . . .	31
Mathematics . . . . .	105
Mechanics . . . . .	108, 118
Medicine:	
Courses for Seniors . . . . .	37
Seven-Year Course . . . . .	38
Military Drill . . . . .	27
Military Science and Tactics . . . . .	109
Mineralogy . . . . .	80

Minor, Defined.....	32
Museums.....	21
Music:	
Admission to Study.....	20
Courses in.....	111
Norwegian.....	129
Officers, Cadet.....	110
Oratory.....	123
Organizations, Student.....	30
Pedagogy. See Education.....	71
Phi Beta Kappa.....	30
Philology.....	56
Philosophy and Psychology.....	112
Physical Training.....	117
Physics.....	118
Political Science.....	67
Prizes.....	25
Psychology.....	112
Public Speaking.....	123
Publications, Student.....	30
Regents, Board of.....	8
Rhetoric and Public Speaking.....	123
Romance Languages.....	126
Sanford Hall.....	29
Scandinavian Languages.....	129
Scholarships.....	25
Senior Year.....	35
Seven-Year Course in Science and Medicine.....	38
Shevlin Hall.....	29
Sigma Xi.....	30
Societies, Literary.....	30
Sociology and Anthropology.....	132
Sophomore Year.....	34
Spanish.....	126
Specials. See Unclassed Students.....	20
Student Government Association for Women.....	29
Students.....	137-152
Student Organizations.....	30
Student Publications.....	30
Swedish.....	129
Tactics.....	109
Teachers' Certificate, University.....	28
See also Departmental Statements.	
Unclassed Students.....	20
Women Students.....	28