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The Bulletin
of the University of
Minnesota

General Information
For the Year 1918-1919



Vol. XXI No. 6 May 25 1918

*Entered at the post-office
in Minneapolis as second-class matter
Minneapolis, Minnesota*

SANDERY CO. SAINT PAUL

The Bulletin of the University of Minnesota is issued as often as twice a month during the University year.

The Bulletin comprises—

The reports of the President and of the Board of Regents, the Register, the Bulletin of General Information, the annual announcements of the individual colleges of the University, announcements of special courses of instruction, and reports of University officers.

These bulletins will be sent gratuitously to all persons who apply for them. The applicant should state specifically which bulletin or what information is desired. Address

The REGISTRAR,
The University of Minnesota,
Minneapolis, Minnesota.

Research Publications. Containing results of research work. Papers are published as separate monographs numbered in several series.

Current Problems Series. Containing papers of general interest in various lines of work.

School of Mines Experiment Station Bulletin. Containing results of investigations conducted by the Station.

These publications are sent free to libraries and to other institutions publishing similar material. To individuals, a small charge is made. For lists and prices, address

The LIBRARIAN,
The University of Minnesota,
Minneapolis, Minnesota.

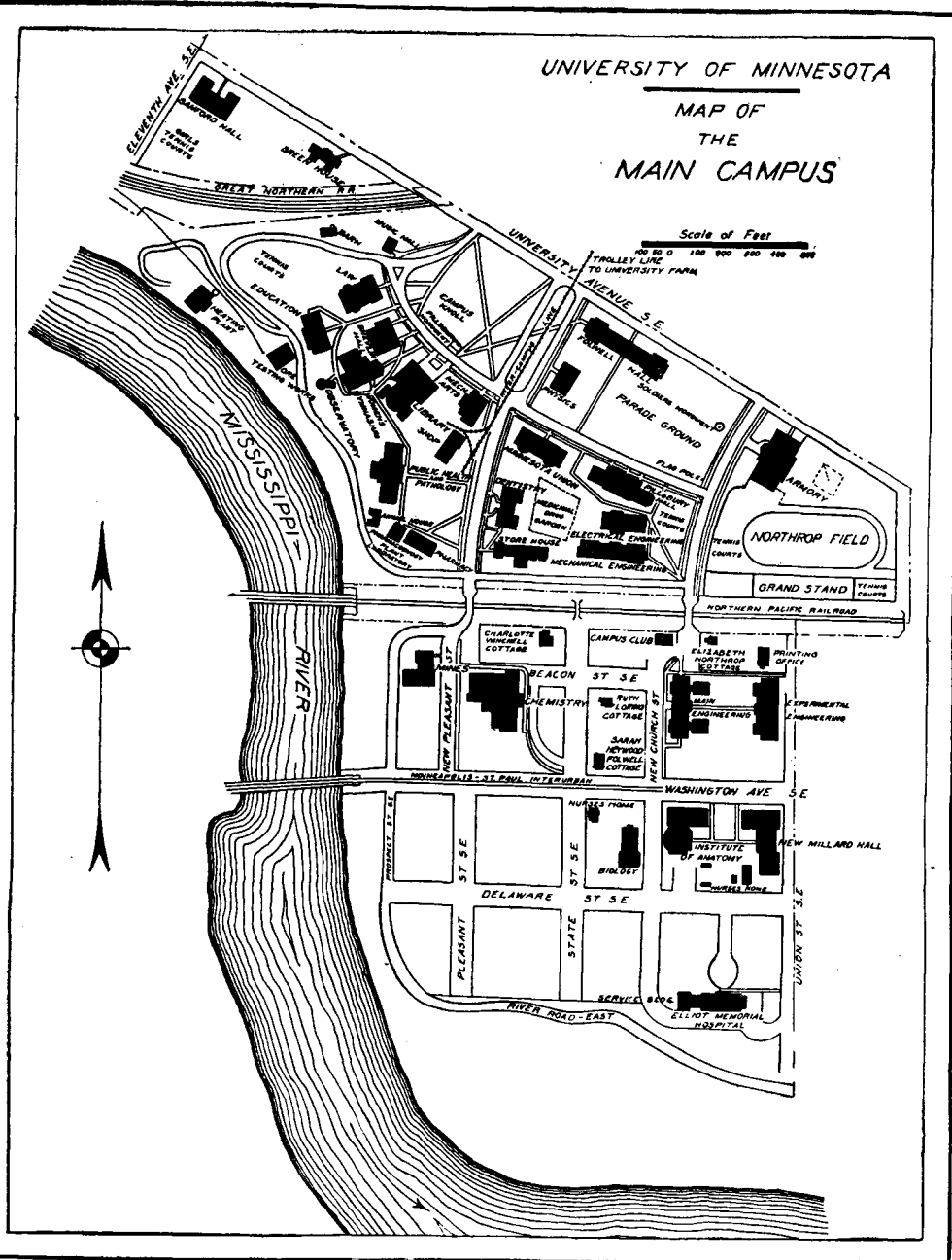
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UNIVERSITY OF MINNESOTA

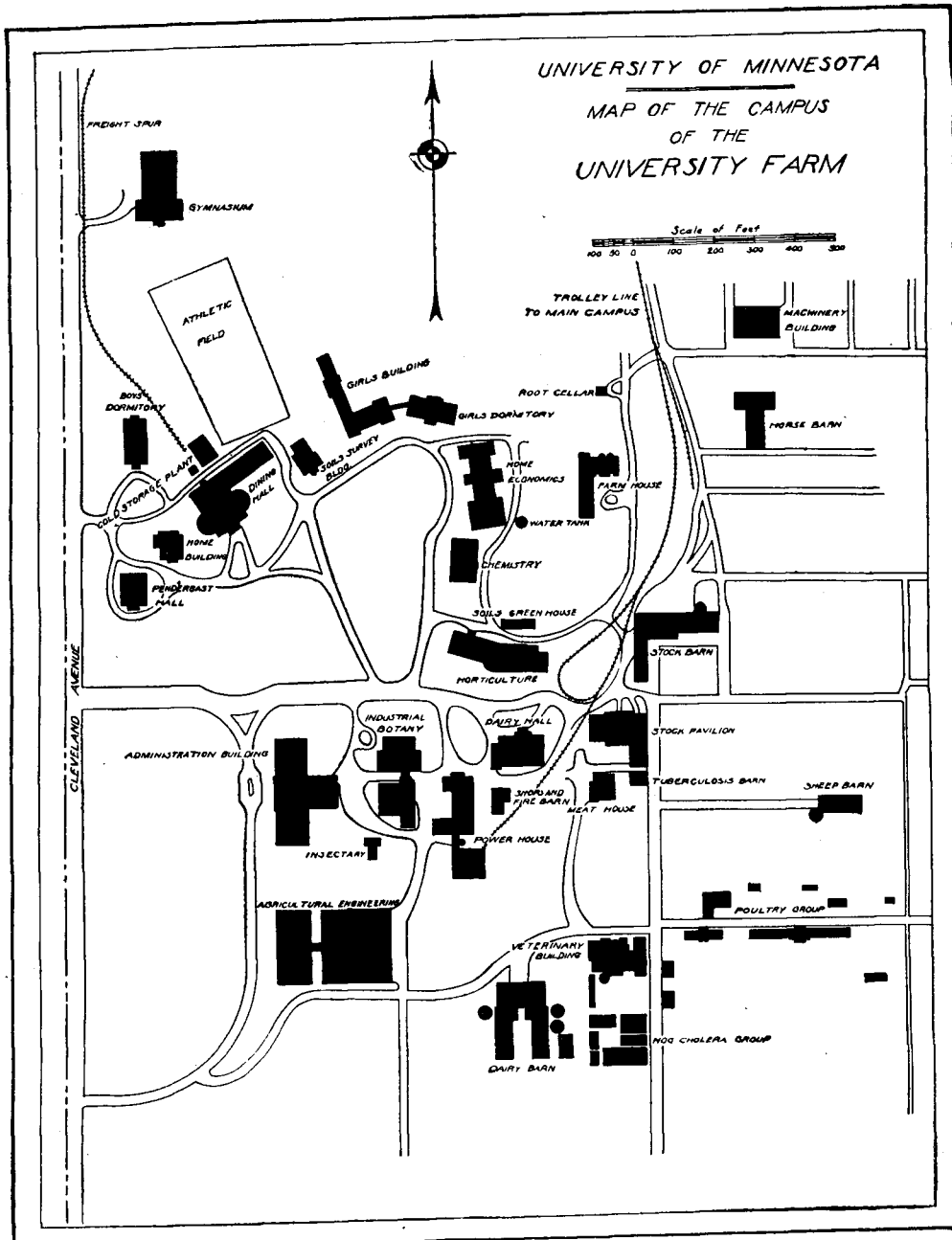
MAP OF
THE
MAIN CAMPUS

Scale of Feet
0 100 200 300 400 500



Area of Main Campus, 108.5 acres

UNIVERSITY OF MINNESOTA
 MAP OF THE CAMPUS
 OF THE
 UNIVERSITY FARM



Area of University Farm, 422.56 acres

1918							1919														
JULY							JANUARY							JULY							
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	
..	
AUGUST							FEBRUARY							AUGUST							
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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	..	..	..	..	..	..
SEPTEMBER							MARCH							SEPTEMBER							
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	
OCTOBER							APRIL							OCTOBER							
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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	..
..	
NOVEMBER							MAY							NOVEMBER							
..	..	..	..	1	2	..	..	..	..	..	1	2	3	..	..	..	..	1	2	3
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	..	..	..	..	..	..
DECEMBER							JUNE							DECEMBER							
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	
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29	30	31	29	30	28	29	30	31	
..	

Revised

UNIVERSITY CALENDAR

1918-1919

Due to the establishing of the S.A.T.C., with the accompanying change to the quarter system, material changes were made in the calendar after the bulletin of general information was issued.

1918

October	7	Monday	Registration and induction of S.A.T.C. students begins
October	9	Wednesday	Fall quarter S.A.T.C. classes begin
October	23	Wednesday	Fall quarter civilian classes begin
November	5	Tuesday	General Election Day; a holiday
November	11	Monday	Armistice signed; a holiday
November	28	Thursday	Thanksgiving Day; a holiday
December	19	Thursday	Senate meeting, 4:00 p.m.
December	21	Saturday	Fall term closes. S.A.T.C. discontinued
December	23	Monday	Senate meeting, 4:00 p.m.

1919

January	3	Friday	Winter quarter begins
February	12	Wednesday	Lincoln's Birthday; a holiday
February	20	Thursday	Senate meeting, 4:00 p.m.
February	22	Saturday	Washington's Birthday; a holiday
March	26	Wednesday	Winter quarter closes
April	2	Wednesday	Spring quarter begins
April	18	Friday	Good Friday; a holiday
May	15	Thursday	Senate meeting, 4:00 p.m.
May	30	Friday	Memorial Day; a holiday
June	16	Sunday	Baccalaureate service
June	17	Monday	Senior Class Day exercises
June	18	Wednesday	Alumni Day; spring quarter closes
June	19	Thursday	Forty-seventh Annual Commencement
June	23	Monday	Summer session begins

ORGANIZATION OF THE UNIVERSITY

The University is organized in Schools, Colleges, and Divisions as follows:

THE COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

THE COLLEGE OF ENGINEERING AND ARCHITECTURE

THE DEPARTMENT OF AGRICULTURE, including—

THE COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

THE SCHOOLS OF AGRICULTURE, including—

THE CENTRAL SCHOOL, UNIVERSITY FARM

THE NORTHWEST SCHOOL, CROOKSTON

THE WEST CENTRAL SCHOOL, MORRIS

THE AGRICULTURAL EXPERIMENT STATIONS, including—

THE STATE EXPERIMENT STATION, UNIVERSITY FARM

THE NORTHWEST EXPERIMENT STATION, CROOKSTON

THE NORTH CENTRAL EXPERIMENT STATION, GRAND RAPIDS

THE WEST CENTRAL EXPERIMENT STATION, MORRIS

THE NORTHEAST DEMONSTRATION FARM AND EXPERIMENT STATION, DULUTH

THE SOUTHEAST DEMONSTRATION FARM AND EXPERIMENT STATION, WASECA

THE FRUIT BREEDING FARM, ZUMBRA HEIGHTS

THE STATE TREE STATION, OWATONNA

THE FOREST EXPERIMENT STATIONS, ITASCA AND CLOQUET

THE AGRICULTURAL EXTENSION DIVISION

THE SHORT COURSES IN AGRICULTURE

THE LAW SCHOOL

THE MEDICAL SCHOOL, including—

THE SCHOOL OF EMBALMING

THE SCHOOL FOR NURSES

THE COLLEGE OF DENTISTRY

THE SCHOOL OF MINES, including—

MINNESOTA SCHOOL OF MINES EXPERIMENT STATION

THE COLLEGE OF PHARMACY

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

THE UNIVERSITY EXTENSION SERVICE, including—

GENERAL EXTENSION DIVISION

AGRICULTURAL EXTENSION DIVISION

UNIVERSITY CALENDAR

1918-1919

1918			
September	11	Wednesday	Registration closes except for new students
September 11-18		Week	Fees payable except for new students
September 17-24		Week	Examinations for removal of conditions (except for College of Agriculture, Forestry, and Home Economics) and entrance examinations
September 23-24			Registration and payment of fees for new students
September	25	Wednesday	First semester begins
September	30	Monday	First semester evening extension classes begin
September	30	Monday	Agricultural College farm experience examinations
October	17	Thursday	Senate meeting, 4:00 p.m.
October	28	Monday	School of Agriculture, first term begins
November	5	Tuesday	General Election Day; a holiday
November	20	Wednesday	Medical School second quarter begins
November	27	Wednesday	Thanksgiving recess begins 9:00 p.m.
December	2	Monday	Thanksgiving recess ends 8:00 a.m.
December	2-7	Week	Second semester condition examinations, College of Agriculture, Forestry, and Home Economics
December	3	Tuesday	Creamery Butter Makers' Short Course (10-days' session), and Cheese Makers' Short Course (three-weeks' session) begin
December	20	Friday	School of Agriculture, first term closes
December	21	Saturday	Christmas vacation begins 12 m.
1919			
December	30	Week	Farmers' and Home-Makers' Week Short Course
January	4		
January	2	Thursday	Christmas vacation ends 8:00 a.m.
January	2	Thursday	School of Embalming begins
January	6	Monday	School of Agriculture, second term begins
January	6	Monday	Dairy Short Course begins
January	20	Monday	Second semester registration closes except for new students
January	24	Friday	First semester evening extension classes close
January	27	Monday	Final examinations begin

January	27	Monday	Payment of second semester fees closes except for new students
January	31	}	Registration and payment of fees for new students
February	1		
February	3	Monday	Second semester begins
February	3	Monday	Second semester evening extension classes begin
February	3-7	Week	Merchants' Short Course
February	12	Wednesday	Lincoln's Birthday; a holiday
February	20	Thursday	Senate meeting, 4:00 p.m.
February	22	Saturday	Washington's Birthday; a holiday
March	31	Monday	Medical School fourth quarter begins
March	31	Week	Boys' and Girls' Week, University Farm
April	5	}	Easter recess begins 9:00 p.m.
April	17			Thursday
April	22	Tuesday	Easter recess ends 8:00 a.m.
April	22-28	Week	Condition examinations in certain colleges
May	15	Thursday	Senate meeting, 4:00 p.m.
May	23	Friday	Final examinations begin 2:00 p.m.
May	23	Friday	Second semester evening extension classes close
May	30	Friday	Memorial Day; a holiday
May	31	Saturday	Second semester closes
June	1	Sunday	Baccalaureate service
June	2	Monday	Senior Class Day exercises
June	4	Wednesday	Alumni Day
June	5	Thursday	Forty-seventh Annual Commencement
June	6	Friday	Summer vacation begins
June	16	Monday	Summer Session begins
June	17	Tuesday	Agricultural Summer Session begins

The University year for 1919-20 will begin Tuesday, September 16. Classes will begin September 24.

Program of Entrance Examinations 1918-1919

Entrance examinations for admission to the various colleges of the University will be conducted according to the following schedule, in Room 112, Library Building, unless otherwise specified.

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

Tuesday,	Sept. 17	9 a.m.	Business Subjects, Elementary Algebra, Plane Geometry
		2 p.m.	Manual Subjects, Domestic Art and Science, Agriculture, Higher Algebra, Solid Geometry

Wednesday, Sept. 18	9 a.m.	Astronomy, Botany, Geology, Chemistry, Physiography, Zoology, Physics, Physiology
	2 p.m.	American Government, History, Economics, Commercial Geography, History of Commerce, Economic History of England, Economic History of the United States
Thursday, Sept. 19	9 a.m.	English
	2 p.m.	German, Greek, French, Latin, Scandinavian, Spanish

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.

Condition Examinations

Examinations for the removal of conditions are given only at the following times: (1) the week following the Easter recess, (2) the registration week in September, and (3) the week following the Thanksgiving recess for students in the College of Agriculture, Forestry, and Home Economics.

The examinations in second-semester courses are given in the September period and those in first-semester courses are given after the Easter recess or in September, or at both times, as each school or college may determine. No student may take more than one examination to remove a condition.

Examination schedules for the respective schools and colleges may be secured at the Registrar's office.

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THE SCHOOL FOR NURSES

THE COLLEGE OF DENTISTRY

THE SCHOOL OF MINES, including—

MINNESOTA SCHOOL OF MINES EXPERIMENT STATION

THE COLLEGE OF PHARMACY

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

THE UNIVERSITY EXTENSION SERVICE, including—

GENERAL EXTENSION DIVISION

AGRICULTURAL EXTENSION DIVISION

THE BOARD OF REGENTS

The Hon. FRED B. SNYDER, Minneapolis, President of the Board	- 1922
MARION LEROY BURTON, Minneapolis	- - - - - <i>Ex officio</i>
The President of the University	
The Hon. J. A. A. BURNQUIST, St. Paul	- - - - - <i>Ex officio</i>
The Governor of the State	
The Hon. C. G. SCHULZ, St. Paul	- - - - - <i>Ex officio</i>
The Superintendent of Education	
The Hon. W. J. MAYO, Rochester	- - - - - 1919
The Hon. MILTON M. WILLIAMS, Little Falls	- - - - - 1919
The Hon. JOHN G. WILLIAMS, Duluth	- - - - - 1920
The Hon. GEORGE H. PARTRIDGE, Minneapolis	- - - - - 1920
The Hon. A. E. RICE, Willmar	- - - - - 1921
The Hon. CHARLES L. SOMMERS, St. Paul	- - - - - 1921
The Hon. PIERCE BUTLER, St. Paul	- - - - - 1922
The Hon. C. W. GLOTFELTER, Waterville	- - - - - 1922

EXECUTIVE OFFICERS

MARION LEROY BURTON, Ph.D., D.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 B. JOHNSTON, Ph.D., Dean of the College of Science, Literature,
 and the Arts
 JOHN R. ALLEN, M.E., Dean of the College of Engineering and Archi-
 tecture
 ROSCOE W. THATCHER, M.A., Dean and Director of the Department of
 Agriculture
 EDWARD M. FREEMAN, Ph.D., Dean of the College of Agriculture, For-
 estry, and Home Economics
 WILLIAM R. VANCE, Ph.D., LL.D., Dean of the Law School
 ELIAS POTTER LYON, Ph.D., M.D., Dean of the Medical School
 RICHARD O. BEARD, M.D., Assistant Dean and Secretary of the Medical
 School
 ALFRED OWRE, B.A., M.D., C.M., D.M.D., Dean of the College of Dentistry
 WILLIAM R. APPLEBY, M.A., Dean of the School of Mines
 FREDERICK J. WULLING, Ph.D., LL.M., Dean of the College of Pharmacy
 President of the University actively in charge of the School of Chemistry
 LOTUS D. COFFMAN, Ph.D., Dean of the College of Education
 GUY STANTON FORD, Ph.D., Dean of the Graduate School
 EDWARD E. NICHOLSON, M.A., Dean of Student Affairs
 RICHARD R. PRICE, M.A., Director of University Extension
 GERTRUDE H. BEGGS, Dean of Women

THE UNIVERSITY OF MINNESOTA

DESCRIPTION OF DEPARTMENTS

THE COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS offers a four-year course of study leading to the degree of Bachelor of Arts. The work is elective under certain limitations intended to secure a proper balance between breadth of foundation and liberal culture on the one hand and specialized training on the other.

Business Education.—This is a four-year course designed to give training for positions of responsibility in the modern business world. The first two years are devoted to foundation subjects including geography, history, and the principles of economics and accounting. It is the aim of the later years to give professional training and to develop appreciation of the moral and social values and responsibilities in the conduct of business.

Course in Training for Social and Civic Work.—This is a five-year course. During the first four years the student secures a broad education with special attention to history, economics, political science, and sociology. The fifth year is devoted to technical subjects with professional training in social work. The B.A. degree is given at the end of four years and either a special certificate or the M.A. degree upon the completion of the fifth year.

Course in Arts and Music.—A four-year course in which the theoretical and practical work in music are combined with the study of acoustics, psychology, modern languages, English literature, and history. The object is to provide a well-rounded cultural course for those who are preparing for professional work in Music.

Combined courses in Arts and Medicine.—A seven-year course leading to the degrees of Bachelor of Science and Doctor of Medicine and an eight-year course leading to the degrees of Bachelor of Arts and Doctor of Medicine.

Combined course in Arts and Law.—A six-year course leading to the degrees of Bachelor of Arts and Bachelor of Laws.

Combined course in Arts and Dentistry.—A six-year course leading to the degrees of Bachelor of Arts and Doctor of Dental Surgery.

Combined course in Arts and Chemistry.—A five-year course leading to the degrees of Bachelor of Arts and Bachelor of Science in Chemistry.

Pre-professional Training.—In this college are given also the two years of college work required for admission to the Law School and the College of Education, and various non-professional subjects required in other schools and colleges of the University.

Vocational guidance for women.—Women students may consult the Vocational Adviser for Women for information in regard to the selection of courses, the choice of a vocation, and the means of securing professional training. The office in Shevlin Hall is open from 9:00 to 12:00 during the week preceding the opening of the University, and from 8:30 to 5:00 during the entire academic year. A collection of training school bulletins and general information in regard to topics related to women's occupations is available for use by the students. Women are urged to make

appointments with the Vocational Adviser, and to consult the collection of occupational information.

Journalism.—See College of Agriculture, Forestry, and Home Economics.

THE COLLEGE OF ENGINEERING AND ARCHITECTURE offers courses of study of five years each, in Civil, Mechanical, and Electrical Engineering, and Architecture, leading to the degrees of Civil, Mechanical, and Electrical Engineer, and Architect. The degrees of Bachelor of Science in Engineering and Bachelor of Science in Architecture are conferred at the end of the fourth year. This college also offers work in the Graduate School leading to the degree of Master of Science.

Engineering for Manufacturers, Contractors, and Administrators.—The four-year course in General Engineering, leading to the degree of Bachelor of Science in Engineering, is an excellent preparation for careers in certain business fields akin to engineering. These semi-engineering activities in part are: the operation of such public utilities as light and power plants, traction companies, railway and irrigation systems; the management of manufacturing establishments, such as automobile factories, locomotive works, flour and saw mills; the direction of construction in contracting work; salesmanship in the materials of construction including water wheels, electrical and other machinery. The course includes the mathematics, shop work, physics, mechanics, and chemistry of the standard Engineering Course. It includes liberal electives for such specialized work as will fit men for the particular fields which they expect to enter. Such subjects as Economics, Sociology, Psychology, Business Management, Accounting Principles, Banking, Public Utilities, and Business Law may be taken as supplementary to the technical subjects.

In the course in Civil Engineering, a period of five weeks is spent in camp. This summer survey work is required of all students in this course in the vacation following the junior year.

Excellent facilities exist in the college for practicing engineers to carry on graduate work in engineering and architecture.

THE COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS offers four-year courses in Agriculture and Home Economics leading to the degree of Bachelor of Science. The work in Agriculture includes general courses in Agricultural Education, Manual Training, Agronomy and Farm Management, Dairy Husbandry, Animal Husbandry, and Horticulture. Special Agricultural Science Courses are also offered in Agricultural Chemistry, Agricultural Economics, Entomology, Plant Pathology, and Soils. The courses in Home Economics include a general course, a teachers' course in the general field of Home Economics, and a special teachers' course in Textiles and Clothing.

The work in Forestry includes courses in Technical Forestry, Commercial Lumbering, and Wood Pulp and Distillation Products. In addition to the work given at the University Farm, six months' work, two freshman and four junior, is given at Itasca State Park, where a well-equipped demonstration forest is available as a laboratory.

The College offers to all students in Agriculture and Home Economics the courses necessary for the University Teachers' Certificate and the Minnesota Teachers' Industrial Certificate in preparation for teaching in secondary schools.

Graduate work is offered in all special lines of Agriculture. The special problems are for the most part correlated with work in the Experiment Station.

Journalism.—Courses in Journalism, including Reporting, Copy-reading, Editorial-writing and Administration, Business Administration, Rural and Agricultural Journalism, are offered by the College of Agriculture, Forestry, and Home Economics. These courses are open to students in the College of Science, Literature, and the Arts, also.

The Schools of Agriculture offer three-year courses of study adapted especially to the needs and opportunities of farm boys and girls. They offer courses of special training for practical farm life and home economics. The Central School is located at St. Anthony Park; the North-west School, at Crookston; and the West Central School, at Morris.

The Dairy School offers a five-weeks' course of practical instruction in dairying, especially designed for those who are actually engaged in the manufacture of butter and cheese. This course is given in December.

The Dairy Short Course consists of five weeks of practical instruction in dairying, especially designed for those who are actually engaged in the manufacture of butter and cheese. The beginners' course continues for four weeks, an advanced course being offered in addition during the last two weeks, followed immediately by an ice-cream course of one week.

The Farmers' and Home-Makers' Week is held early in January. Instruction in Agriculture and Home Economics is offered in regular classes, important conferences are held, and many agricultural organizations of the state hold their sessions at this time.

The School of Traction Engineering is a five-weeks' course of practical instruction in the operation and handling of traction engines and other farm machinery. Engineers' licenses of different grades are given according to previous experience. This course is given in May.

The Rural Life Short Course of one week is held in July and is devoted to the educational, social, civic, religious, moral, sanitary, and economic betterment of life in the country.

The Editors' Short Course, held in February, is devoted to instruction in the conduct of the affairs of the rural newspaper and consideration of the problems of the rural press.

The Boys' and Girls' Week Short Course, held the first week in April, gives instruction in farm animals, field and garden crops, cooking, sewing, garment making, and home nursing.

The Experiment Station conducts experiments along the various lines of agriculture which are of interest to farmers. It is closely correlated with the collegiate work of the department. Its object is the solution of agricultural problems of importance to Minnesota. It offers secondarily

educational and research advantages to undergraduate and graduate students of the College of Agriculture, Forestry, and Home Economics. The main station is located at St. Anthony Park; substations are located at Crookston, Grand Rapids, and Morris. Demonstration experimental farms are also located at Waseca and Duluth. Forest experiment stations have been established at Cloquet and Itasca Park.

The Extension Work of the Department of Agriculture is correlated with the Farmers' Institute work and aims to bring to the farmers of the state information leading to the improvement of the farm and home. It reaches farmers through institutes, lectures, demonstrations, and demonstration farms, industrial and agricultural contests, a press bureau, and by correspondence and personal visits.

THE LAW SCHOOL offers a course covering a period of three academic years, leading to the degree of Bachelor of Laws. 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 in some other college or university of equal grade. A special pre-legal course of two years, covering those subjects which are particularly desirable as preliminary to the study of law, is offered by the College of Science, Literature, and the Arts. Seniors in that college are permitted to take the work of the first-year class in law and count the same as the equivalent of one year's work towards their Academic degree. This provision enables students to obtain the degrees of Bachelor of Arts and Bachelor of Laws in six years. The so-called "case system" method of teaching law, approved by the leading law schools of the country, is employed.

THE MEDICAL SCHOOL requires for admission the completion of two years of collegiate work in Science, Literature, and the Arts at this University, or other college or university of equal rank.

All students are required to secure the B.S. or B.A. degree before receiving the degree of Doctor of Medicine. The College of Science, Literature, and the Arts and the Medical School unite in offering the following courses of study:

1. A combined course leading to the degrees of Bachelor of Science and Doctor of Medicine and consisting of: (a) two years of work in the College of Science, Literature, and the Arts, including certain required subjects (see page 25); (b) two years in the scientific departments of the Medical School, at the end of which the B.S. degree is granted; (c) two years in the practical or clinical departments of the Medical School; (d) one year in a hospital internship or in advanced laboratory study or research. At the end of this period the M.D. degree is granted.

2. A combined course leading to the degrees of Bachelor of Arts and Doctor of Medicine. Students who present three years of properly selected work in the College of Science, Literature, and the Arts, including the required subjects noted, may elect the first year in medicine in their senior academic year, receiving the B.A. degree at its close and the M.D.

degree upon the successful completion of the remaining four years in medicine.

3. *The School of Embalming* offers an annual course of study. A certificate covering the successful completion of the work is granted, which is accepted by the State Board of Health, in lieu of examination for an embalmer's license.

4. *The School for Nurses* is conducted in connection with the University Hospital service. It offers a three-year course, the first six months occupied in preliminary study, the remaining two and one-half years in residence and in hospital and out-patient training.

5. Graduate and research work is offered to qualified students. (See page 25.)

THE COLLEGE OF DENTISTRY offers a four-year course of study leading to the degree of Doctor of Dental Surgery.

The University offers an optional six-year course of study leading to the degrees of Bachelor of Science and Doctor of Dental Surgery at the end of the six-year course.

THE SCHOOL OF MINES offers three regular courses, namely, Mining Engineering, Mining Engineering (specializing in Geology), and Metallurgy, leading to the degrees of Engineer of Mines (E.M.), Engineer of Mines (in Geology) [E.M. (Geology)], and Metallurgical Engineer (Met.E.), respectively.

Students with satisfactory preparation in Elementary and Higher Algebra and Plane and Solid Geometry may be graduated in four years. Students presenting high-school credentials to the extent indicated on page 27 may be graduated in five years.

Courses in the school are designed for the purpose of preparing men to enter their profession with a thoro grounding in mathematics, in the sciences, and in the fundamental principles of mining engineering and metallurgy. A system of apprenticeship during summer vacations has been inaugurated. This work has become a regular part of the curriculum and is required of all students who are candidates for degrees.

THE COLLEGE OF PHARMACY offers a regular three-year course leading to the degree of Pharmaceutical Chemist (Phm.C.) A four-year course leading to the degree of Bachelor of Science in Pharmacy (B.S. in Phm.) is also offered. This course includes all of the Pharmaceutical Chemist course and the equivalent of one year in the College of Science, Literature, and the Arts. Two graduate courses, leading to the degrees respectively of Master of Science in Pharmacy and Doctor of Science in Pharmacy, are open to those who have the Bachelor's degree in Pharmacy, and who have shown exceptional scholarship and ability.

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY offers three courses. Two of these, the four-year course in Chemistry and the five-year course in Arts and Chemistry, are designed for those who wish to become teachers of chemistry, analysts, and investigators. The four-year course in Chemistry leads to the degree of Bachelor of Science in Chemistry, while the Arts and Chemistry Course leads to the degree of Bachelor

of Arts after four years and Bachelor of Science in Chemistry at the end of the fifth year.

The third or Applied Course extends over five years, leading to the degree of Bachelor of Science at the end of four years and Chemical Engineer at the end of the fifth year. These courses aim to give the student a broad foundation in chemistry and some of the allied sciences.

THE COLLEGE OF EDUCATION offers a practical and a theoretical training for prospective high-school teachers and principals, for principals of elementary schools, for supervisors of special studies, and for superintendents of school systems.

Students are admitted to the college only after the completion of at least two full years of college work, during which time they should have pursued at least one course in general psychology, and prospective high-school teachers should have given especial attention to one or more of the subjects which they expect to teach. The two-years' course of study, beginning with the junior year, leads to the degree of Master of Arts, in Education. A third year leads to the degree of Master of Arts, including advanced studies in education and philosophy, and in one or more of the subjects of the secondary curriculum, at the option of the candidate.

THE GRADUATE SCHOOL gathers into a single organization and unites for the purpose of administration all the activities of the University in all its schools and colleges in so far as they relate to advanced instruction offered for the second or higher degrees, viz., Master of Arts, Master of Science, and Doctor of Philosophy. The privileges of this school are in general open to all who have received Bachelors' degrees from reputable colleges and universities, based on courses substantially equivalent to those at this University.

Graduate work in medicine is maintained jointly by the Medical School and the Mayo Foundation for Medical Education and Research. The degree of B.S. (or equivalent) and M.D. and one year of intern service in an acceptable hospital are prerequisites for admission to the clinical departments. Properly qualified students may be admitted to the medical laboratory departments (Anatomy, Physiology, Bacteriology, and Pathology) without the medical degree and internship. A number of fellowships and scholarships are provided for selected students undertaking graduate courses in chosen specialties in medicine. These courses cover a period of three years and lead to the degrees of M.S. or Ph.D. in the various fields.

THE UNIVERSITY SUMMER SESSION is organized for six weeks in June and July under the authority of the Board of Regents as a regular part of the University. Courses carrying university credit, including all the subjects of the state professional certificate, are offered for college students, experienced teachers, and others who desire the opportunity for advanced study. Students may secure not more than six credits at one session, except by special permission.

On the main campus, courses are offered in the Colleges of Science, Literature, and the Arts, Education, Engineering, and Dentistry, and

the Medical and Graduate Schools. In the College of Agriculture, Forestry, and Home Economics courses are offered in Agriculture and Home Economics adapted to the needs of teachers and others not in attendance during the regular college session and also to regular students. The State Teachers' Training School is held at the same time and place. For a special circular of summer work inquire at the Registrar's office.

SPECIAL COURSES.—In practically all of the colleges, students of mature age and adequate preparation are permitted to pursue, under the direction of the Faculty, one or two distinct lines of study.

UNIVERSITY EXTENSION.—All extension work of the University of Minnesota has been established as an organic unit of the University under the title of Extension Service. The Extension Service of the University functions in two main lines, the General Extension Division and the Agricultural Extension Division.

The work of the Agricultural Extension Division is indicated on page 15. The General Extension Division conducts evening classes and correspondence courses, provides communities with faculty lectures and lyceum courses of popular lectures and entertainments, maintains a municipal reference bureau and a lantern-slide loan system, fosters debating in the public-schools, holds annual short courses in merchandising, offers guidance for the development of community centers, and gives advice to schools, and other organizations on the selection and production of plays. Bulletins of evening classes, correspondence, and lecture courses may be had upon request. Address the General Extension Division.

THE UNIVERSITY LIBRARY

The purpose of the University Library is to supply books and to teach students to use them with the minimum waste of time and effort and the maximum profit. The collections in the General Library and the College Libraries are maintained to supplement and to facilitate the work of all departments, and familiarity with their resources should be acquired early. Intelligent use of the libraries is essential for the successful pursuit of every college course.

The General Library contains a miscellaneous collection of books relating to all fields of learning but is especially adapted to meet the needs of students in the Academic Department. The College Libraries contain collections of technical books, periodicals and transactions of learned societies relating to the work of the particular college to which they belong.

Registration automatically entitles students to library privileges.

Library assistants are at all times ready to help students in obtaining references and in directing them in the use of catalogs and indexes.

ADMISSION

GENERAL REQUIREMENTS

Admission to the colleges or schools of the University which accept students directly from the high school is either by certificate or examination. The candidate must offer fifteen units of high-school work so chosen as to include those subjects required by the college or school which he desires to enter. No candidate will be admitted with less than fifteen units. In case the candidate did not have an opportunity to take all the required subjects, the Registrar, may, however, authorize substitutions in the list of required subjects to the extent of one unit, unless otherwise stated in the requirements of the individual college or school.

Freshman students will be admitted at the opening of the second semester in February in the Colleges of Science, Literature, and the Arts, Agriculture, Forestry, and Home Economics, and the School for Nurses. All other students admitted at this time must present credentials of advanced standing from other colleges showing their qualification to continue the second semester's work.

Under List of Entrance Subjects is shown the minimum and maximum number of units of any one subject that will be accepted by the various colleges of the University. For a statement of the specific units required in any subject or group, see Requirements of Individual Colleges, pages 22-28.

ADMISSION BY EXAMINATION

Entrance examinations are offered at the University during the opening week, September 17 to 24. Candidates entering by this method must pass examinations in fifteen units so chosen as to satisfy the specific requirements of the college to which entrance is desired. (See Requirements of Individual Colleges.) Certificates from the College Entrance Examination Board, from the Minnesota State High School Board, or from the New York Regents' Examinations are accepted in lieu of examinations in the subjects they represent. Those desiring to take examinations should notify the Registrar in writing not later than September 1. See schedule of examinations, pages 8-9.

ADMISSION BY CERTIFICATE

Only *graduates* of *approved* schools are admitted by certificate.

Graduates of the following schools, provided their preparation satisfies the specific requirements of the college they desire to enter, may be admitted to the freshman class upon presentation of credentials in proper form. See Registration, page 21.

1. Minnesota state high schools or other accredited schools in the state.
2. Schools in any other state accredited by the state university of that state.

3. Minnesota state normal schools and normal schools of other states having similar courses.

The student who does not hold a diploma from an approved school may gain admission by examination as indicated above.

For list of accredited schools in Minnesota see pages 29-31.

REGISTRATION

The applicant for admission should request the principal or superintendent to forward to the Registrar of the University a complete transcript of his high-school or preparatory-school record showing the number of weeks and hours a week spent upon each study, with the grades entered as *passed*, *passed with credit*, or *passed with honor*. Credential blanks prepared by the University must be used. These blanks may be secured upon application at the Registrar's office. Upon receipt of the credentials at the University the Registrar will notify the applicant with regard to his admission, and will send directions for registration.

Students who were in attendance the preceding year are required to have their registration completed two weeks before classes begin, and fees paid one week before this time. Blanks for the purpose are mailed from the Registrar's office in ample time. Those not receiving the material by September 1 should notify the Registrar at once. See calendar, page 7, and penalty fees, page 39.

LIST OF ENTRANCE SUBJECTS

The term *unit* means not less than five recitations of forty minutes each a week for a school year of at least thirty-six weeks. In manual subjects and kindred courses, it means the equivalent of ten recitation periods a week for thirty-six weeks.

GROUP A: ENGLISH

English, four 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: LANGUAGES

Latin—

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

German—

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

* Three units will satisfy the English requirement in the Colleges of Engineering and Dentistry and the Schools of Mines and Chemistry, and, when the applicant presents four units in one foreign language or two units in each of two foreign languages, will suffice for the other colleges.

Greek—

Grammar, one unit
Anabasis, four books, one unit

Spanish—

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

French—

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 or one unit
Senior American, one-half unit

Social Sciences

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 AND MISCELLANEOUS SUBJECTS

Not more than four units in studies of this group may be counted towards admission. The subjects are no longer designated by the University. The applicant is free to present in this division such studies as are not listed in Groups A, B, C, D, and E, but which are certified by the superintendent or principal as being of acceptable nature and counted towards graduation.

REQUIREMENTS OF THE INDIVIDUAL COLLEGES

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

I. *Regular Bachelor of Arts Course*

(1) English, four units; or three units of English accompanied by four units of one foreign language, or two units in each of two foreign languages.

(2) Mathematics: Elementary Algebra, one unit; Plane Geometry, one unit.

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

2. *Academic-Medical Course*

Same as 1 above.

3. *Academic-Law Course*

Same as 1 above.

4. *Arts and Music Course*

Same as 1 above, also certificate from the Department of Music showing that the applicant is qualified to pursue the courses offered.

5. *Arts and Chemistry Course, five years*

Same as 1 above.

6. *Graduates of 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 for graduation. Such students will not be permitted to elect the following courses for credit: Education 1, 2, 3, or 105, Rhetoric 1-2, or Psychology 1-2 or 5.

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.

7. *Unclassed Students*

Unclassed students are: (1) persons of mature years engaged in teaching or other occupation, but registered in this college without having satisfied the entrance requirements in full; (2) all others who have been permitted to register for less than eleven hours of work. Only by permission of the Administrative Board and upon the presentation of satisfactory reasons for not taking the regular course will an applicant be admitted as an unclassified student. Unless he takes the same examinations or presents 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.

COLLEGE OF ENGINEERING AND ARCHITECTURE

Including Courses in Civil, Electrical, and Mechanical Engineering, and Architecture

1. English, four units; or English, three units, and foreign language, two units.

2. Mathematics: Elementary Algebra, one unit; Plane Geometry, one unit.

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

High-school students desiring to enter this College are urged to take Advanced Algebra, Solid Geometry, and Chemistry in high school. Students entering with deficiencies in these subjects will be required to take courses covering these deficiencies in the University before they can proceed with other work which depends upon these subjects.

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

Including Courses in Agriculture, Forestry, and Home Economics

Students entering this college should submit their credentials to the enrollment committee, University Farm, St. Paul.

1. English, four units; or three units accompanied by four units of one foreign language, or two units in each of two foreign languages.

2. Mathematics: Elementary Algebra, one unit; Plane Geometry, one unit.

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

Every prospective student in Agriculture is also urged to obtain at least six months' practical experience on a farm before entering college. Those whose farm experience credentials are not satisfactory will be examined as to their familiarity with farm practices, and farm experience will be required during the college course in accordance with the results of these examinations.

Prospective students in Home Economics are urged to elect Biology, Physiology, Chemistry, and Physics, as a part of their high-school course.

Schools of Agriculture

These schools are not of collegiate grade. For further information, see special bulletins.

LAW SCHOOL

Regular Students

Students desiring to enter the Law School must first complete two full years (not less than fifty-eight credits) of collegiate work in science, literature, and arts at this or some other university or college of equal rank. See admission to the College of Science, Literature, and the Arts, page 22. Such candidates may be admitted upon presenting their credentials to the Registrar.

A special pre-legal course is offered by the College of Science, Literature, and the Arts covering those subjects which are particularly desirable as preliminary to the study of law.

The Law Faculty recommends that prospective law students devote the major part of their time while in high school to the study of the

following subjects: English, Latin, History, Mathematics, French or German, and Science.

Special Students

Applicants who are twenty-one years of age and have preliminary education sufficient at least to entitle them to admission to the College of Science, Literature, and the Arts, may, upon furnishing satisfactory evidence of their ability to pursue the law course with profit to themselves and without hindrance to the regular students, in the discretion of the Faculty, be admitted to the Law School as special students. Such special students are not candidates for a degree.

Special students entering with fifty-two academic credits may become regular students by complying with the requirements for admission before the beginning of their second year in the Law School, *provided* they have passed all the subjects required of the first-year law class.

MEDICAL SCHOOL

Registration of students entering the Medical School is limited to ninety. Applicants will be selected on the basis of preliminary training, general ability, and physical fitness. Physical and psychological examinations are held and the results considered in connection with scholastic records in selecting candidates for the freshman class in Medicine.

The sixty college credits required must include six credits each in Rhetoric, Physics,† General Chemistry and Qualitative Analysis,§ Organic Chemistry, Zoology (or Biology chiefly founded on animals), and French or German, enough to enable the student to read medical publications in the language with facility. This will usually require two years of college work in addition to high-school credits in the language selected. Tests of this reading knowledge are required at entrance.

Entrance conditions are rarely permitted and only with the assent of the Central Bureau on Admission to Medical Colleges.

The degree of Doctor of Medicine is conferred only upon those who have received the Bachelor's degree in Arts or Science from this or some other recognized university or college. Combined courses are offered by the College of Science, Literature, and the Arts and by the Medical School, which lead to either of the Bachelor's degrees and, subsequently, to the degree in Medicine.

Those who at the time of entrance into the Medical School have a Bachelor's degree from an approved institution other than the University of Minnesota may be allowed reasonable deviation from the exact credits mentioned above. But thoro college courses in Physics, Chemistry, and Biology and a reading knowledge of a modern language (German or French) are indispensable as preparation for medical study.

† In this University, Physics 1, 2, 3, and 4 required, equals 8 credits.

§ In this University, students who enter from high school with good preparation in Chemistry take Chemistry 3-4, 6 credits. Those entering without high-school Chemistry take Chemistry 21-22, 10 credits.

Special Students

Physicians and others who would profit by the work may be admitted as special students. Such students are not candidates for the degree.

School of Embalming

One year of high-school work or its equivalent in some other satisfactory preparatory school is a prerequisite for admission. Applicants must submit credentials covering this work and satisfactory evidence of good character. The course begins January 2. Examinations are held at the close of the course and, successfully passed, entitle the student to a certificate.

School for Nurses

Graduation from an approved high school or other preparatory school on the accredited list is a prerequisite for admission. Preference, however, will be given to women of superior preliminary training. Applicants must not be less than twenty, nor more than thirty-five, years of age. They must submit to the committee satisfactory evidence of physical and mental fitness and of good character and will undergo a general physical examination by the school physician.

Upon receipt of credentials at the Registrar's office, applicants will be notified with regard to the details of registration.

All applicants matriculated will be required to take the preliminary course of instruction covering a period of six months, and must pass the examinations at its close. This period will be one, not only of preliminary training, but of probation. The Faculty reserves the right to pass upon the general fitness of the student to enter the hospital service at the close of that time.

COLLEGE OF DENTISTRY

1. English, three units.
2. Mathematics: Elementary Algebra, one unit; Plane Geometry, one unit.
3. Enough additional work to make in all fifteen units, of which not more than four may be in Group F.
4. One year of Chemistry, and two or more years of Manual Training are recommended.

On account of the limited capacity of the College of Dentistry not more than ninety freshmen can be admitted. Applications for admission should be in the Registrar's office not later than July 25.

Candidates will be selected according to quantity and quality of preparation, and when necessary their fitness shall be determined by competitive examination and conference with the Student Work Committee.

All other qualifications being equal, residents of Minnesota will be given prior consideration for vacancies existing at the date of their application.

SCHOOL OF MINES

It is recommended that students who come poorly prepared in mathematics enter the five-year courses.

Five-Year Courses

1. English, three units.
2. Mathematics: Elementary Algebra, one unit; Plane Geometry, one unit.
3. Enough additional work to make in all fifteen units, of which not more than four may be in Group F.

Four-Year Courses

1. English, three units.
2. Mathematics: Elementary Algebra, one unit; Plane Geometry, one unit; Higher Algebra, one-half unit; Solid Geometry, one-half unit.
3. Enough additional work to make in all fifteen units of which not more than four may be in Group F.

No substitution for the mathematics requirement can be made in this course.

It is recommended that students who enter the four-year courses review their mathematics, especially Higher Algebra and Solid Geometry. Those who are unable to carry satisfactorily freshman mathematics will be compelled to drop back into the five-year course.

COLLEGE OF PHARMACY

Graduation from a four-year high-school course or equivalent training is required for admission to the regular courses in pharmacy. Applicants are advised to secure preparation in two units of Latin and one unit each of Physics, Chemistry, Botany, and Physiology, as these subjects may be required in the near future.

SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

Arts and Chemistry Course (five years)

Students entering this five-year course in Arts and Chemistry matriculate in the College of Science, Literature, and the Arts and must meet the requirements for entrance to that College.

Analytical Course (four years) and Applied Course (five years)

1. English, three units.
2. Mathematics: Elementary Algebra, one unit; Plane Geometry, one unit; Higher Algebra, one-half unit.
3. Enough additional work to make in all fifteen units of which not more than four may be in Group F.

High-school students desiring to enter this College are urged to take Physics and one-half unit of Solid Geometry.

COLLEGE OF EDUCATION

Applicants for admission to this college must present credentials showing:

1. The completion of a regular four-year high-school course.
2. The completion of two full years of collegiate work (not less than sixty credits) in science, literature, and arts at this or some other college or university of equal rank.

Graduation from Advanced Graduate normal courses (two years beyond the high school) is considered equivalent to (1) and (2) above.

Graduates of a five-year normal course, if individually recommended by the normal-school president, are allowed forty-two credits and are admitted to the College as unclassified students pending the completion of eighteen additional credits.

ADMISSION AS UNCLASSIFIED STUDENTS

Only by permission of the proper officers and upon the presentation of satisfactory reasons for not taking the regular course will an applicant be admitted as an unclassified student. He must take the same examinations or present the same credentials as are required of those who enter as regular students. Exceptions can be made only upon vote of the appropriate faculty. A new application must be made each semester to the committee in charge. No unclassified student shall be admitted to the School of Mines.

ADMISSION TO ADVANCED STANDING

1. *From Other Colleges*

This University accepts credits from all reputable colleges and universities toward advanced standing. Such credits are accepted as far as they represent courses equivalent to the work done in this institution. In bringing or sending 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; catalog course number and descriptive title.
- (b) The number of weeks and hours a week spent upon each subject.
- (c) The value of the course expressed in semester credits.
- (d) The result. The exact grades should be stated, accompanied by an explanation of the marking system employed.

Upon receipt of the student's credentials the Registrar will notify the applicant concerning his classification and will send directions for registration.

All statements concerning advanced standing and classification are provisional, subject to the satisfactory completion of one year's work at the University by the applicant.

Candidates wishing to gain advanced standing by examination are allowed examinations without charge, provided such be taken within six weeks after matriculation.

2. *From Minnesota Normal Schools*

Graduates of the Advanced Graduate course of a Minnesota State Normal School are admitted to the College of Science, Literature, and

the Arts with one year (30 credits) of advanced standing. Graduates of such advanced courses are admitted to the College of Education with an allowance of sixty credits towards graduation.

Individual graduates of the Advanced Latin course (five-year) or of the Advanced English course (five-year) of a Minnesota State Normal School who, on the basis of maturity and ability, present certificates of special fitness from the President of the Normal School, will be admitted with thirty credits of advanced standing. Graduates of such courses are admitted to the College of Education with an allowance of forty-two credits towards graduation. State Normal Schools at the following places are recognized: Duluth, Mankato, Moorhead, St. Cloud, Winona.

3. *Junior Colleges*

In accordance with the policy of the University to encourage able schools to give one or two years of college work, the University Senate has prescribed conditions under which such work may be recognized for advanced standing. Copies of these standards may be had upon inquiry at the Registrar's office. The following schools have complied with the requirements and are offering either one or two years of collegiate study: Albert Lea College; Cloquet Junior College; Concordia College, St. Paul; Faribault Junior College; Hibbing Junior College; Jackson Junior College; Park Region Luther College, Fergus Falls; Rochester Junior College; St. Johns College, Collegetown; Stanley College, Minneapolis; Villa St. Scholastica, Duluth.

4. *Miscellaneous*

Credit in Shop Work and Drawing will be given in the College of Engineering for work in manual training, or for practical experience, provided the applicant gives evidence of proficiency in such work, and is qualified to pursue advanced work. The student must register for the regular work and at the same time make application to the department concerned for advanced credit.

LIST OF ACCREDITED PREPARATORY SCHOOLS

Graduates of the following Minnesota state high schools will be admitted to the University of Minnesota without conditions, provided their credentials satisfy the specific requirements of the college to which entrance is desired:

Ada	Alexandria	Arlington
Adrian	Amboy	Atwater
Aitkin	Annandale	Aurora
Akeley	Anoka	Austin
Albert Lea	Appleton	Bagley
Alden	Argyle	Barnesville

Belle Plaine	Eveleth	Lake Crystal
Bemidji	Excelsior	Lakefield
Benson	Fairfax	Lake Park
Bird Island	Fairmont	Lamberton
Biwabik	Faribault	Lanesboro
Blackduck	Farmington	Le Roy
Blooming Prairie	Fergus Falls	Le Sueur
Blue Earth	Fertile	Le Sueur Center
Brainerd	Fosston	Litchfield
Breckenridge	Frazee	Little Falls
Brown Valley	Fulda	Long Prairie
Buffalo	Gaylord	Luverne
Buhl	Gilbert	Lyle
Caledonia	Glencoe	McIntosh
Cambridge	Glenwood	Mabel
Canby	Glyndon	Madelia
Cannon Falls	Graceville	Madison
Carlton	Grand Meadow	Mahnomen
Cass Lake	Grand Rapids	Mankato
Chaska	Granite Falls	Mantorville
Chatfield	Hallock	Maple Lake
Chisholm	Halstad	Mapleton
Clarkfield	Harmony	Marshall
Cleveland	Hastings	Melrose
Cloquet	Hawley	Milaca
Cokato	Hayfield	Minneapolis
Coleraine	Hector	Central
Greenway	Henderson	East
Olcott	Herman	North
Cottonwood	Heron Lake	• South
Crookston	Hibbing	West
Crosby-Ironton	Hinckley	Minneota
Dassel	Hopkins	Montevideo
Dawson	Houston	Montgomery
Deer River	Howard Lake	Monticello
Delano	Hutchinson	Moorhead
Detroit	International Falls	Mora
Dodge Center	Ivanhoe	Morris
Duluth	Jackson	Morristown
Central	Janesville	Morton
Denfeld	Jordan	Mountain Iron
Eagle Bend	Kasota	Mountain Lake
East Grand Forks	Kasson	Nashwauk-Keewatin
Elbow Lake	Kenyon	New Prague
Flk River	Kerkhoven	New Richland
Elmore	Lake Benton	New Ulm
Ely	Lake City	Northfield

ADMISSION

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North St. Paul	Rushford	Thief River Falls
Norwood-Young America	St. Charles	Tracy
Olivia	St. Cloud	Two Harbors
Ortonville	St. James	Tyler
Osakis	St. Louis Park	Villard
Owatonna	St. Paul	Virginia
Park Rapids	Central	Wabasha
Paynesville	Humboldt	Wadena
Pelican Rapids	John A. Johnson	Walker
Perham	Mechanic Arts	Warren
Pine City	St. Peter	Waseca
Pine Island	Sandstone	Waterville
Pine River	Sauk Center	Wayzata
Pipestone	Sauk Rapids	Welcome
Plainview	Shakopee	Wells
Preston	Sherburn	West Concord
Princeton	Slayton	Wheaton
Red Lake Falls	Sleepy Eye	White Bear
Red Wing	South St. Paul	Willmar
Redwood Falls	Springfield	Windom
Renville	Spring Grove	Winnebago
Rochester	Spring Valley	Winona
Roseau	Staples	Winthrop
Royalton	Stephen	Worthington
Rush City	Stewartville	Zumbrota
	Stillwater	

Graduates of the following private schools will be admitted to the freshman class under the regulations governing admissions of high-school graduates:

Albert Lea	Frontenac
Albert Lea College, Prepara- tory Department	Villa Maria
Collegeville	Minneapolis
St. John's College	Blake School for Boys
Duluth	Northrop Collegiate Institute
Cathedral High School for Boys	Minnesota College
Cathedral High School for Girls	St. Margaret's Academy
Villa Sancta Scholastica	Stanley Hall
Faribault	Montevideo
Bethlehem Academy	Windom Institute
St. Mary's Hall	Moorhead
Shattuck Military Academy	Concordia College
Fergus Falls	Owatonna
Park Region Luther College	Pillsbury Academy
	Red Wing
	Academy of the Red Wing Semi- nary

Luther Ladies' Seminary	The College of St. Catherine
St. Joseph	Visitation Convent
Convent of St. Benedict	St. Paul Park
St. Paul	St. Paul's College
Bethel Academy	St. Peter
St. Joseph Academy	Academy, Gustavus Adolphus
St. Paul Academy	College
St. Thomas College	Winona
The Backus School for Girls	St. Claire Seminary

DESCRIPTION OF SUBJECTS ACCEPTED FOR ADMISSION

The following statements indicate in a general way the preparation which the University expects in the various subjects accepted for admission. The number of units in parentheses following each subject indicates the maximum credit accepted by any one college of the University and does not mean that all colleges will accept the maximum stated. See pages 22 to 28 for statements of the requirements of the individual colleges.

GROUP A. ENGLISH

(Three or four units*)

In order to secure a definite plan of study and unity of method on the part of preparatory schools, the entrance requirement in English is outlined below somewhat in detail. To satisfy this requirement a course of not less than four hours a week must be pursued during the time specified above. The headings under which instruction will naturally fall are:

- I. The Principles of Rhetoric.
- II. Practice in Written Expression.
- III. English Classics.

I

The work in the principles of rhetoric should include the principles and technical terms of ordinary texts upon the subjects, whether acquired by the direct study of such text or mainly by the study of selected English masterpieces. It should not be forgotten that this is not an end in itself, but simply a means of teaching the student the correct use of English.

II

Not less than an hour a week in each of the four years of the course should be devoted to work in composition, which should be criticized both orally and in writing by the teacher. Such subjects should be chosen as will best make this written work an expression of the lives and interests of the students, who should be taught to observe accurately, think logically, and write correctly and forcefully.

III

The preparation in English Literature should consist in the study of a limited number of English classics and in the reading of a larger number. The following lists of books, headed respectively *reading* and *study*, are quoted from the report of the National Conference on Uniform Entrance Requirements in English. They will be found suggestive to those preparing students for the University. In connection with both lists, the student should be trained in reading aloud and be encouraged

* See note on page 21.

to commit to memory some of the more notable passages both in verse and in prose. As an aid to literary application, he is further advised to acquaint himself with the most important facts in the lives of the authors whose works he reads and with their place in literary history.

A. READING.—The aim of this course is to foster in the student the habit of intelligent reading and to develop a taste for good literature, by giving him a first-hand knowledge of some of the best authors. He should read carefully the selections prescribed, but should not concentrate his attention upon details to the neglect of the main purpose and charm of what he reads.

With a view to large freedom of choice, the books provided for reading are arranged in the following groups, from which at least ten units are to be selected, two from each group:

Group 1. The *Old Testament*, comprising at least the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings, and Daniel, together with the books of Ruth and Esther; the *Odyssey*, with the omission, if desired, of Books I, II, III, IV, V, XV, XVI, XVII; the *Iliad*, with the omission, if desired, of Books XI, XIII, XIV, XV, XVII, XXI; Virgil's *Aeneid*. The *Odyssey*, *Iliad*, and *Aeneid* should be read in English translations of recognized literary excellence.

For any unit of this group a unit from any other group may be substituted.

Group 2. *Shakespeare*.—*Midsummer Night's Dream*; *Merchant of Venice*; *As You Like It*; *Twelfth Night*; *The Tempest*; *Romeo and Juliet*; *King John*; *Richard II*; *Richard III*; *Henry V*; *Coriolanus*; *Julius Caesar*;* *Macbeth*;* *Hamlet*.*

Group 3. *Prose Fiction*.—Two to be selected.—Malory's *Morte d'Arthur* (about 100 pages); Bunyan's *Pilgrim's Progress*, Part I; Swift's *Gulliver's Travels* (voyages to Lilliput and to Brobdingnag); De Foe's *Robinson Crusoe*, Part I; Goldsmith's *Vicar of Wakefield*; Frances Burney's *Evelina*; Scott's Novels (any one); Jane Austen's Novels (any one); Maria Edgeworth's *Castle Rackrent*, or *The Absentee*; Dickens' Novels (any one); Thackeray's Novels (any one); George Eliot's Novels (any one); Mrs. Gaskell's *Cranford*; Kingsley's *Westward Ho!* or *Hereward, the Wake*; Reade's *The Cloister and the Hearth*; Blackmore's *Lorna Doone*; Hughes' *Tom Brown's School-days*; Stevenson's *Treasure Island*, or *Kidnapped*, or *Master of Ballantrae*; Cooper's Novels (any one); Poe's *Selected Tales*; Hawthorne's *The House of the Seven Gables*, or *Twice-Told Tales*, or *Mosses from an Old Manse*; a collection of *Short Stories* by various standard writers.

Group 4. *Essays, Biography, etc.*—Two to be selected.—Addison and Steele's *The Sir Roger de Coverley Papers*, or Selections from the *Tatler* and *Spectator* (about 200 pages); Boswell's Selection from the *Life of Johnson* (about 200 pages); Franklin's *Autobiography*; Irving's *Sketch Book* (about 200 pages), or *Life of Goldsmith*; Southey's *Life of Nelson*; Lamb's *Essays of Elia* (about 100 pages); Lockhart's *Life of Scott* (about 200 pages); Thackeray's Lectures on Swift, Addison and Steele in the *English Humorists*; Macaulay's *Lord Clive*, *Warren Hastings*, *Milton*, *Addison*, *Goldsmith*, *Frederick the Great*, *Madame d'Arblay* (any one); Trevelyan's *Life of Macaulay* (about 200 pages); Ruskin's *Sesame and Lilies*, or *Selections* (about 150 pages); Dana's *Two Years before the Mast*; Selections from Lincoln, including at least the two *Inaugurals*, the *Speeches in Independence Hall* and at *Gettysburg*, the *Last Public Address*, and the *Letter to Horace Greeley*, together with a brief memoir or estimate; Parkman's *The Oregon Trail*; Thoreau's *Walden*, Lowell's *Selected Essays* (about 150 pages); Holmes's *The Autocrat of the Breakfast Table*; Stevenson's *An Inland Voyage*, and *Travels with a Donkey*; Huxley's *Autobiography*, and selections from *Lay Sermons*, including the addresses on *Improving Natural Knowledge*, *A Liberal Education*, and *A Piece of Chalk*; a collection of Essays by Bacon, Lamb, De Quincey, Hazlitt, Emerson, and later writers; a collection of *Letters* by various standard writers.

Group 5. *Poetry*.—Two to be selected.—Palgrave's *Golden Treasury (First Series)*, Books II and III with special attention to Dryden, Collins, Gray, Cowper, and Burns; Palgrave's *Golden Treasury (First Series)* Book IV, with special attention to Words-

* If not chosen for study under (b).

worth, Keats, and Shelley (if not chosen for study under b); Goldsmith's *The Traveller* and *The Deserted Village*; Pope's *The Rape of the Lock*; a collection of English and Scottish Ballads, as, for example, some Robin Hood ballads. *The Battle of Otterburn*, *King Estmere*, *Young Beichan*, *Bewick and Grahame*, *Sir Patrick Spens*, and a selection from later ballads; Coleridge's *The Ancient Mariner*, *Christabel*, and *Kubla Khan*; Byron's *Childe Harold*, Canto III or IV, and *The Prisoner of Chillon*; Scott's *The Lady of the Lake*, or *Marmion*; Macaulay's *The Lays of Ancient Rome*, *The Battle of Naseby*, *The Armada*, *Ivry*; Tennyson's *The Princess*, or *Gareth and Lynette*; *Lancelot and Elaine*, and *The Passing of Arthur*; Browning's *Cavalier Tunes*, *The Lost Leader*, *How They Brought the Good News from Ghent to Aix*, *Home Thoughts from Abroad*, *Home Thoughts from the Sea*, *Incident of the French Camp*, *Hervé Riel*, *Pheidippides*, *My Last Duchess*, *Up at a Villa—Down in the City*, *The Italian in England*, *The Patriot*, *The Pied Piper*, "De Gustibus"—, *Instans Tyrannus*; Arnold's *Sohrab and Rustum*, and *The Forsaken Mermaid*; selections from *American Poetry*, with special attention to Poe, Lowell, Longfellow, and Whittier.

B. STUDY.—This part of the requirement is designed to insure a natural and logical continuation of the student's earlier reading, with greater stress laid upon form and style, the exact meaning of words and phrases, and the understanding of allusions. The books provided for study are arranged in four groups, from each of which one selection is to be made.

(1) Shakespeare's *Julius Caesar*, *Macbeth*, *Hamlet*.

(2) Milton's *L'Allegro*, *Il Penseroso*, and either *Comus* or *Lycidas*; Tennyson's *The Coming of Arthur*, *The Holy Grail*, and *The Passing of Arthur*; the selections from Wordsworth, Shelley, and Keats, in Book IV or Palgrave's *Golden Treasury (First Series)*.

(3) Burke's *Speech on Conciliation with America*; Macaulay's *Two Speeches on Copyright* and *Lincoln's Speech at Cooper Union*; Washington's *Farewell Address* and Webster's *First Bunker Hill Oration*.

(4) Carlyle's *Essay on Burns*, with a selection from Burns's *Poems*; Macaulay's *Life of Johnson*; Emerson's *Essays on Manners*.

GROUP B. LANGUAGES

Latin

In place of the work specified below the University also accepts the work recommended in the report of the Cleveland Commission on College Entrance Requirements in Latin.

Latin Grammar (one unit).—This will include the subjects of orthography, etymology, and syntax. Proficiency is particularly desired in the following subjects: the analysis of the verb forms, the rules of syntax, and the principal parts of the irregular verbs.

Caesar (one unit).—First four books or selections from the seven books equivalent to four; or three books, with thirty pages of Cornelius Nepos, or two books with sixty pages of Cornelius Nepos. The student is expected to be familiar with the life of Caesar and an account of his wars.

Cicero (one unit).—Any six orations from the following list: *Against Catiline*, *Poet Archias*, *Ligarius*, *Marcellus*, *Manilian Law* (to count as two orations), the fourteenth *Philippic*. The student should also be familiar with the life of Cicero.

Virgil (one unit).—Six books of the *Aeneid*, or five of the *Aeneid* and one of the *Metamorphoses* of Ovid, or the *Eclogues*. The student should be familiar with the life of Virgil and an account of his times and writings. A correct rhythmical reading of the text is to be encouraged.

Greek

Greek Grammar (one unit).

Xenophon's Anabasis, three books, or the equivalent (one unit).

German (four units)

In the first year the student should acquire:

1. Correctness and ease of pronunciation; the ability to read from the text with the proper sentence accent.
2. A vocabulary of a thousand words in everyday use; facility in expressing his thoughts in simple sentences. As a means to this, at least 150 pages of narrative prose, and some poetry, should be read. Using the subject matter of the daily reading lesson as a basis, the teacher should, through rapid question and answer, develop the student's power of self expression in the foreign idiom.
3. The essentials of German grammar, to be taught inductively in conjunction with the oral development of the reading lesson indicated in (2). Toward the last of the year the essentials should be reviewed with accuracy and in detail, with the help of sentences and free composition. Some free composition, or written answers to questions, should be required frequently after the first weeks.

In the second year the student should:

1. Read 200-300 pages of prose and poetry. The better students should be encouraged to private reading of simple texts. The use of classics in the second year is discouraged. A very simple text should be chosen for the first weeks to make the transition from the beginning course less abrupt. Other texts should follow of which the language is sufficiently modern to lend itself well to oral treatment of the subject matter in class. This course should continue the effort of the first year to develop, by means of question and answer in German, the accurate and immediate knowledge of the language through direct imitation and spontaneous use of the idiom of the text. This work may be supported by occasional translation from English into German, based, preferably, upon the text read.
2. Translate selected passages of the text into idiomatic English. To translate sentences which the student already understands is a waste of time. Usually a paraphrase, or a brief explanation in German, of a difficult passage is more satisfactory than translation.
3. Review topically the essentials of German grammar, including the chief rules of orthography and syntax.

One or two additional years of work in literature will be accepted. Students presenting four years of high-school German are admitted to advanced standing.

French (four units)

Work of the first year should comprise:

1. Careful drill in pronunciation.
2. Rudiments of grammar, including inflection of the more common irregular verbs.
3. Abundant practice in turning simple English into French.
4. Reading of 100 to 175 pages of simple French, including ample practice in sight translation.
5. Writing of French from dictation.

Work of the second year should comprise:

1. Complete and thoro drill in grammar.
2. Drill in connected prose composition.
3. Reading of 250 to 400 pages of modern prose and poetry.
4. Continued practice in writing French from dictation.
5. Practice in the understanding of simple French when spoken or read.

Work of the third and fourth years: If a third and fourth year are offered, they should consist of (1) advanced connected prose composition, (2) reading of more difficult French with emphasis on the literary side, and (3) oral practice.

Spanish (four units)

Courses in Spanish should follow the same plan as for French.

Scandinavian Languages

Norwegian or *Swedish* (four units).—The student should acquire the principles of grammar, ability to read and translate ordinary prose and easy poetry, also to translate from English, and a fair acquaintance with the history of the Scandinavian countries. Two additional years' work in literature will be accepted.

GROUP C. HISTORY AND SOCIAL SCIENCES

History

Ancient History (one unit).—This study should begin with a brief survey of the oriental peoples who have most influenced European development, and should be carried down to the establishment of Charlemagne's empire.

Modern History (one unit).—From Charlemagne to the present. It is desirable to give at least one third of the year to the period from 1789.

English History (one-half or one unit).—The Saxon period should be passed over rapidly. In the remainder of the work, besides the narrative, constitutional points should receive attention, and easily accessible documents should receive careful study.

Senior American History (one-half or one unit).—No attempt should be made to cover the whole field in this time. In the study of any period in the nineteenth century special attention should be paid to economic development and the westward movement.

Social Sciences

American Government (one-half or one unit).—This should be a study of our government, national, state, and local, as it is organized and actually operated today. The instruction should aim to impart information essential to intelligent, active citizenship, such as the division of the government into departments, their organization and function; the methods of nominating, electing, and appointing men to office; of framing and amending constitutions, city charters, and statutes; of drawing grand and petit juries and the duty of the citizen to serve on them; the distinction between common law, state law, and constitutional law, between equity, civil, and criminal cases.

Elementary Economics (one-half unit).—In the study of Economics it is desirable to avoid two extremes, abstract theory on the one hand, and controversial questions, such as the tariff, trusts, and trade unions, on the other hand. Emphasis should be placed on historical and descriptive matter, especially relating to the economic development of England and the United States. Some good elementary text-book should be mastered and a reasonable amount of collateral reading required.

History of Commerce (one-half or one unit).—This forms the natural introduction to the study of present economic conditions. It would be well to give special attention to the economic history of England and the United States. The work should be based on a text-book, supplemented by carefully directed map work and assigned readings. This should be preceded by a year course of medieval and modern European history.

Commercial Geography (one-half or one unit).—This describes and seeks to explain the commerce of today. The work should cover the ways in which commerce depends on nature and on man, the development of means of transportation and communication, and a detailed study of the several commercial regions of the world with reference to resources, industries, transportation facilities, and commerce. It should be based on a text-book supplemented by map work and assigned readings.

GROUP D. MATHEMATICS

Elementary Algebra (one unit).—Positive and negative numbers; addition; subtraction; multiplication; division; factoring; highest common divisor and lowest common multiple by factoring; fractions; equations of the first degree in one, two, and three unknowns, with numerous problems involving such equations; involution (omitting the binomial theorem); evolution (omitting cube root); elementary manipulations of surds; irrational equations that lead to equations of the first degree; pure

quadratic equations; affected quadratic equations by the method of completing the square and by factoring, with problems involving such equations.

Higher Algebra (one-half unit).—A review of elementary algebra with more difficult problems and with some demonstrational work; the factor theorem; the binomial theorem for positive integral exponents; cube root; fractional, negative, and zero exponents; surds, radicals, and imaginaries; the solution of affected quadratic equations by formula; equations in the quadratic form; simultaneous quadratic equations; arithmetic and geometric progressions. The course in higher algebra should be taken by students in their third or fourth high-school year.

Plane Geometry (one unit).—Any of the standard texts on this subject will furnish the necessary preparation. Isoperimetry, symmetry, and maxima and minima of figures are not required. The exercises requiring solutions and demonstrations should not be omitted.

Solid Geometry (one-half unit).—Any of the standard texts on this subject will furnish the necessary preparation. The exercises requiring solutions and demonstrations should not be omitted.

GROUP E. NATURAL SCIENCES

Physics (one unit).—It is suggested that the year's work be confined to four of the seven subjects mentioned below.

(1) Mechanics of solids, (2) liquids and gases, (3) sound, (4) heat, (5) light, (6) and (7) electricity and magnetism (to count as two subjects, but not to be divided).

Chemistry (one unit).—The full year's work should include a study of both the non-metals and metals with laboratory experiments illustrating the common chemical laws and the commoner chemical reactions.

Botany (one-half or one unit).—One-half unit: The course should cover the external form and functions of the parts of the flowering plant, including its development from the seed. A part of the work should consist of becoming familiar with the common plants of the neighborhood, both cultivated and native.

One unit: In addition to the work required for one-half unit the course should embrace the microscopic structure of the parts of the flowering plant and a study of selected lower forms. The one year's course should embrace essentially what is covered by Bergen's *Elements of Botany*, Andrews' *Plants the Year Around*, and J. G. Coulter's *Plant Life and Plant Uses*.

Zoology (one-half or one unit).—Animals should be studied as living units in their relation to one another and their environments. This study should include development stages as well as the habits, general structure and special adaptations of the adult stage. The aim of the teacher should be to foster a love for animate nature and to develop accuracy in observation and description.

Astronomy (one-half unit).—An elementary course in general astronomy as presented in any good modern text-book will satisfy this requirement.

Geology (one-half unit).—These subdivisions should receive special attention: physiographic geology, the building of the land and the evolution of its existing contours; geodynamics, the modifying of the earth by atmosphere, water, terrestrial heat, plants, and animals, and a brief survey of historical geology.

Physiography (one-half unit).—The following topics should be emphasized: meteorology, the leading facts relating to the atmosphere and its phenomena, including some acquaintance with the work of the United States weather bureau; land sculpture, as it treats of the origin, development, and degradation of land forms; and the influence of these processes on the physical environment of man.

GROUP F. VOCATIONAL AND MISCELLANEOUS SUBJECTS

The studies of Group F are no longer designated by the University. This group contains all subjects not listed in the Groups A, B, C, D, and E, which are certified by the high-school superintendent as of acceptable nature and counted towards the graduation of the student.

DEGREES

The candidate for a degree must complete the requirements for graduation in his course. Any person may undergo, at a suitable time, an examination in any subject, and if such person pass in all the studies and exercises of the course, he is entitled to the appropriate degree; provided, however, that at least one full year (the one immediately preceding the granting of the degree) is spent at the University, before such degree is granted, and provided further that the examination, in every case, is held before a committee of the Faculty appointed for that purpose.

For detailed information concerning requirements, see pages 12-18, also the bulletin of the appropriate college or school.

THE UNIVERSITY STATE TEACHERS' CERTIFICATE

The University State Teachers' Certificate is granted to all graduates of the College of Education and to those graduates of the Colleges of Agriculture, Forestry, and Home Economics, and of Science, Literature, and the Arts who satisfy the requirements as stated in the bulletins of those colleges.

This certificate by state law authorizes students to teach in the public schools of Minnesota for two years from date of issue. After that time, upon satisfactory evidence of the student's successful teaching experience, the certificate may be made permanent by the endorsement of the Superintendent of Education and the President of the University.

THE MINNESOTA TEACHERS' INDUSTRIAL CERTIFICATE

The Colleges of Agriculture, Forestry, and Home Economics, and Education offer the courses necessary to obtain from the State Department of Education an Industrial Certificate authorizing the holder to teach agriculture in a high school receiving state aid for maintaining a department of agriculture. They also offer courses necessary to obtain from the same source an Industrial Certificate authorizing the holder to teach home economics in a high school receiving state aid for maintaining a department of home economics.

EXPENSES

FEEs

DEPOSIT FEE

At the beginning of each year, in addition to the first semester incidental fee, a deposit fee of five dollars (Medicine and Dentistry, ten dollars) is required of every student to cover the following possible charges:

Change of registration.....	\$2.50
Examination for removal of condition at set time or postponed physical examination	\$1.00
Rental of post-office box, university post-office (required of all) .....	.50 a year
Locker rental, locker key deposit.....	\$.50 to \$1.00 a year
Case-book deposit (Law School), laboratory breakages, or damage to University property.	
Penalties for late registration or late payment of fees.	

A penalty fee of one dollar (\$1.00) must be paid by all students who register or pay fees after the prescribed time. (See calendar, page 7.) 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 each year. If, at any time during the college year, the charges against a student shall warrant a renewal of the deposit, a second fee of five dollars (\$5.00) will be required.

SPECIAL FEES

The following special items may be included in the expenses of a student:

Minnesota Union membership (required of men)....	\$1.00 a semester
Health fee (required of everyone).....	\$3.00 a semester
Minnesota Daily subscription†.....	\$1.75 a year
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 Univer- sity, if taken within the first six weeks.)	
Military uniform, men.....	*27.00
Gymnasium suit, men and women (approximately).....	5.00

INCIDENTAL FEES

One half of the annual tuition fee, which includes all laboratory charges, is payable at the beginning of each semester. Cards entitling

† Such an examination may be taken only upon approval of the appropriate committee.

* Subject to change, depending upon cost of material.

‡ This fee may be required of all students of collegiate grade, depending on later action of the Board.

the student to admission to classes will not be issued until the fees have been paid.

Science, Literature, and the Arts:

Annual tuition fee, resident.....	\$ 40.00
Annual tuition fee, non-resident.....	80.00
Health fee	6.00
Military uniform for men.....	*27.00
Gymnasium suit, men and women (approximately).....	5.00
Elective	
Music, Instrumental (one lesson a week), annually.....	64.00
Music, Instrumental (two lessons a week), annually.....	128.00
Music, Vocal (one lesson a week), annually.....	80.00
Music, Vocal (two lessons a week), annually.....	160.00

College of Engineering and Architecture:

Annual tuition fee, resident and non-resident.....	\$ 60.00
Health fee	6.00
Military uniform	*27.00

College of Agriculture, Forestry, and Home Economics

Annual tuition fee, resident.....	\$ 40.00
Annual tuition fee, non-resident.....	80.00
Itasca Park fee, freshman year (for Forestry students).....	3.00
junior year	5.00
Military uniform	*27.00

Law School:

Annual tuition fee.....	\$ 65.00
Health fee	6.00

Medical School:

Annual tuition fee.....	\$150.00
Health fee	6.00
Hospital fee (junior and senior years).....	1.00
Course for Embalmers.....	50.00
School for Nurses, preliminary course, tuition fee.....	25.00
Health fee.....	6.00
Junior and senior years, health fee.....	6.00

College of Dentistry, Four-year Course:

Annual tuition fee, first year.....	\$100.00
Annual tuition fee, second, third, and fourth years.....	175.00
Health fee	6.00
Military uniform	*27.00
Instruments and appliances, estimated.....	350.00
Books, estimated	75.00

* Subject to change, depending upon cost of material.

School of Mines:

First Year Five-Year Courses

Annual tuition fee.....	\$ 55.00
Health fee	6.00
Note books and supplies (Estimated).....	5.00
Military uniform	*27.00

Freshman Year

Annual tuition fee.....	\$ 55.00
Health fee	6.00
Books (Estimated)	25.00
Military uniform	*27.00
Draughting instruments (Estimated).....	15.00
Note books and supplies (Estimated).....	5.00

Sophomore Year

Annual tuition fee.....	\$ 55.00
Health fee	6.00
Field work { Surveying } May 1 to July 1 { Geological }	100.00 to 150.00
Books (Estimated)	15.00
Note books and supplies (Estimated).....	5.00

Junior Year

Annual tuition fee.....	\$ 55.00
Health fee	6.00
Field work { Mining } May 1 to July 1 { Metallurgy }	175.00 to 250.00
Books (Estimated)	30.00
Note books and supplies (Estimated).....	5.00

Senior Year

Annual tuition fee.....	\$ 55.00
Health fee	6.00
Books (Estimated)	15.00
Note books and supplies (Estimated).....	5.00

College of Pharmacy:

Annual tuition fee.....	\$ 55.00
Health fee	6.00
Military uniform	*27.00

School of Chemistry:

Annual tuition fee.....	\$ 55.00
Health fee	6.00
Military uniform	*27.00

College of Education:

Annual tuition fee, resident.....	\$ 40.00
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* Subject to change, depending upon cost of material.

Annual tuition fee, non-resident.....	80.00
Health fee	6.00

The Graduate School:

Annual tuition fee.....	\$ 30.00
Health fee	6.00

STUDENTS EXEMPT FROM FEES

All fellows, scholars, assistants, and instructors, and all members of the teaching staff and scientific bureaus or experiment stations when regularly enrolled as students in the Graduate School, shall not be required to pay university fees or tuition.

FEES FOR STUDENTS OF ONE COLLEGE TAKING WORK IN ANOTHER

Where a student of a given college or school elects courses in another, such courses being accepted by the college in which the student is registered as a part of its curriculum, the tuition shall be that of the college in which he is registered.*

If, at any time, such student desires credit for this course towards the degree offered by the second college, he shall pay such additional tuition as is required by the second college, charged in accordance with the schedule indicated below.

FEE SCHEDULE FOR STUDENTS CARRYING LESS THAN FULL WORK

Students carrying less than the complete schedule of work may pay fees on a credit-hour basis. The following table indicates the charge for each college, also the minimum amount that may be paid by any student.

COLLEGE OR SCHOOL	Credit Hour Fee	Minimum Total
Science, Literature, and the Arts.....	\$2.50	\$ 5.00
Engineering and Architecture.....	3.00	10.00
Agriculture, Forestry, and Home Economics.....	2.50	5.00
Law	5.00	10.00
†Medicine	3.00	10.00
†Dentistry, freshmen	3.00	10.00
sophomores, juniors, and seniors.....	3.50	10.00
Mines	2.00	10.00
†Pharmacy	3.00	10.00
Chemistry	3.00	10.00
Education	2.50	5.00
Graduate School	2.00	5.00

* A student paying full fees in a given college, electing courses in a lower-fee college, shall pay no additional fees for the work so elected, but if electing in a higher-fee college may have the option of paying the pro rata fees of both or the full fees of the first and pro rata fees of the second.

† In these three colleges the prorating is on the basis of clock hours.

LIVING EXPENSES

BOARD AND ROOM

Women.—Sanford Hall, the one dormitory for women, accommodates eighty-seven girls, about one third of whom may be freshmen. The charge for room and board is \$250 for the University year. Applications should be sent to the Director of Sanford Hall, University of Minnesota, before June 1.

Four coöperative cottages, each in charge of a chaperone, offer comfortable homes to about sixty girls of small means. By assisting with the work of the houses the students are able to keep expenses within moderate bounds. In assigning students to these cottages, preference is given to girls earning a part of their expenses. Application may be made to the Dean of Women.

Home Management Houses.—Two residences for women, located near the Agricultural College campus, are maintained by the Division of Home Economics, furnishing accommodations for a small number of students. The charge is \$250 for the university year, payable monthly. Applications should be sent to the Chief of the Division of Home Economics, University Farm, St. Paul. A deposit fee of \$10.00 is required when a room is reserved.

About fifty affiliated houses are approved by the University as residences for women. For further information and list of addresses application may be made to the Dean of Women.

For residence in places not listed above, special arrangements are to be made in the Office of the Dean of Women.

Luncheons on the cafeteria plan are served daily in Shevlin Hall.

Men.—A list of approved boarding and rooming places may be had upon request at the Bureau of Information and Employment.

At the Minnesota Union, the men's club house on the campus, three meals a day are served on the cafeteria plan at practically cost prices. Last year the average price paid for breakfast was 14 cents, luncheon 23 cents, dinner 24 cents. Board by the week varied from four to five dollars.

All students.—The expense of living at the University varies greatly according to individual habits and tastes. In general the scale of expenses is below rather than above that of similar institutions in the middle west, and is considerably lower than that of most institutions situated in the eastern states.

GENERAL EXPENSES—ESTIMATED

The following tables give estimates of the freshman students' expenses in college, omitting clothing, railroad fare, and vacation expenditures. To live within the minimum rate, a student must forego all luxuries and economize in every expenditure.

COLLEGES OF SCIENCE, LITERATURE, AND THE ARTS, EDUCATION, AGRICULTURE,
FORESTRY, AND HOME ECONOMICS

	Minimum	Average	Liberal
†Annual tuition fee.....	\$40.00	\$40.00	\$40.00
Deposit fee	5.00	5.00	5.00
Health fee	6.00	6.00	6.00
Minnesota Union fee.....	2.00	2.00	2.00
Gymnasium suit	5.60	5.60	5.60
Military uniform	*27.00	27.00	27.00
Books	15.00	20.00	25.50
Laundry	18.00	31.50	45.00
Room rent	54.00	90.00	108.00
Board	144.00	180.00	225.00
Incidentals	50.00	180.00	270.00
	<hr/>	<hr/>	<hr/>
	\$366.60	\$587.10	\$759.10

† Annual tuition fee for undergraduate students residing outside the State of Minnesota is \$80.00.

Funds absolutely necessary for immediate expenses upon entering these colleges, including two weeks' board and first month's room rent in advance: minimum, \$86.00; average, \$91.00.

COLLEGE OF ENGINEERING AND ARCHITECTURE

	Minimum	Average	Liberal
Annual tuition fee.....	\$60.00	\$60.00	\$60.00
Deposit fee	5.00	5.00	5.00
Health fee	6.00	6.00	6.00
Minnesota Union fee.....	2.00	2.00	2.00
Military uniform	*27.00	27.00	27.00
Books and instruments.....	30.00	36.00	37.50
Laundry	18.00	31.50	45.00
Room rent	54.00	90.00	108.00
Board	144.00	180.00	225.00
Incidentals	50.00	180.00	270.00
	<hr/>	<hr/>	<hr/>
	\$396.00	\$617.50	\$785.50

Necessary for immediate expenses upon entering this College: minimum, \$114.00; average, \$126.00.

LAW SCHOOL

	Minimum	Average	Liberal
Annual tuition fee.....	\$65.00	\$65.00	\$65.00
Deposit fee	5.00	5.00	5.00
Health fee	6.00	6.00	6.00
Minnesota Union fee.....	2.00	2.00	2.00
Books and note books.....	10.00	16.50	18.50

EXPENSES

Laundry	18.00	31.50	45.00
Room rent	54.00	90.00	108.00
Board	144.00	180.00	225.00
Incidentals	50.00	180.00	270.00
	<hr/>	<hr/>	<hr/>
	\$354.00	\$576.00	\$744.50

Necessary for immediate expenses upon entering this School: minimum, \$71.00; average, \$76.00.

MEDICAL SCHOOL, FIRST YEAR

	Minimum	Average	Liberal
Annual tuition fee.....	\$150.00	\$150.00	\$150.00
Deposit fee	10.00	10.00	10.00
Health fee	6.00	6.00	6.00
Minnesota Union fee.....	2.00	2.00	2.00
Books and instruments.....	27.50	33.00	50.00
Laundry	18.00	31.50	45.00
Room rent	54.00	90.00	108.00
Board	144.00	180.00	225.00
Incidentals	50.00	180.00	270.00
	<hr/>	<hr/>	<hr/>
	\$461.50	\$682.50	\$866.00

COLLEGE OF DENTISTRY

	Minimum	Average	Liberal
Annual tuition fee.....	\$100.00	\$100.00	\$100.00
Deposit fee	10.00	10.00	10.00
Health fee	6.00	6.00	6.00
Minnesota Union fee.....	2.00	2.00	2.00
Military uniform	*27.00	27.00	27.00
Books and instruments.....	130.00	147.50	175.00
Laundry	18.00	31.50	45.00
Room rent	54.00	90.00	108.00
Board	144.00	180.00	225.00
Incidentals	50.00	180.00	270.00
	<hr/>	<hr/>	<hr/>
	\$541.00	\$774.00	\$968.00

Necessary for immediate expenses upon entering this College: minimum, \$216.00; average, \$236.00.

SCHOOL OF MINES

	Minimum	Average	Liberal
Annual tuition fee.....	\$55.00	\$55.00	\$55.00
Deposit fee	5.00	5.00	5.00
Health fee	6.00	6.00	6.00
Minnesota Union fee.....	2.00	2.00	2.00

* Subject to change, depending upon cost of material.

Military uniform	*27.00	27.00	27.00
Books, etc.	22.00	27.50	27.50
Laundry	18.00	31.50	45.00
Room rent	54.00	90.00	108.00
Board	144.00	180.00	225.00
Incidentals	50.00	180.00	270.00
	<hr/>	<hr/>	<hr/>
	\$383.00	\$604.00	\$770.50

Necessary for immediate expenses upon entering this College: minimum, \$103.50; average, \$116.50.

COLLEGE OF PHARMACY

	Minimum	Average	Liberal
Annual tuition fee.....	\$55.00	\$55.00	\$55.00
Deposit fee	5.00	5.00	5.00
Health fee	6.00	6.00	6.00
Minnesota Union fee.....	2.00	2.00	2.00
Military uniform	*27.00	27.00	27.00
Books and instruments.....	21.00	24.00	24.00
Laundry	18.00	31.50	45.00
Room rent	54.00	90.00	108.00
Board	144.00	180.00	225.00
Incidentals	50.00	180.00	270.00
	<hr/>	<hr/>	<hr/>
	\$382.00	\$600.50	\$767.00

Necessary for immediate expenses upon entering this College: minimum, \$100.00; average, \$114.00.

SCHOOL OF CHEMISTRY

	Minimum	Average	Liberal
Annual tuition fee.....	\$55.00	\$55.00	\$55.00
Deposit fee	5.00	5.00	5.00
Health fee	6.00	6.00	6.00
Minnesota Union fee.....	2.00	2.00	2.00
Gymnasium suit	5.60	5.60	5.60
Military uniform	*27.00	27.00	27.00
Books and instruments.....	15.00	17.00	19.00
Laundry	18.00	31.50	45.00
Room rent	54.00	90.00	108.00
Board	144.00	180.00	225.00
Incidentals	50.00	180.00	270.00
	<hr/>	<hr/>	<hr/>
	\$381.60	\$599.10	\$767.60

Necessary for immediate expenses upon entering this School: minimum, \$100.00; average, \$114.00.

* Subject to change, depending upon cost of material.

SELF-SUPPORT

The Bureau of Employment is maintained for the purpose of assisting all students who seek employment, and of developing in all proper ways opportunities for self-help. The opportunities for men are necessarily more varied than those for women. Communications from students and graduates in regard to obtaining employment should be addressed to this bureau. Students or prospective students applying for the first time must appear at the office in person.

For the benefit of those who are without support of any kind it may be said that a number of students, with the aid of the money saved during the summer, are earning all of their college expenses. Some are able to meet their expenses during the college year, but this can be done only by students of unusual force and adaptability, or with exceptional opportunities. The average man must meet stern competition; he must live economically; he must guard his health while preserving a fair balance between time given to studies and to outside work.

It is not a good policy to begin life in a new community entirely without resources. A prospective student should have at least \$100 or the equivalent in addition to tuition fees; even then it will be necessary for him to do outside work and live very economically. Before he can place himself in a self-supporting position he may have to try again and again, and meanwhile his living expenses will be accumulating. An adequate reserve fund under such conditions will secure peace of mind, health of body, and the benefits of the college year.

The Twin Cities offer exceptional opportunities to the self-supporting student. Students are employed as clerks, bookkeepers, stenographers, salesmen, solicitors, telegraph operators, mechanics, assistants, musicians, waiters, laborers, janitors, telephone operators, and in many other capacities. Considerable work can be secured within walking distance.

Applicants for employment should bear in mind that, while every effort is made to secure work for all who need it, positions can not be assigned in the order in which applications are made. The places available are of so varied a nature that it would be impossible to assign them in order, without regard to the ability and qualifications of different applicants. The employer must be given the best man for his particular position. This means that fitness must be the first consideration. Whenever possible, however, the order of applications is followed.

Those who find themselves without funds at the beginning of the college year should register in some of the Evening Extension Courses and seek employment during the day rather than to run the risk of not being able to finance themselves while carrying regular university work. By choosing extension courses for which university credit is allowed, students can make their future university work much easier and give themselves more time for outside work. The correspondence courses offered by the Extension Division are open to all. Students who can meet the usual requirements for college entrance are allowed university credit for most of these courses.

SCHOLARSHIPS, LOANS, AND PRIZES

GRADUATE FELLOWSHIPS AND SCHOLARSHIPS

Shevlin Fellowships

The University of Minnesota offers four Shevlin Fellowships of \$500 each for the year 1918-19. They are open to graduate students, one each in the Colleges of Agriculture, Chemistry, Medicine, and Science, Literature, and the Arts. Applications for these fellowships must be made on or before March 1. Blank applications can be obtained from the Dean of the Graduate School.

Assistants and Scholars

The following Assistantships and Scholarships are also open to graduate students. They carry stipends ranging from \$225 to \$1,000 with remission of tuition in the Graduate School. Appointments are made upon the recommendation of the departments concerned. Applications may be made through the Dean of the Graduate School.

Agriculture	16 Assistants
Animal Biology.....	{ 2 Teaching Fellows 3 Scholars
Astronomy	1 Scholar
Botany	{ 2 Teaching Fellows 2 Scholars
Chemistry	13 Assistants
Comparative Philology.....	1 Scholar
Economics	{ 2 Teaching Fellows 1 Scholar
Education	{ 1 Assistant 1 Scholar
English	{ 1 Assistant 2 Scholars
Geology and Mineralogy.....	2 Scholars
German	2 Scholars
History	{ 2 Teaching Fellows 2 Assistants 2 Scholars
Mathematics	{ 2 Assistants 1 Scholar
Medical School.....	{ 10 Teaching Fellows* 50 Mayo Fellows 2 Special Fellows 5 Scholars 12 Assistants
Philosophy	1 Scholar
Physics	{ 2 Teaching Fellows 2 Scholars
Political Science.....	{ 1 Teaching Fellow 2 Scholars
Psychology	{ 1 Teaching Fellow 1 Scholar
Romance Languages.....	{ 3 Teaching Fellows 1 Scholar
Scandinavian	1 Scholar
Sociology and Anthropology....	2 Scholars

* Special Requirements. Address inquiries to Dean of the Graduate School.

The Albert Howard Scholarship Fund

This scholarship, amounting to \$240 a year, is awarded to graduate students in the College of Science, Literature, and the Arts.

Class of 1890 Scholarship

As a gift of the class of 1890 the annual income from the sum of \$2,500 will be available in September, 1917, to a graduate of the College of Science, Literature, and the Arts or the College of Engineering and Architecture who has shown distinguished ability and initiative as a student and who desires to make further preparation for public service.

UNDERGRADUATE SCHOLARSHIPS

Free and Service Scholarships

The following scholarships are open to students in the Colleges of Science, Literature, and the Arts, Engineering and Architecture, Agriculture, Forestry, and Home Economics, and Education, who are residents of Minnesota, and who have been in attendance at the University for at least one semester:

100 semester free scholarships of \$20 each

50 semester service scholarships of \$20 each requiring of the holder eighty hours' service in some division of the University.

Students interested may secure application blanks upon inquiry at the Registrar's office.

The Moses Marston Scholarship in English

The annual income of \$1,000 is to be used to further English study. The scholarship is awarded by the English Department as a recognition of special capacity for literary and linguistic studies.

National City Bank Scholarships

The National City Bank of New York City offers to students of the University one or more scholarships each year for the purpose of training young men in banking and foreign trade. The arrangements will include certain periods of practical work and study in the National City Bank. Detailed announcement will be made later.

The Minneapolis College Woman's Club Scholarship

For the year 1918-19 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. Applications for this scholarship may be made to the Dean of Women.

The St. Paul College Woman's Club Scholarship

For the year 1918-19 two scholarships of \$100 each are available. In awarding them, the character, the scholarship, and the need of the applicant will be considered. Altho open to all women in the junior and

senior classes and to graduate students, preference will be given to young women from St. Paul. Applications for it may be made to the Dean of Women.

The W. S. G. A. Scholarship

For the year 1918-19 one scholarship of \$100 is available for a woman in the junior or senior class. Applications for this scholarship may be sent to the Dean of Women not later than May 10.

Minnesota State Pharmaceutical Association Scholarship

The Minnesota State Pharmaceutical Association at its last meeting voted the sum of \$75 to be awarded annually to that student who is a citizen of the United States and who has resided in Minnesota for at least five years and has earned the highest general rating in the work of the second year of the regular course in this College. If such student should discontinue attendance at the College, the said sum is to be awarded to the student next highest in standing who meets the other requirements.

The Fairchild Scholarship

Mr. Samuel W. Fairchild offers a scholarship in the sum of \$300 to be awarded to that first-year student in any of the colleges holding membership in the American Conference of Pharmaceutical Faculties who has had two years of drug store experience, is a high-school graduate, and who passes the best competitive examination to be conducted by or under the auspices of a committee made up of members appointed jointly by the American Pharmaceutical Association, the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy. Fuller particulars may be had from the Dean of the College.

The Get Together Club Scholarship

For the year 1918-19 a scholarship of \$50 is available to students of the Division of Home Economics. In awarding it, the character, the scholarship, and the need of the applicants will be considered. Preference will be given to students in the junior and senior classes. Applications for this scholarship may be made to the Chief of the Division of Home Economics.

STUDENT LOAN FUNDS

Unless otherwise stated, all applications for loans should be made to the Secretary to the President.

The Gilfillan Trust Fund

The annual income from this fund of \$50,000 is at the disposal of the Executive Committee of the Board of Regents either as a gift or a temporary loan to worthy students of the University who are residents of Minnesota. The income of \$2,000 is loaned to students on their notes in amounts not exceeding \$200 to any one person in one year, at the rate of

five per cent per annum. The regulations governing the administration of the income from the fund may be learned by addressing the President of the University.

The Elliot Scholarship Loan Fund

The income from this fund of \$5,000 is loaned students in the School of Mines. The financial needs of the applicant, his scholarship, moral character, enthusiasm shown in his work, and promise of usefulness in his profession will be taken into consideration. When money is available, it may be loaned to pay expenses of worthy students during sickness. The loans are to be repaid, without interest, at the earliest convenience of the recipients.

The Minneapolis Colony of New England Women

For the year 1918-19 this scholarship loan amounts to \$100. 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.

School of Agriculture—Class of 1902 Trust Fund

A fund of \$100 is available for temporary loans to deserving students needing such help who are not below the junior class in the School of Agriculture. Applications should be made to the Principal of the School.

The Ludden Estate Loan Fund

Six hundred and twenty-five dollars is annually available for short or temporary loans in limited amounts, to students in any department of the University.

The Ludden Real Estate Loan Fund

The sum of \$3,000 is available for loans to students in any department of the University.

Loan Fund for Women Students

This fund is to be used for emergency loans to women students whose character and scholarship recommend them for assistance. Application may be made to the Dean of Women.

Home Economics Self-Government Loan Fund

The sum of \$250 is available for small emergency loans to women in the division of Home Economics whose character and scholarship recommend them for assistance. Applications 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, have been awarded annually for the best work in the Department of Rhetoric and Public Speaking, as evidenced finally by an oration in public.

The Frank H. Peavey Prize

This prize of \$100 is awarded to the members of the team winning the annual freshman-sophomore debate.

The Ludden Trust Prize

The sum of \$100 is available to furnish prizes for the winners of the first three places in the freshman-sophomore oratorical contest.

The Frank O. Lowden Prize

The annual income from \$3,000 is available to orators competing in the Northern Oratorical League. A prize of \$100 will be given to the orator winning the first place and \$50 to the winner of second place.

The '89 Memorial Prize in History

A prize of \$50 each year is given for the best thesis in history, written from the sources, by a member of the graduating class.

The William Jennings Bryan Prize

A prize of \$50 will be awarded every fourth year to the writer of the best essay upon a topic in Political Science to be announced. The essay, which is limited to ten thousand words, must be handed to one of the instructors in Political Science by May 1. The next award will be made in 1921.

The Alumni Weekly Gold Medal

This medal is awarded annually by the Faculty Committee on Debate and Oratory, to that member of the graduating class who has, in the judgment 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 broadminded, 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 Rollin E. Cutts Prize in Surgery

The income from \$500 is awarded in the form of a gold medal to that member of the senior class of the Medical School who presents the best thesis showing original work upon a surgical subject.

The Edwin Ames Jaggard Prize in Legal History

A prize of \$50 is awarded each year to the student in the Law School

whose contributions to the pages of the Minnesota Law Review during such year shall be adjudged by the Law Faculty to be most meritorious.

The American Law Book Company Prize

A complete set of the Cyclopedia of Law and Procedure is awarded by the Law Faculty to that student in the Third-Year Class who shall have maintained the highest grade of scholarship throughout the three-years' course leading to the LL.B. degree.

The Briggs Prize in Foundry Practice

Seventy-five dollars annually, in two prizes, accompanied by gold medals, will be awarded to sophomores in the College of Engineering for the best essays relative to foundry practice. No prize will be awarded if less than five essays are submitted in competition. Essays should contain about 3,000 words, and must be submitted to the instructor in Rhetoric on or before May 1.

ORGANIZATIONS AND PUBLICATIONS

SELF-GOVERNMENT ORGANIZATIONS

The Minnesota Union was organized in the spring of 1908 "to promote the best interests and welfare of the University of Minnesota, and comradeship among its members, and to erect and maintain a suitable club house for such purposes." All men students of the University are active members of the Union and are assessed a membership fee of one dollar a semester, payable at the time of registration. The Legislature gave the Chemistry Building for the use of the Union and appropriated \$17,500 for remodeling.

The dining room, operated on the cafeteria plan, serves three meals a day at practically actual cost. Students are advised to ascertain the Union prices for board before making arrangements elsewhere.

The Women's Self-Government Association is open to all women students of the University. Its purpose is to create a sense of unity and fellowship among the women, to promote and maintain the highest standards of University life and to regulate all matters of student conduct not falling under the jurisdiction of the Faculty. The headquarters of the Association are in Shevlin Hall. Members of the Association will be in readiness during the opening days to meet new students and to serve them in every way possible. The dues are fifty cents a year.

The Home Economics Self-Government Association.—The women in the College of Agriculture, Forestry, and Home Economics, altho nominally members of the Women's Self-Government Association, have an independent organization, the Home Economics Self-Government Association, which is open to all women in the College of Agriculture, Forestry, and Home Economics. The form of organization and the purpose of the Association are similar to those of the Women's Self-Government Association, but adapted to the needs of the students in the College of Agriculture, Forestry, and Home Economics.

The All-University Council is composed of representatives elected from the senior class of each college or school. Its function is mainly that of a student self-governing body, representing the student body in matters affecting student interest, controlling their activities to a large extent, and endeavoring to unify the spirit and promote the best possible welfare of the University.

College Councils.—Several of the colleges of the University have their own councils articulating with the All-University Council and having similar functions.

MISCELLANEOUS ORGANIZATIONS

There are at the University more than two hundred student organizations representing religious, ethical, literary, scientific, dramatic, athletic, social and other activities. A complete list of these organizations with

brief statements concerning each is given in the Minnesota Blue Book and Students' Social Register. A copy may be obtained at the Registrar's office.

PUBLICATIONS

The Bulletin of the University of Minnesota includes the reports of the President and of the Board of Regents, the Register, the Bulletin of General Information, the annual announcements of the individual colleges of the University, announcements of special courses of instruction, reports of University officers, etc.

Research Publications of the University of Minnesota were begun in 1912 with the support of a special appropriation by the Legislature. They contain the results of original investigations by members of the University. They appear in the form of several series of studies, which offer opportunity for the publication of large monographs and of papers of special importance to the people of this state.

Current Problems Series contains papers of general interest in relation to various lines of work.

School of Mines Experiment Station Bulletins contain reports of results of investigations conducted by the State Mining Experiment Station.

Bulletins of the Minnesota Geological Survey include reports of work done in Minnesota by the Minnesota Survey in coöperation with the United States Geological Survey; also, preliminary reports published independently by the Minnesota Survey in order to prevent loss by delaying the use of information of economic value. The most recent reports are *Surface Formations and Agricultural Conditions of Northwestern Minnesota*, and *Preliminary Report on the Clays and Shales of Minnesota*, *Surface Formations and Agricultural Conditions of Northeastern Minnesota*, *Geology and Ore Deposits of the Cuyuna Iron Range*.

List with prices of preceding four groups of publications will be furnished by the Librarian.

Agricultural Experiment Station Bulletins give the results of experiments carried on at University Farm and at the substations at Duluth, Crookston, Grand Rapids, Morris, and Waseca, as rapidly as such work is completed, or as soon as conclusions of economic value are reached. At least four such bulletins are published annually. The *Annual Report of the Agricultural Experiment Station* summarizes the business and work of the Agricultural Experiment Station and substations each year.

Minnesota Farmers' Library and *Special Bulletins* are series of popular instructive bulletins issued by the Agricultural Extension Division designed to inform the farmers of the state as to methods tried out at the Experiment Station and substations, or on demonstration farms, and approved as good practice for Minnesota farmers. *University Farm Press News* is a semi-monthly clip-sheet containing brief instructive articles, designed for reprinting by the newspapers of the state.

The Visitor is a news letter issued monthly by the Division of Agricultural Education of the College of Agriculture, Forestry, and Home

Economics. It is sent principally to teachers of agriculture, superintendents of schools, and to students of education in the College of Agriculture, Forestry, and Home Economics.

The Minnesota Daily, the University newspaper, is published five times each week during the University year by the Minnesota Daily Association. Its staff is composed entirely of students.

The Minnehaha is an illustrated monthly of satire and humor edited by and circulated among the students of the University. Because of war conditions this publication has been temporarily amalgamated with *The Minnesota Daily*.

The Minnesota Magazine is a publication which strives to represent the best literary efforts of the University. Owing to peculiar conditions arising from the war situation, the magazine has for the past year been published as a section of *The Minnesota Daily*.

The Minnesota Farm Review is a weekly owned by the alumni of the School of Agriculture, but operated under the direction of a committee representing the faculty, the alumni, and the students of the School of Agriculture and the College of Agriculture, Forestry, and Home Economics, and edited by the Division of Publications and Journalism, as a laboratory for students in Journalism.

The Junior Annual, called "The Gopher," is a book published annually by the junior class of the University.

The Agrarian is a book published annually by the senior class of the School of Agriculture.

The Minnesota Engineer of the Society of Engineers is issued quarterly. It is devoted to the publication of articles upon engineering subjects.

The Minnesota Alumni Weekly is issued each Monday during the University year. It is published in the interests of the alumni and the University.

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DEGREES GRANTED IN 1917

TOTAL—926

THE COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

BACHELORS OF ARTS—257

Eugene Ackerson*	James Westphal Clark*
Ethel Muriel Akins	Clara Marie Claussen
Marguerite Albrecht	Herbert Clefton
Florence Charlotte Allen	Mary Ruth Colby
Esther Elizabeth Anderson	Charles William Cole*
Ruth Elfie Anderson	Adelaide Barbara Connors
Walfred Anderson	Richard Rowe Cook
Walter Adams Andrews	Laura Catherine Cooke
Harriet Gardner Anundsen	Margaret Emily Cotton
Reola Cornelia Appel	Susan Crandall
Corinne Ask	Elmer John Croft*
James Ballentine‡	Ethel Marie Crosby
Lena Bank	Hollis Ankeny Cross*‡
Georgia Marie Barker	Albert John Dahlby
Helen Minerva Barker	Walter Aloysius Daly
Robert Benepet‡	Sara Dixon
Genevieve Bernhardt	Amelia Mary Doyle
Esther Marie Blase	Louis Halbert Dunn
Emma Bolt	Howard Oliver Dykman*
Harriet Elizabeth Bomsta	Anna Marguerite Elken
Harlow Horace Bonniwell, Jr.	Julia Louise Erickson
William Raymond Bosworth	Mildred Marguerite Esswein
Dikka Bothne	Thomas Sabin Estrem
George Kenney Bowden	Thorolf Groth Evensen*
James Denis Boyle*	Elizabeth Cornelia Ewert
Florence Estelle Brande	Russel Fallgatter
Martin Oscar Brandon	Constance Falstad
Helen Josephine Brimeyer	Lucy Lair Fargo
Florence Loretta Broker	Elsa Feldhammer
Mary Catharine Brown	Louisa Irene Fenstermacher
Anna Elizabeth Brunsdale	Grace Edith Ferguson
James Oliver Buswell, Jr.*	Isabel Finley
Electa May Byrne	Vincent Fitzgerald*
Kathryn Virginia Byron	William Kerr Foster, LL.M.
Gladys Viola Callister	Oliver Thomas Francis
Margaret Cammack	Alice May Fulton
Sally Elizabeth Carlson	Samuel Chester Gale
Ruth Carroll	Marguerite Elizabeth Gallogly
Cora Agnes Clara Cederstrand	Anna Lillian Ganssle
Mildred Chamberlain	Nellie Almira Garrett
George Conrad Christiansen	Helen Adele Garrigues
Halbert Carl Christofferson	Alice Gengnagel

* Rendered a real service as adviser to freshmen during the year 1916-17.

‡ Now in the Army, Navy, or Ambulance Corps service.

Harold Collins Genter‡	Vernie Edna Larson
Anne Isabel Gibson	Helen Hunt Leavitt
Thelma Adalene Giles	Abraham Levin
Paul Shaffner Gillespie*	Carl Henry Lewis
Dorothy Goodner	Arthur Henry Lindeman
Alonzo Gaskell Grace	Leah Emma London
Marion Gray	Bessie Coralynn Lowry
Merry Gertrude Greenwald	David Lundeen
John Greig	Rachael deCamp Lynch
Herbert Mark Griffin*	Helen Esther McBride
Natalia Grimm	Anna Margaret McDonald
Vivien Groves	Myrtle Madeline McGrath
Mollie Welsh Halloran	Florence Fliinn McHale
Alice Halstengaard	Clara Louise MacKenzie
Eugene Ball Hanson	Irma Evelyn McLachlin
Alice Harker	Howard Leigh McLeod
Maybelle Elizabeth Harker	Gladys McPeck
John Eaton Hartigan*	Lea Madsen
Dagmar Mathilde Hasberg	Mary Agnes Maier
Victor Paul Hauser*	Lawrence Walter Marshall
Herman Eliot Hayward	Mildred Joy Mekeel
Kenneth Conner Healy	Arthur Homer Melin*
Bertha Lion Heilbron	Gordon Ellsworth Merrill
Esther Mae Hense	Helene Mary Michell
Hazel Ruth Herrick	Frank LeRoy Miller
Mary Ruth Hill	Jennie Hachenberg Mills
Edith Edney Hoff	Harriet Esther Minor
Norman Arnold Holen*	Edith Mitchell
Hazel Evelyn Holt	Lula Amanda Moen
Mamie Theresa Horgan	Mary Louise Mosher
Fyvie Rae Horne	Lola Muriel Nay
Ethel Leota Hoskins	Carroll Nelson
Roberta Hostetler	Margaret Alice Newsome
Lulu Frances Howe	Helen Louise Nicol
Charles Ellsworth Huntington, Jr.‡	Louise Florence Nippert
Vernon King Hurd*	Ingerd Nissen
Frances Pryor Irwin	Arthur Henry Nobbs, D.D.S.
Helen Lorinda Jack	Lucile Noble
Anna Jacobs	Joseph Lindsay Nolan*‡
Judith Jacobs	Clara Nordgarden
Gertrude Jacobsen	Mildred O'Connor
Frances Jechlinger	Edith Elizabeth Odell
Albert Johnson*	Eleanor Olds
Beatrice Emma Johnson	Gunther Orsinger*
Carl William Johnson	Frances Haverгал Ostergren
Edith Belle Jones	Philip Oviatt
Alfred Martin Joyce	Marguerite Eunice Owen
Margaret Helena Kelly	Clayton Palmer Packard‡
Olaf Reider Kelly	Oscar Peander Pearson
James Kernan	Oscar Edward Pederson
Carl Henre Klaffke	Esther Christine Peter
Henry Kuhrmeyer*‡	Clara Viola Petersen
Mildred Helen Lammers	Ida Bertha Petrich
Beatrice Larson	Omar Titus Pfeiffer‡
Nellie Amanda Larson	Elizabeth Burdick Pierce

* Rendered a real service as adviser to freshmen during the year 1916-17.

‡ Now in the Army, Navy, or Ambulance Corps service.

Helen Medbery Pierce
 Gertrude Piper
 Arthur Bensell Poole*
 Oliver Stanley Powell*
 Earl DeWitt Prudden*
 Mary Redmond
 Gladys Lorene Reker
 Paul Reyerson*
 Florence Ringoen
 Mary Hartley Rogers
 Einar Adolph Rogstad‡
 Laureame Marguerite Royer
 Ora Alice Savidge
 Julia Marie Seipel
 Dorothy Osgood Seymour
 Alma Josephine Sidnam
 Sina Siltrum
 Franklin Skinner*‡
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 Catharine Lawrie Stevens
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 Vahlborg Sund
 Abel Bernhardt Swan †
 Bothilde Swanson
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Gertrude Clare Sweetman
 Oscar Alvin Swensen
 Phoebe Dorothy Swenson
 Severn Hugh Swenson
 Jack Tarbox
 George Alfred Thiel
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 Harriet Clare Toomey
 James Emerson Troupe
 Arnulf Ueland
 Kathryn Jean Urquhart
 Rosalie Vanasek
 Florence Vack
 Clare Voelker
 Margaret Wallace
 Dorothy Waterman
 Emma Fuller Waterman
 Louise North Watkins
 Stella May Webb
 Ruby Beatrice Weedell
 Claire Weikert
 V'Lora Welch
 Phana Otta Wernicke
 Lillian Isabella Wetherald
 Chester Eugene Whittier
 Eleanor Charlotte Widell
 Claude Alden Williams
 Alonzo Wheelock Wilson*
 Louise Janet Wittman
 Kathryn Olive Wold

Frances Margaret Womack

BACHELORS OF ARTS—*In Music*—5

Gladys Theodosia Albrecht
 Frederick Arthur Cooke

Stella Sara Edelman
 Gladys Moriette

Grace Irene Nelson

BACHELORS OF SCIENCE—53

Ernest Raymond Alexander
 Egbert John Borgeson
 Herbert Henry Charles Buscher
 James Bain Carey
 Woodard Colby
 Rudolf Lennard Crook
 Donald Herbert Daniel
 Georgiana De Jong
 Frederick Henry Carl Dubbe
 Clifford Thoren Ekelund
 Swan Ericson
 Herman Fasbender
 Ruben Columbus Fjellman
 Selmer Gausemel
 Harold Leroy Goss

Manley Hewett Haynes, Ph.M.
 Stanley Hewitt Haynes, B.S. in Eng.
 Frank Gustav Hedenstrom
 Hillard Herman Holm
 Charles Hynes
 Hugh Toland Jones, B.A.
 David Kadesky
 William Aloysius Kennedy
 Thomas James Kinsella
 Herbert Melfred Knudtson
 Herman John Kooiker
 Clarence Myhren Larson
 Charles Louis Lick
 Algot Siegfried Lineer
 Hymen Shalit Lippman

*Rendered a real service as adviser to freshmen during the year 1916-17.

‡ Now in the Army, Navy, or Ambulance Corps service.

Oscar Edwin Locken	Charles Edward Proshok
Thomas Alexander Lowe	Harold Edward Richardson
George Elmer McGeary	Roy Elmer St. Clair
Leslie Cameron McLachlin	Harry John Scholtes
Roger Harribert Mattson	Leo Morton Schulman
Harry Arthur Miller, B.A.	Ray Llewellyn Schutt
Russell Wright Morse*	Abraham Shedlov*
Frank Morrissey	Joseph Michael Sprafka
John Mulder	Julius Richard Sturre
Orville Norman Nelson	Samuel Arthur Weisman
Arthur Gottfried Plankers	Oswald Silvanus Wyatt
	Thomas Otto Young, B.S.

THE COLLEGE OF ENGINEERING AND ARCHITECTURE

CIVIL ENGINEERS—8

Hjalmar Nels Bruce, B.S.	Archibald Christian Knauss, B.S.
Anders Carlson, B.S.	Harold Leon Peterson, B.S.
Charles Edward Doell, B.S.	Clarence McKinley Rader
Ralph Estes Johnston, B.S.†	Ernest Weinke, B.S.

ELECTRICAL ENGINEERS—14

Amos Herbert Abbott, B.S.	Donald Palmer Loye, B.S.
Evar Harry Blomberg, B.S.	Einar Christopher Melby, B.S.
Russell Irvin Butterworth, B.S.	Nathaniel Rihei Mori, B.S.
William Gould Dow, B.S.	Hiram Arthur Tallmadge, B.S.
Philip Edelman, B.S.	Ernest John Teberg, B. S.
Danforth King Gannett, B.S.	Jesse Lysander Thompson, B.S.
Frank Harold Irwin, B.S.	Axel Albin Turnquist, B.S.

MECHANICAL ENGINEERS—4

Ira Leroy Johnson, B.S.	John Reid Ritchie, B.S.
Chester Sherman Moody, B.S.	Charles Wellington Stone, B.S.

BACHELORS OF SCIENCE—*In Engineering*—50

Edward Ignatius Andersen‡	Arthur Carl Gerlach‡
Ward Edwin Becker	Charles Frederick Guggisberg
Charles Boehnlein	Joel Hektner
Ellsworth Robert Boyce	Arthur Gustave Holmstine
Irvin Boyum	Fredrik Waldemar Hvosleff‡
Mark Brataas‡	Arthur Ray Jacobs
Ernest Theodore Bros	Edwin Francis Jones
Homer Leigh Brown	Edwin Christian Juvrud
Arvid Paul Carlson	Harry Knutson
Chauncy Martin Carlson	Victor Fritiof Larson
Addison Henry Douglass	Clarence Lilly
Lemuel James Dunlap	Henning Linden
Solomon Bernard Ebert	Walter David Luplow
Everett Erle Eckenbeck	Ronald Floyd Luxford
Gustaf Albin Ek	Ray McKibben
Irving Nelson Eustis	Axel Ludwig Malmstrom
George Fossen	Einar Christopher Melby

* Rendered a real service as adviser to freshmen during the year 1916-17.

‡ Now in the Army, Navy, or Ambulance Corps service.

John Hays Murray
 Otis Stanley Nelson
 Clarence McKinley Rader
 Herman William Riekman
 Cirilo Luis Romero Perez
 Abraham Edward Rosenbloom
 Willard Warren Scott
 Clarence Quast Swenson

George Warner Swenson
 Duane Leroy Taylor†
 William Albert Thomas
 Philip Dorn Tryon
 Herbert Hughey Wheeler
 Frederick John Williams
 Benjamin Sutton Willis
 Raymond John Wolfangle

BACHELORS OF SCIENCE—*In Architecture*—8

Floyd Wilson Brown
 Donald Henry Buckhout
 Howard Bertram Gilman
 Linton Herrmann Kreinkamp

Walter Ritter Mixer
 George Frederick Poulsen
 George Henry Prudden, Jr.
 George Marsh Riedesel

THE COLLEGE OF AGRICULTURE

BACHELORS OF SCIENCE—*Course in Agriculture*—75

Olaf Sverrer Aamodt
 Floyd Rogers Adams
 Earl Ain Ballinger
 Jefferson Sears Benner
 Dwight Whitney Benton
 James Charles Bowe
 Norris Kenneth Carnes
 Leslie Woods Cheney
 Maynard Henry Coe
 Arthur Ferdinand Dahlberg
 Oke Abraham Dahlberg
 John Peabody Dale
 †Victor Alonzo Dash, Jr.
 Francis Laurence Doherty
 Allen Williams Edson
 Glenn Ferguson
 Casper Talmage Fredrickson
 Walter Frestedt
 Fred Gaumnitz
 Edward Mathias Gillig
 George Rogers Glotfelter
 Alfred Smith Grant
 Rex Eugene Harlan
 Malachi Lawrence Harney
 Maurice Wilton Hayward
 James Courtenay Hening
 Jesse Edmund Hibbard
 Axel Bernard Johnson
 Edwin Nathaniel Johnson
 Perry Johnson
 Robert Walter Kavel
 Benjamin Ulrich Kienholz
 Archie Everett Long
 Lars Arthur Lunde
 Richard Elbert McKenney
 Gibson Gilmore McKneight
 Fayette James Meade

Anton Miesen
 Lawrence Berthold Miller
 Hans Martin Morck
 Elmer LeRoy Mott
 John Frederick Mueller
 Cuthbert Edward Munns
 Carl Edward Nelson
 George Nelson
 Hjalmar Albert Nelson
 August Neubauer
 Keisuke Obara
 Theodore Eugene Odland
 Carl Marnold Ostby
 Charles Arlington Partridge
 Clarence David Patterson
 William August Peters
 Kenneth Kort Poehler
 Everett Prichard
 Morton James Rainey
 Francis Rickel
 William Edward Roberts
 Sherrill Emory Robinson
 Matthew Henry Saari
 Lorenz Herman Schulz
 Harold Roberts Searles
 Mark Milton Serum
 †Donald Steele Smith
 Robert Richard Smith
 Arthur John Souba
 Roscoe Weldon Tanner
 Lucius Edwin Tillotson, Jr.
 Harold Carl Timberlake
 Charles William Vandyke
 John Joseph Wagner
 George Washington Theophile White
 Harold Sibley Willard
 Thomas Russell Williams

Charles Edward Wise

† Now in the Army, Navy, or Ambulance Corps service.

BACHELORS OF SCIENCE—*Course in Home Economics*—55

Mrs. Walter Adams Andrews	Ethel Cecelia Peterson
Rebekah Cassandra Ball	Helen Alvina Peterson
Ellen McRae Campbell	Laura Marie Piemeisel
Charlotte Eastman Chatfield	Laura Pinkerton
Louise Wood Clayton	Laura Randall
Marie Cooper	Gertrude Catherine Reinhardt
Ethel Belle Crocker	Hazel Rockwood
Florence Eleanor Dahl	Florence Marjorie Roth
Irene Alice Dahl	Lillian Almira Ryberg
Naime Cecelia Dahlstrom	Alma Olivia Schmidt
Ruth Almyra Josephine Dale	Hazel Schoelkopf
Margaret Salisbury Drew	Ethel Mavis Scott
Gertrude Elizabeth Falkenhagen	Eunice Fillmore Smith
Florence Alberta Fallgatter	Dorothea Sprjestersbach
Martha Hansine Galchutt	Charlotte Stacy
Albertha Cecelia Gustafson	Marion Phillips Stoddart
Louise Hatch	Susan Sophia Swella
Esther Vivian Haugen	Irene Eloise Tews
Priscilla Elizabeth Hough	Ada Elizabeth Thornton
Esther Johnson	Onah Louise Thurston
Gertrude Marie Kay	Ruth Trump
Martha Lucy Kimball	Alice Tryon
Bertha Louise Klatt	Elizabeth Gale Tryon
Cora Louise Maland	Muriel Washburn
Jennie Maude Miller	Mildred Weigley
Marcella Emma Monasch	Elizabeth Whitwell
Julia Marion Oppegard	Mary Louise Williams
	Esther Alice Wood

THE COLLEGE OF FORESTRY

BACHELORS OF SCIENCE—3

John Duncan Burnes	Carl Frederick Forsberg
	Lauren Steele Tuttle

THE LAW SCHOOL

BACHELORS OF LAWS—34

Harry Judson Acton	Alfred LeRoy Gausewitz, B.A.
Raymond Clarence Alley	Otis Hickman Godfrey, B.A.
Charles Gustaf Anderson	Norman John Hauge, B.A.
†Albert Preston Baston	William Carl Johnson
Edwin Hamilton Chapman	David London
Edward Louis Cohen	Harold Leonard Lundquist
Joseph Cohen	Frank Ferdinand Michael
Harold Clement Costello	Arthur Behrenfeld Miller
Andrew Harold Dahlberg	William Campbell Moorhead
Charles Milby Dale, B.A.	Thomas O'Hearn, B.A.
Harry William Davis	Charles Leroy Pegelow
Edwin Gotfred Erlandson	Jay Bernhard Peterson, B.A.
Paul William Frenzel	Oscar Peterson, B.A.

† Now in the Army, Navy, or Ambulance Corps service.

Leland McLeod Pryor, B.A.
 ††Walter Davis Shelly
 Francis Herbert Stadvold
 Joseph Dennis Sullivan, B.A.

John Lewis Townley, Jr.
 Leonard Alfred Wilson
 Donald Arthur Young
 Lyle Edwin Zumwinkle

THE MEDICAL SCHOOL

DOCTORS OF MEDICINE—41

‡Allen Tindolph Agnew
 †Frank Joseph Anderson, B.S.
 Allen Richard Anderson, B.S.
 †Einar Cornelius Andreassen, B.S.
 †Robert Laing Christie, B.S.
 †George Maurice Constans, B.A., B.S.
 Oscar John Reuben Freed, B.S.
 †Everett Kinne Geer, B.S.
 Harold Leroy Goss, B.S.
 Otto Andrew Groebner, B.S.
 †William Henry Wallace Holley, B.S.
 Charles King Holmes, Ph.B.
 Rolf Hovde, B.S.
 †Charles Joseph Hutchinson, B.A.
 †William Roscoe Jepson, B.S.
 John Asdal Kittelson, B.S., M.A.
 William Winfred Klima, B.S.
 Herbert Melfred Knudtson, B.S.
 Albert Marinus Larson, B.A.
 †Arthur Larson, B.S.

John Aloysius Lepak, B.S.
 George Vincent Lynch
 George LeRoy Merkert, B.S.
 Herbert August Molander, B.S.
 Cecile Rose Moriarty, B.S.
 Gustaf Theodore Nordin, B.S.
 Clara Adams Nutting, B.S.
 Fritz Richard Pearson, B.S.
 Charles Edward Proshok, B.S.
 Jake Arthur Riegel, B.S.
 †Boles Albert Rosenthal, B.A.
 Howard Lee Sargeant, B.S.
 Ray Schutt, B.S.
 *Morse Joseph Shapiro, B.S.
 *Jerome Francis Smersh, B.S.
 Millard Ferdinand Smith, B.S.
 †Samuel Bernhardt Solhaug, B.A., B.S.
 John William Stuhr, B.S.
 †Adolph Gustav Sund, B.S.
 Edwin Oscar Swanson

‡Chester Orlo Tanner, B.S.

CERTIFICATES—24

Allen Richard Anderson, B.S.
 Oscar John Reuben Freed, B.S.
 Harold Leroy Goss
 Otto Andrew Groebner, B.S.
 Charles King Holmes, Ph.B.
 Rolf Hovde, B.S.
 John Asdal Kittelson, B.S.
 William Winfred Klima, B.S.
 Albert Marinus Larson, B.A.
 John Aloysius Lepak, B.S.
 George Le Roy Merkert, B.S.
 Herbert August Molander, B.S.

Cecile Rose Moriarty, B.S.
 Gustaf Theodore Nordin, B.S.
 Clara Adams Nutting, B.S.
 Fritz Richard Pearson, B.S.
 Charles Edward Proshok
 Jake Arthur Riegel, B.A., B.S.
 Howard Lee Sargeant, B.S.
 Ray Llewellyn Schutt
 Morse Joseph Shapiro, B.S.
 Millard Ferdinand Smith, B.S.
 Edwin Oscar Swanson
 Florian Vaughn, B.A.

GRADUATES IN NURSING—12

Margaret Dunn
 Eva Hasle
 Fuku Hayashi
 Celia Evelyn Joach
 Esther Olava Jorstad
 Mabel Amanda Knutson

Katherine Adella Price
 Mary Grace Redpath
 Ella Smitka
 Agnes Estelle Vollbrecht
 Katharine Ruth Vos
 Anne Margaret Watland

† Degree conferred in advance in view of enlistment.

‡ Now in the Army, Navy, or Ambulance Corps service.

THE COLLEGE OF DENTISTRY

DOCTORS OF DENTAL SURGERY—95

Walter James Abell	Clarence Lillehei
Leroy Clifford Andersen	Clifford Orlando Lindelien
Louis Bergersen	Robert William Linquist
Ingvald Gerhard Bergh	Gustav Lorhammer
Jacob Victor Birnberg	Morell Dion McKenzie
August Theodore Bodien	Richard Meintsma
Abe Borovsky	Melvin Alfred Miller
Frank Theodore Brink	Robert Neiman
Erwin Frederic Bruss	Clarence Arthur Nelson, Ph.B.
John Edwin Buehler	Victor Nylander
David Reginald Chisholm	Alfred Olson
Michael Jeda Cohler	Charles Herbert Paske, B.A.
Daniel Nelson Colburn	Chester Peterson
John Emmitt Connell	Walter Frederick Peterson
George Wilfird Cook	Roy Harold Pfeiffer
Donald Grant Dampier	Linus Lars Pierson
Beatrice Eva Danz	Leon Maurice Radke
Hymen Abraham Diamond	William Lynn Radke, B.A.
Laurence Malcolm Durfee	Henry Noth Reinking
Stanley Monoque Farrell	William Danial Reynolds, Jr.
Graham Bertrand Fee	George Henri Ribbel
Howard Feeney	George Melvin Ringstrom
Edgar Arthur Fossum	John Francis Robinson
Leonard Cornelius Gabrielson	John Gerhard Saevig
Herbert Elroy Gardner	Adolph Fred Schuft
Donald Geddes	Charles Albert Sell
Magnus Gerde	Harold Otto Shackell
Cecil William Girvin	Raymond Francis Shanahan
Arthur Peder Hansen	August Edward Simonson
Elmer Leonard Hanson, B.A.	Arthur Edward Skon
Frederick William Harper	Marion Ruth Stevens, B.A.
Rolf Peter John Hartig	Clayton Alfred Swanson
Joseph Isadore Hartwig	Ingeborg Talle
Walter Kirkland Haven	Marcus Hauman Thorson, B.A.
Clifford James Healy	Charles Myron Tucker
Lambert Manvil Hendricks	Clarence Arthur Tucker
Max Rudolph Herrmann	Arthur Clarence Wedin
Harold Chester Hillmann	Christian Joseph Wjibeler
Herbert Alexander Hoglund	Harry Leonard Weisman
Houghton Holliday, B.A.	Lehman Wendell, B.S.
Walter Gustave Iverson	Earl Clay West
Roy Magnus Jernall	Vernon Depew Whitaker
Roy Johnson	Eleonora Schnell White, B.A.
Dagny Ingeborg Just	Floyd Maurice White
Edward James Kubesh	Oliver Palmer Wilson
Emmet Gordon Leighton	Amadeus Frank Wolter
Ray Bunnell LeMay	Walter William Zettler

Daniel Eleazar Ziskin

THE SCHOOL OF MINES

ENGINEERS OF MINES—10

Edwin Hilmer Anderson	William Harold Elson
Charles Ernest Buresch	Omer Francis Ernster
Thomas Edward Cassilly	Edward James Fearing
Richard Clarence Dennis	Yih Kun Kwong
†James Lawrence Dopp	John Joseph Woodruff

ENGINEERS OF MINES—*In Geology*—5

Lewis Samuel Coryell	Arville Irving Levorsen
William Earle Hubbard	Edwin Arthur Sweetman
	††Carleton Wallace

METALLURGICAL ENGINEER—1

Paul Arthur Peterson

THE COLLEGE OF PHARMACY

GRADUATES IN PHARMACY—32

Leonard Arthur Berg	Sydney Martin Oleson
†Karl Eugene Bleser	Chester Jerome Olson
Archie Harold Carlson	Silas Clifford Olson
Jerome Edward Cycmanick	Arthur Lawrence Eugene Peterson
George Raymond Distad	Verner Carl John Peterson
Howard Edward Eichinger	Herbert Adolph Strate
Benoite Eugene Fournier	Abraham Strimling
Robert Wells Frank	William Strimling
David Philip Gottlieb	Paul Henry Stucky
Selmer Haugen	Evans Sundry
Ida Iverson	James Clifford Swenson
Walter Johnson	†Phineas Romayne Taylor
Charles William Mike	Raymond Vaaler
Anna Elizabeth Mulrean	†Peter Vadheim
Claude Albert Novack	Harry Williams
Edmund Oehlke	Jee Foun Wong

THE SCHOOL OF CHEMISTRY

CHEMICAL ENGINEER—1

Alexander Dewey Bell, B.S.

BACHELORS OF SCIENCE—8

Foster Alonzo Burningham	Oscar Wilhelm v. d. Luft
Aaron Domovsky	††Frank Dufresne Strong
William Higburg	Frederick MacLeod Washburn
Ward Edward Kuentzel	Gideon Widell

† Degree conferred in advance in view of enlistment.

† Now in the Army, Navy, or Ambulance Corps service.

BACHELORS OF SCIENCE—*In Chemistry*—9

Benjamin Irving Corson	Benjamin Markus
Samuel Wallace Durham	Horace Sinclair Marr
Lawrence Rudolf Eckman, B.A.	Olive Wadleigh Marshall
Walter Egge	Jay Clyde Owens
	Olaf Selmer Rask, B.A.

THE COLLEGE OF EDUCATION

BACHELORS OF ARTS—*In Education*—38

Sven Anderson Aas	Almeda Anna Hodgdon
Marjorie Bacher	Frances Elizabeth Kelley
Catherine Barry	Ance Kilgore
Rose Claire Becker	Eleanor Josephine Liedl
Louis Victor Bergtold	Morris Kalmon Lipschutz
‡Arthur Bernhard Bjornstad	Myrtle Esther McBroon
Nellie Grace Bryan	Grace Badger McKeelham
Jane Burkleo	Gladys Marie Nelson
James Francis Burns	Lillian Eloise Nelson
Hanphyn Theodore Carlson	Freda Evelyn Orth
Floyd Alvin Chandler	Louis John Pluto
‡George Buchanan Clarke	Emmett Arthur Raymond
Louise Coe	Helen Dorothy Sims
Julia Elizabeth Cole	Proctor Knott Smiley
John Joseph Corcoran	Harry Johnson Steel
Robert Philip Ewald	Alberto Alvin Wallace
Beatryce Anna Finn	Zoe Marie Ward
*Arthur Edward Grawert	Frances Whaley
Cora Mildred Groth	Kathrine Graham Young

THE GRADUATE SCHOOL

MASTERS OF ARTS—45

Matilda Victorine Baillif	Helen Louise Blake
B.A. '09, Minnesota	B.A. '13, Fargo
Major, Education	Major, English
Minor, Psychology	Minor, German
Thesis, An Educational Diagnosis of Minneapolis Seventh Grade Children by Means of Standard Educational Tests	Thesis, A Study of the Form and Method of Satire in the Poetry of the Age of Dryden
Orpha Lucetta Bissell	Aldena Augusta Carlson
B.A. '09, Wisconsin	B.A. in Educ. '15, Minnesota
Major, History	Major, English
Minor, Rhetoric	Minor, Rhetoric
Thesis, The Activities of the American Fur Company	Thesis, The Influence of the Writ- ings of Emanuel Swedenborg up- on the Personality, Philosophy, and Works of William Blake

* Rendered a real service as adviser to freshmen during the year 1916-17.

‡ Now in the Army, Navy, or Ambulance Corps service.

- Clyde Ray Chambers**
 B.A. '16, Missouri
 Major, Sociology
 Minor, Psychology
 Thesis, The Public Feeding of Elementary School Children
- Ralph Colby**
 B.A. '16, Minnesota
 Major, English
 Minor, Philosophy
 Thesis, The "Lullay" Poems; a Study of a Group of Middle English Lyrics
- Florence Rising Curtis**
 B.A. '11, Illinois
 B.L.S. '11, New York State Library School
 Major, Sociology and Anthropology
 Minor, Economics
 Thesis, The Libraries of the American State and National Institution for Defectives, Dependents, and Delinquents
- Lester Wells Dooley**
 B.A. '10, Upper Iowa
 Major, Education
 Minor, Educational Psychology
 Thesis, The Improvement in Language Abilities of Elementary School Children
- Louise Therese Dossdall**
 B.A. '16, Minnesota
 Major, Botany
 Minor, Plant Pathology
 Thesis, Water Requirements and Adaptation of Equisetum
- Harry Norton Fitch**
 B.A. '15, North Dakota
 Major, Education
 Minor, Psychology
 Thesis, An Educational Diagnosis of Minneapolis Sixth Grade Children by Means of Standard Educational Tests
- Charles Cullom Gault**
 B.A. '14, Randolph-Macon
 Major, Physiology
 Minor, Anatomy
 Thesis, The Influence of the Vagus Nerves on Respiration
- Orville Almon George**
 B.A. '16, Minnesota
 Major, Mathematics
 Minor, Physics
 Thesis, On the Radial Curve in General and Its Application to the Conic Sections
- Ralph Haefner**
 B.A. '16, Minnesota
 Major, Comparative Philology
 Minor, German
 Thesis, The Question of Spelling Reform
- Harry Door Harper**
 B.A. '15, Minnesota
 Major, Economics
 Minor, Anthropology
 Thesis, An Accounting System for the Retail General Store
- Clara Ellida Hegg**
 B.L. '98, Wisconsin
 Major, English
 Minor, Norwegian
 Thesis, The Relation of *The Taming of the Shrew* and *The Taming of a Shrew*
- Dorothy Heinemann**
 B.A. '16, Minnesota
 Major, History
 Minor, Political Science
 Thesis, Germany's Policy in the Far East, Especially since 1890
- Lillian Helms**
 B.A. '09, Carleton
 Major, English
 Minor, Sociology
 Thesis, Conscious and Unconscious Technique in the Fiction of Sir Walter Scott
- Pedro Henriquez-Urena**
 B.L. '01, Santo Domingo
 LL.B. '14, National University of Mexico
 Major, Romance Languages
 Minor, English
 Thesis, The Irregular Stanza in the Spanish Poetry of the Sixteenth and Seventeenth Centuries
- Frances Hicks**
 B.A. '07, Minnesota
 Major, Latin
 Minor, History
 Thesis, The Roman Senate under the Early Empire

- Karl John Holzinger
B.A. '15, Minnesota
Major, Mathematics
Minor, Physics
Thesis, A Discussion of the Intrinsic Equations for Plane Curves, Curves in Space, and Surfaces
- Theodore Martin Janssen
B.A. '05, Wartburg
Major, German
Minor, Comparative Philology
Thesis, Das Dramatische in H. von Kleists Novellen
- Jens Peter Jensen
B.A. '13, Dakota Wesleyan
Major, Economics
Minor, Sociology
Thesis, Co-operative Marketing of Livestock in the United States with Special Reference to the Distribution of Returns and Costs
- Enrique Jimenez
B.L. '09, LL.B. '14, National University of Mexico
Major, Romance Languages
Minor, English
Thesis, The Sonnet in the Comedies of Lope de Vega
- Herbert Glenn Kenagy
B.S. in Educ., B.A. '16, Missouri
Major, Economics
Minor, Sociology
Thesis, The Public Employment Office—a Type Study with Special Reference to Minneapolis Conditions
- John Kierzek
B.A. '13, Carleton
Major, English
Minor, Rhetoric
Thesis, The Culmination and Decline of the Corpus Christi Plays in England
- John Asdal Kittelson
B.S. '13, Beloit
Major, Anatomy
Minor, Pathology
Thesis, The Postnatal Growth of the Kidney in the Albino Rat
- William Frederick Kraushaar
B.A. '05, Wartburg
Major, German
Minor, Comparative Philology
Thesis, Die Gestaltendarstellung in den Novellen Gottfried Kellers
- Clara Belle Leet
B.A. '05, Allegheny
Major, History
Minor, Education
Thesis, An Historical Study of the Palatine Hill and Its Relation to Ancient Rome
- Gorm Loftfield
B.A. '15, Minnesota
Major, Botany
Minor, Plant Pathology
Thesis, The Effect of Physical Factors upon *Petalostemon purpureus* and *Petalostemon candidus*
- Frances Erma Lowell
B.A. '15, Minnesota
Major, Psychology
Minor, Education
Thesis, Children's Association Frequency Tables
- John Charnley McKinley
B.S. '15, Minnesota
Major, Anatomy
Minor, Pathology
Thesis, Observations on the Muscular System of the Infant
- Grace Jane Lovell May
B.A. '04, Minnesota
Major, English
Minor, Rhetoric
Thesis, Changes Made by Henry James in Some of the Earlier Stories as Revised for Later Publication in the New York Edition of His Works
- Guy Carson Miller
B.A. '14, Leander Clark
Major, Education
Minor, Psychology
Thesis, Finance in City Schools
- Wanda Norina Orton
B.A. '15, Minnesota
Major, Education
Minor, English
Thesis, A History of Latin and English Entrance Requirements at Harvard University, 1846-1915
- Max Peter Rapacz
B.A. '16, Minniesota
Major, Political Science
Minor, History
Thesis, Public Utility Franchises in Minneapolis

- Eleanor Frances Raymond
Ph.B. '14, Wisconsin
Major, History
Minor, Education
Thesis, The Early Political Career
of Henry H. Sibley, 1846-1853
- Grace Evaleen Richards
B.A. in Educ. '10, Minnesota
Major, English
Minor, Rhetoric
Thesis, Shakespeare and the Con-
ventional Use of Prose in Eliza-
bethan Drama
- Morris Roberts
B.A. '16, Minnesota
Major, English
Minor, Romance Languages
Thesis, A Series of Latin Hymns,
De Tempore, with Middle English
Paraphrases
- Oswald Rognley
B.A. '15, St. Olaf
Major, Physics
Minor, Mathematics
Thesis, The Effect on the Intensity
of the X-Ray Spectrum Lines of
Magnetizing the Reflecting Crystal
- Eleanor Norcross Shenchon
B.A. '14, Minnesota
Major, Romance Languages
Minor, Education
Thesis, Theophile Gautier and the
"Roman Comique"
- Sister Eugenia Maginnis
B.A. '15, St. Catherine
Major, Latin
Minor, English
Thesis, The Four Dramas of Ros-
witha, a Nun of the Tenth Cen-
tury
- Ralph Sylvester Underwood
B.A. '16, Minnesota
Major, Astronomy
Minor, Physics
Thesis, An Investigation of the
Proper Motion of Faint Stars near
Sirius
- Gustaf Leopold van Roosbroeck
B.A. '09, Brussels
Major, Romance Languages
Minor, German
Thesis, The *Melite* of Pierre Cor-
neille
- Ruth Wilson
B.A. '16, Minnesota
Major, English
Minor, Rhetoric
Thesis, Miracles of Our Lady in
Middle English Verse
- Marion Woodward
B.A. '15, Wells
Major, Romance Languages
Minor, History
Thesis, A Comparison of the
Phedre of Racine and Pradon

MASTERS OF SCIENCE—24

- Henry Ray Aldrich
B.S. '14, Massachusetts Institute of
Technology
Major, Economic Geology
Minor, Petrology
Thesis, The Enrichment of Nickel
Ores
- Vera Barrows
B.A. '16, Minnesota
Major, Chemistry
Minor, Botany
Thesis, An Indirect Method for the
Determination of Fat and Phos-
pholipines in Hops, and a Com-
parison of the Amount of These
Constituents in Oregon with That
in Austrian Hops
- Clarence Carleton Bausman
B.A. '16, Minnesota
Major, Botany
Minor, Plant Pathology
Thesis, Observations on the Mor-
phology of Some Australian
Algae
- Edgar Bernard Brossard
B.S. '11, Utah Agricultural College
Major, Farm Management
Minor, Agricultural Economics
Thesis, Important Factors in the
Operation of Irrigated Farms

- Arthur Rosson Cade
 B.S. '15, Worcester Polytechnic Institute
 Major, Chemistry
 Minor, Pharmacology
 Thesis, Contributions to Our Knowledge of Carminic Acid
- Egerton Lafayette Crispin
 Ph.B. '02, Illinois
 M.D. '06, Johns Hopkins
 Major, Medicine
 Minor, Roentgenology
 Thesis, Clinical Studies in Abdominal Disorders
- Everett Haisley Doherty
 B.S. '11, Earlham
 Major, Agricultural Chemistry
 Minor, Plant Physiology
 Thesis, A Physico-chemical Study of the Gluten of Strong and Weak Flours
- Myron Amos Dresser
 B.A. '16, Minnesota
 Major, Petrology
 Minor, Geology
 Thesis, The Paragenesis of Certain Nickel Ores of Sudbury, Ontario
- Della Gay Drips
 B.A. '07, Wisconsin
 Major, Pathology
 Minor, Physiology
 Thesis, Studies on the Ovary of the Spermophile; with Special Reference to the Corpus Luteum
- Yue Chor Fong
 B.S. '12, Nanyang
 Major, Electrical Engineering
 Minor, Mathematics and Mechanics
 Thesis, A Study of the Operating Characteristics of the Audion
- Ralph John Garber
 B.S. '12, Illinois
 Major, Farm Crops
 Minor, Soils
 Thesis, A Study of the Relation between Endosperm of the Seed and Resultant Characters as Found in a Variety of Wheat
- Anant Madhav Gurjar
 B.S. '11, Utah Agricultural College
 Major, Agricultural Chemistry
 Minor, Soils
 Thesis, Studies in the Respiration of Stored Wheat
- Floyd Edward Joyce
 B.A. '12, Iowa
 Major, Organic Chemistry
 Minor, Physiological Chemistry
 Thesis, Thermal Decomposition of Silver Salts of Phenol Containing More than One Kind of Halogen
- Walter McClellan Lauer
 B.A. '13, Ursinus College
 Major, Chemistry
 Minor, Metallography
 Thesis, An Investigation of Wood Oil
- Francis Bartholomew McMahon
 B.S. '11, Wisconsin
 M.D. '13, Pennsylvania
 Major, Surgery
 Minor, Pathology
 Thesis, Primary Pulmonary Carcinoma and Its Roentgen Diagnosis
- Francis Winfred Peck
 B.S. in Agr. '12, Minnesota
 Major, Farm Management
 Minor, Agricultural Economics
 Thesis, Factors of Cost in Meat Production
- William Earl Petersen
 B.S. in Agr. '16, Minnesota
 Major, Dairy and Animal Husbandry
 Minor, Veterinary Science
 Thesis, Factors Influencing Production as Deduced from the Register of Merit
- Dorothy Foster Pettibone
 B.S. '15, Wisconsin
 Major, Pathology
 Minor, Bacteriology
 Thesis, Factors in Coagulation in Certain Pathologic Conditions
- Hugo Ringstrom
 B.A. '14, B.S. in Chem. '15, Minnesota
 Major, Chemistry
 Minor, Agricultural Chemistry
 Thesis, A Proximate and Complete Mineral Analysis of Different Market Brands of Desiccated Milk

- Ernest George Roth
B.S. in Agr. '16, Minnesota
Major, Soils
Minor, Chemistry
Thesis, The Character of the Peat
Soils of Anoka County
- Shinjiro Sato
B.S. '15, State College of Wash-
ington
Major, Agricultural Chemistry
Minor, Soils
Thesis, The Recovery of Indigo
from Polygonum Tinctora and
Methods of Purification of Crude
Indigo
- Julius Boraas
B.L. '95, M.L. '98, Minnesota
Major, Education
Minor, Psychology
Thesis, Formal English Grammar
and the Practical Mastery of
English
- Thomas Monteith Broderick
B.A. '13, Minnesota
M.S. '14, Wisconsin
Major, Geology
Minor, Analytical Chemistry
Thesis, The Relation of the Iron
Ores in Northeastern Minnesota
to the Duluth Gabbro
- Elmer Anson Daniels
B.S. '12, M.S. '13, Minnesota
Major, Organic Chemistry
Minor, Bacteriology
Thesis, The Action of Butyl Chloral
on Benzene and Its Homologues
in the Presence of Aluminum
Chloride
- Donald Folsom
B.A., '12, Nebraska
M.A. '14, Minnesota
Major, Botany
Minor, Agricultural Chemistry
Thesis, The Experimental Modifi-
cation of Ranunculus under Con-
trol
- Lillian Marie Seyfried
B.A. '15, Minnesota
Major, Organic Chemistry
Minor, Physiological Chemistry
Thesis, The Action of Iodine on
Sodium Trichlorphenolate
- William Moses Shaw
B.S. '16, Minnesota
Major, Soils
Minor, Chemistry
Thesis, Indicators of the Lime Re-
quirement of Soils
- Anna Wentz
B.A. '11, Minnesota
Major, Botany
Minor, Economic Entomology
Thesis, A Morphological Study of
Some Little-known Forms of Pa-
cific Algae

DOCTORS OF PHILOSOPHY--11

- Paul Darwin Foote
B.A. '09, M.A. '11, Western Reserve
Major, Physics
Minor, Mathematics
Thesis, Some Characteristics of the
Marvin Pyrheliometer

- Frances Louise Long
B.A. '06, B.S. '06, Nebraska
M.A. '13, Minnesota
Major, Botany
Minor, Plant Pathology
Thesis, The Quantitative Determi-
nation of Photosynthate in Re-
lation to Light in Various Species

- Marie Caroline Lyle
B.A. '11, M.A. '12, Minnesota
Major, English
Minor, Comparative Philology
Thesis, The Original Identity of the
York and Towneley Cycles

- Edgar Kirke Soper
B.A. '08, M.A. '14, Leland Stanford
Major, Economic Geology
Minor, Geology
Thesis, The Origin, Occurrence, and
Uses of Minnesota Peat

- Harvey Stallard
Ph.B. '09, Ottawa
Major, Botany
Minor, Chemistry
Thesis, Secondary Successions in
the Climax Formations in North-
ern Minnesota

Chester Arthur Stewart

B.A. '14, Missouri

M.A. '15, Minnesota

Major, Anatomy

Minor, Pathology

Thesis, Studies on the Effects of
Inanition upon Growth in the
Albino Rat

William Dorney Valleau

B.S. '13, Minnesota

Major, Horticulture

Minor, Plant Pathology

Thesis, A Study of Sterility in the
Strawberry

DOCTOR OF PHILOSOPHY—*In Surgery*—1

Golder Lewis McWhorter

B.S. '11, Chicago

M.D. '13, Rush Medical

Major, Surgery

Minor, Anatomy

Thesis, Some Clinical and Experi-
mental Observations on Gastric
Acidity

DOCTOR OF SCIENCE—1

Ralph Edwin Morris

M.D. '02, Colorado

Major, Experimental Medicine

Minor, Experimental Pharmacology

Thesis, The Graphic Recording of
Reflexes, Clonus, and Tremors

DOCTOR OF SCIENCE—*In Neurology*—1

Henry William Woltmann

B.S. '11, M.D. '13, Minnesota

Major, Neurology

Minor, Pathology

Thesis, The Brain Changes Asso-
ciated with Pernicious Anemia

DOCTOR OF SCIENCE—*In Pediatrics*—1

Rood Taylor

M.D. '10, Michigan

Major, Pediatrics

Minor, Chemistry

Thesis, Hunger in Infants

HONORS AND PRIZES

HONORS

THE WESTERN INTERCOLLEGIATE CONFERENCE MEDAL

Joseph Michael Sprafka

THE ALUMNI WEEKLY GOLD MEDAL

Vincent Fitzgerald

THE AMERICAN INSTITUTE OF ARCHITECTS MEDAL

Donald Henry Buckhout

HONOR GRADUATES OF THE MILITARY DEPARTMENT TO BE REPORTED TO THE ADJUTANT GENERAL OF THE UNITED STATES ARMY AND THE ADJUTANT GENERAL OF THE MINNESOTA NATIONAL GUARD

Cadet Major

Gunther Orsinger

Cadet Captains

Addison Henry Douglass

Henning Linden

Walter David Luplow

Lawrence Walter Marshall

Elmer LeRoy Mott

Donald Timerman

Mark Milton Serum

Philip Dorn Tryon

Cadet First Lieutenant

Elmer John Croft

HONORS IN PUBLIC SPEAKING

Vincent Fitzgerald

Omar Titus Pfeiffer

THE EINAR HOIDALE PUBLIC SPEAKING CERTIFICATES

George Kenney Bowden

Vincent Fitzgerald

Paul Jaroscak, A. '18

Frances Elizabeth Kelley

Paul Kerfoot, L. '19

David Lundeen, L. '18

Leslie Morse, L. '18

DEGREE WITH DISTINCTION

In History

Edith Belle Jones

DEGREES WITH HONORS

In Animal Biology

George Alfred Thiel

In Economics

Oliver Stanley Powell

In History

Gertrude Jacobsen

Faith Thompson

In Political Science

Eugene Ackerson

In Romance Languages

Herbert Clefton

MINNEAPOLIS COLLEGE WOMAN'S CLUB SCHOLARSHIP

Esther Swanson, A. '18

ST. PAUL COLLEGE WOMAN'S CLUB SCHOLARSHIP'S

Cora Emily Houghton, A. '18

Katherine Evaline Fobes, A. '18

MINNEAPOLIS WOMEN'S SCHOLARSHIPS

Winifred Bailey, A. '19

Gudrun Gabrielsen, A. '19

Annette Reynaud, A. '20

Cora Northey, A. '18

Jemima Olson, A. '18

THE WOMEN'S SELF-GOVERNMENT ASSOCIATION SCHOLARSHIP

Gertrude Huntley, A. '19

THE MOSES MARSTON SCHOLARSHIP

Muriel Fairbanks, A. '18

THE ALBERT HOWARD SCHOLARSHIP

Morgan Evan Roberts, B.S. '17, Wisconsin

THE CLASS OF 1890 SCHOLARSHIP

Dorothy Heinemann, B.A. '16, Minnesota

THE SHEVLIN SCHOLARSHIP

Julius Nolte, B.A. '17, Yale

THE SHEVLIN FELLOWSHIPS

Science, Literature, and the Arts

Gwen Ann Jones, B.A. '09, Bryn Mawr

Agriculture

John Joseph Wagner

Medicine

Martin Daniel Ott, B.A. '13, Missouri

Chemistry

Seraphim Joseph Reichert, B.A. '15, Miami

THE ANNUAL REGISTER

PRIZES

THE BRIGGS PRIZE IN FOUNDRY PRACTICE

First Place

Arthur Perry Peterson, E. '19

Second Place

Richard Hall Olson, E. '19

THE ROLLIN E. CUTTS PRIZE IN SURGERY

William Roscoe Jepson

THE FRANK H. PEAVEY PRIZE

First Place

Leon Nacht, A. '19

Second Place

Saul Averil Yaeger, A. '19

Third Place

Cecil William Johnson, A. '19

THE LUDDEN TRUST PRIZE

First Place

Leon Nacht, A. '19

Second Place

Daniel Holland Bessessen, A. '19

Third Place

Margaret Miriam Labovitz, A. '20

THE JOHN S. PILLSBURY PRIZE

First Place

Frances Elizabeth Kelley

Second Place

Paul Abrahamson, A. '18

Third Place

Vincent Fitzgerald

THE JOURNAL PRIZE FOR HISTORICAL ESSAYS

First Place

Gertrude Jacobsen

Second Place

Edith Belle Jones

HONORS AND PRIZES

129

THE '89 MEMORIAL PRIZE IN HISTORY

Faith Thompson

Thesis, Women's Work and Women's Rights in the Twelfth and Thirteenth
Centuries

THE AMERICAN LAW BOOK COMPANY PRIZE

Charles Milby Dale, B.A.

THE EDWIN AMES JAGGARD PRIZE

Harold Clement Costello

THE WILLIAM JENNINGS BRYAN PRIZE

Eugene Ackerson

STUDENTS, 1917-18

THE GRADUATE SCHOOL

ENROLLMENT—327

Resident Students—246

Aamodt, Olaf S., St. Paul B.S., Minnesota, 1917	Plant Pathology
Adair, Fred L., Minneapolis B.S., Minnesota, 1898; M.D., Rush Medical, 1901	Anatomy
Alexander, Jean H., McComb, Ohio B.S., Ohio State, 1915; M.A., Ohio State, 1916	Education
Allen, George D., Minneapolis B.A., Oberlin, 1907; M.S., Minnesota, 1910	Animal Biology
Alley, Albert G., Minneapolis M.D., Minnesota, 1905	Pediatrics
Alterton, Margaret, Minneapolis B.S., Teachers' College, Columbia, 1906	English
Anderson, Charles A., Hastings B.S., Minnesota, 1916	Agricultural Economics
Anderson, George N., Minneapolis B.A., Bethany, 1909; D.B., Augustana Seminary, 1912	Philosophy
Ankeney, John V., Germantown, Ohio B.S. in Educ., Miami, 1915	Agricultural Education
Arny, Albert C., St. Paul B.S. in Agr., Minnesota, 1909	Farm Crops
Arthur, Mary G., St. Paul B.A., Hamline, 1917	Psychology
Ashby, Robert C., St. Paul B.S.A., Nebraska, 1908; M.S. Minnesota, 1916	Dairy and Animal Husbandry
Asher, Henry T., Bellaire, Ohio B.A., Indiana, 1914	English
Austin, Harriet, Benson B.A., Minnesota, 1906; M.A. Columbia, 1913	History
Bacon, Myrtle C., Minneapolis B.A., Minnesota, 1918 (mid-year)	Rhetoric
Bakken, Herman E., Wautoma, Wis. B.A., St. Olaf, 1915	Industrial Chemistry
Barker, Percy B., Minneapolis B.A., Nebraska, 1908	Agricultural Education
Barry, Lee W., Minneapolis M.D., Michigan, 1911	Obstetrics and Gynecology
Bartlett, Emily M., Orono, Me. B.A., Maine, 1912; M.A., Maine, 1917	Anatomy
Barton, J. Wesley, Minneapolis B.S., in Educ., Utah, 1915	Psychology

SUMMARY OF ATTENDANCE—1917-18

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

	Men	Women	Total
Senior Class	63	206	269
Junior Class	128	295	423
Sophomore Class	246	298	544
Freshman Class	429	392	821
Mid-Year Freshman Class.....	41	44	85
Unclassed	36	78	114
Arts and Music Course—			
Senior Class .....	.....	3	3
Junior Class .....	.....	20	20
Sophomore Class .....	.....	13	13
Freshman Class	1	30	31
Mid-Year Freshman Class.....	.....	2	2
	944	1381	2325

COLLEGE OF ENGINEERING AND ARCHITECTURE

	Men	Women	Total
Post-Senior Class—			
Civil	1	.....	1
Electrical	3	.....	3
Mechanical	4	.....	4
	8	.....	8
Senior Class—			
Civil	9	.....	9
Electrical	11	.....	11
Mechanical	11	.....	11
Architecture	4	.....	4
General	3	.....	3
	38	.....	38
Junior Class—			
Civil	12	.....	12
Electrical	21	.....	21
Mechanical	12	.....	12
Architecture	10	.....	10
General	6	.....	6
	61	.....	61
Sophomore Class—			
Civil	24	.....	24
Electrical	55	.....	55
Mechanical	14	.....	14
Architecture	13	1	14
General	21	.....	21
	127	1	128

Freshman Class—	Men	Women	Total
Civil	24	.....	24
Electrical	39	.....	39
Mechanical	14	.....	14
Architectural Eng.	2	.....	2
Architecture	6	1	7
General	6	.....	6
Undecided	124	1	125
	215	2	217
Irregular Students	8	1	9
	457	4	461

DEPARTMENT OF AGRICULTURE

	Men	Women	Total
College of Agriculture, Forestry, and Home Economics—			
Agricultural Course:			
Senior Class	44	.....	44
Junior Class	51	1	52
Sophomore Class	64	.....	64
Freshman Class	77	1	78
Unclassed	3	.....	3
	239	2	241
Forestry Course:			
Senior Class	4	.....	4
Junior Class	6	.....	6
Sophomore Class	7	.....	7
Freshman Class	11	.....	11
	28	.....	28
Home Economics Course:			
Senior Class .....	.....	74	74
Junior Class .....	.....	68	68
Sophomore Class .....	.....	66	66
Freshman Class .....	.....	67	67
Unclassed .....	.....	9	9
	.....	284	284
Total for College Year	267	286	553
College Summer Session	23	87	110
Extension Field Assistants	17	.....	17
	307	373	680
Total Collegiate Summer Students.....	12	38	50
Duplicates registered 1917-18	295	335	630
Net registration			
Central School of Agriculture—			
Senior Class	85	38	123
Junior Class	136	48	184
Freshman Class	201	64	265
Unclassed	33	7	40
	455	157	612
Total three-year course.....	1	12	13
Normal Course	456	169	625
Total for School .....	.....	1	1
Less duplicates	456	168	624
Net total			

SUMMARY OF ATTENDANCE

261

	Men	Women	Total
Short Courses—			
Dairy School:			
Creamery-Butter Makers	21	.....	21
Ice-Cream Makers	8	.....	8
Dairy Short Course	26	.....	26
Total Dairy School Courses.....	55	.....	55
Less duplicates	5	.....	5
Net total	50	.....	50
Farmers' and Home-Makers' Week.....	1039	259	1298
Editors' Week	53	2	55
Elevator Men's Short Course.....	20	3	23
Boys' and Girls' Week	188	91	279
Traction Engineering:			
First Course	36	.....	36
Second Course	10	.....	10
Total Traction Engineering Courses	46	.....	46
Mess Sergeants	12	.....	12
Teachers' Training School	21	757	778
Consolidated School Principals	73	15	88
Rural Life Short Course.....	17	6	23
Extension Gymnasium	23	.....	23
United Church Seminary Boys.....	22	.....	22
Station Clerks and Women of St. Anthony Park .....	.....	32	32
Total Gymnasium	45	32	77
Total of Short Courses	1569	1165	2734
Less duplicates	11	6	17
Net total	1558	1159	2717
Total at University Farm	2332	1707	4039
Less duplicates	102	72	174
Net total at University Farm	2230	1635	3865
Northwest School of Agriculture—			
School Course:			
Advanced	5	1	6
Normal Training .....	.....	7	7
Seniors	18	5	23
Juniors	31	11	42
Freshmen	94	24	118
Total for the School	148	48	196
Short Courses:			
Junior Short Course	55	33	88
Teachers' Training School.....	6	134	140
Total Short Course	61	167	228
Total Northwest School	209	215	424
Less duplicates .....	.....	2	2
Net total	209	213	422

	Men	Women	Total
West Central School—			
School Course:			
Advanced	3	1	4
Senior	8	9	17
Junior	25	8	33
Freshmen	86	32	118
Total for the School	122	50	172
Short Courses:			
Teachers' Training School	4	97	101
Farmers' Tractor School	87	.....	87
Junior Short Course	61	39	100
Total of Short Courses	152	136	288
Total for West Central School.....	274	186	460
Total Department of Agriculture	2815	2108	4923
Less duplicates	102	74	176
Net total for Department of Agriculture.....	2713	2034	4747

LAW SCHOOL

	Men	Women	Total
<i>Regular Law</i>			
Third-Year Class	25	.....	25
Second-Year Class	29	.....	29
First-Year Class	41	1	42
<i>Special Law</i>			
Third-Year Class	1	.....	1
Second-Year Class	13	.....	13
First-Year Class	23	1	24
Total	132	2	134

THE MEDICAL SCHOOL

	Men	Women	Total
Sixth-Year Class	61	2	63
Fifth-Year Class	60	1	61
Fourth-Year Class	68	6	74
*Third-Year Class	80	2	82
Special Students	14	2	16
Total	283	13	296
The School for Nurses:			
Third-Year Class .....	.....	19	19
Second-Year Class .....	.....	22	22
Preliminary .....	.....	29	29
Accredited .....	.....	16	16
Special .....	.....	1	1
Total .....	.....	87	87
Short Course in Embalming	18	1	19

* Second and First-Year Students are listed in the College of Science, Literature, and the Arts.

SUMMARY OF ATTENDANCE

263

THE COLLEGE OF DENTISTRY

	Men	Women	Total
Senior Class	84	1	85
Junior Class	70	.....	70
Sophomore Class	84	1	85
Freshman Class	97	2	99
Irregular Students	1	.....	1
	<u>336</u>	<u>4</u>	<u>340</u>

THE SCHOOL OF MINES

	Men	Women	Total
Senior Class	16	.....	16
Junior Class	12	.....	12
Sophomore Class	18	.....	18
Freshman Class	20	.....	20
First-Year Class	8	.....	8
	<u>74</u>	<u>.....</u>	<u>74</u>

THE COLLEGE OF PHARMACY

	Men	Women	Total
Post-Graduates	1	.....	1
Senior Class	13	5	18
Junior Class	24	3	27
Freshman Class	19	10	29
Special Students	2	.....	2
	<u>59</u>	<u>18</u>	<u>77</u>

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

	Men	Women	Total
Post-Senior Class	2	.....	2
Senior Class	12	.....	12
Junior Class	15	1	16
Sophomore Class	21	.....	21
Freshman Class	36	1	37
Irregular Students	11	.....	11
	<u>97</u>	<u>2</u>	<u>99</u>

THE COLLEGE OF EDUCATION

	Men	Women	Total
Senior Class	11	36	47
Junior Class	12	34	46
Unclassed Students	16	90	106
	<u>39</u>	<u>160</u>	<u>199</u>
University High School:			
Senior Class	16	15	31
Junior Class	19	9	28
Sophomore Class	24	34	58
Freshman Class	28	31	59
	<u>87</u>	<u>89</u>	<u>176</u>

THE ANNUAL REGISTER

THE GRADUATE SCHOOL

	Men	Women	Total
Registration	221	106	327

THE UNIVERSITY SUMMER SESSION, 1917

	Men	Women	Total
Minneapolis Campus—			
Academic, Education, Engineering:			
Registration	292	560	852
Less duplicates registered 1917-18	147	163	310
Net registration	145	397	542
Dentistry:			
Registration	48	.....	48
Less duplicates registered 1917-18	43	.....	43
Net registration	5	.....	5
Medicine:			
Registration	75	9	84
Less duplicates registered 1917-18	55	5	60
Net registration	20	4	24
Total for Summer Session, Minneapolis Campus:			
Registration	170	401	571
Less duplicates	5	1	6
Net total	165	400	565
University Farm:			
Registration	307	373	680
Less duplicates	12	38	50
Net total	295	335	630
Total for Collegiate Summer Session, 1917.....	460	735	1195

GENERAL EXTENSION DIVISION

	Men	Women	Total
Minneapolis Business Courses	333	77	410
Minneapolis Collegiate Courses	197	513	710
Minneapolis Engineering Courses	126	9	135
Minneapolis Law Courses	25	1	26
	681	600	1281
St. Paul Business Courses	153	22	175
St. Paul Collegiate Courses	63	237	300
	216	259	475
Duluth Business Courses	45	4	49
Duluth Collegiate Courses	4	41	45
	49	45	94
Red Wing Collegiate Courses	9	22	31
Training Course for Volunteers in Social Service Work .....	.....	41	41
Merchants' Short Course	119	6	125
Short* Course in Dentistry	49	1	50
	168	48	216
Correspondence Courses	73	64	137
Total for Extension Division	1196	1038	2234

SUMMARY OF ATTENDANCE

265

SUMMARY OF TOTALS

Students of Collegiate Grade

College	Men	Women	Total	Totals
College of Science, Literature, and the Arts.....	944	1381	2325	
College of Engineering and Architecture	457	4	461	
College of Agriculture, Forestry, and Home Economics	267	286	553	
Law School	132	2	134	
Medical School	283	13	296	
School for Nurses		87	87	
College of Dentistry	336	4	340	
School of Mines	74	.....	74	
College of Pharmacy	59	18	77	
School of Analytical and Applied Chemistry	97	2	99	
College of Education	39	160	199	
Graduate School	221	106	327	
Total	2909	2063	4972	
Less duplicates, 1917-18	42	5	47	
Net total	2867	2058	4925	4925
Summer Session, Minneapolis Campus (less duplicates, 1917-18)	165	400	565	565
Summer Session, St. Paul Campus (less duplicates, 1917-18)	28	49	77	77
Total students of collegiate grade	3060	2507	5567	5567

Students of Subcollegiate Grade

Schools:	Men	Women	Total	Totals
Central School of Agriculture	456	168	624	
Northwest School of Agriculture, Crookston.....	148	48	196	
West Central School of Agriculture, Morris	122	50	172	
University High School	87	89	176	
Total for Subcollegiate Schools	813	355	1168	1168
Short Courses:				
Central School of Agriculture				
Dairy School	50	.....	50	
Farmers' and Home-Makers' Week	1039	259	1298	
Editors' Week	53	2	55	
Elevator Men's Short Course	20	3	23	
Boys' and Girls' Week	188	91	279	
Traction Engineering Courses	46	.....	46	
Mess Sergeants	12	.....	12	
Teachers' Training School	21	757	778	
Consolidated School Principals	73	15	88	
Rural Life Short Course	17	6	23	
Extension Gymnasium	45	32	77	
Totals	1564	1165	2729	
Less duplicates	6	6	12	
Net total, Central School of Agriculture.....	1558	1159	2717	2717
Northwest School of Agriculture:				
Junior Short Course	55	33	88	
Teachers' Training School	6	134	140	
Total, Northwest School of Agriculture.....	61	167	228	228

THE ANNUAL REGISTER

	Men	Women	Total	Totals
West Central School of Agriculture:				
Teachers' Training School	4	97	101	
Farmers' Tractor School	87	.....	87	
Junior Short Course	61	39	100	
Total, West Central School of Agriculture....	152	136	288	288
School of Embalming	18	1	19	19
Total for Short Courses	1789	1463	3252	3252
Total, subcollegiate students	5662	4325	9987	
Less duplicates	79	29	108	
Net total, subcollegiate students	5583	4296	9879	9879

SUMMARY OF TOTALS BY DIVISIONS

Divisions:	Men	Women	Totals
Collegiate Students	3060	2507	5567
Subcollegiate Students:			
Subcollegiate Schools	813	355	1168
Short Courses	1789	1463	3252
Total	5662	4325	9987
Less duplicates	79	29	108
Net total for resident students	5583	4296	9879
Extension Division	1196	1038	2234
Total registration for University	6779	5334	12113

SUMMARY OF TOTALS BY DEPARTMENTS

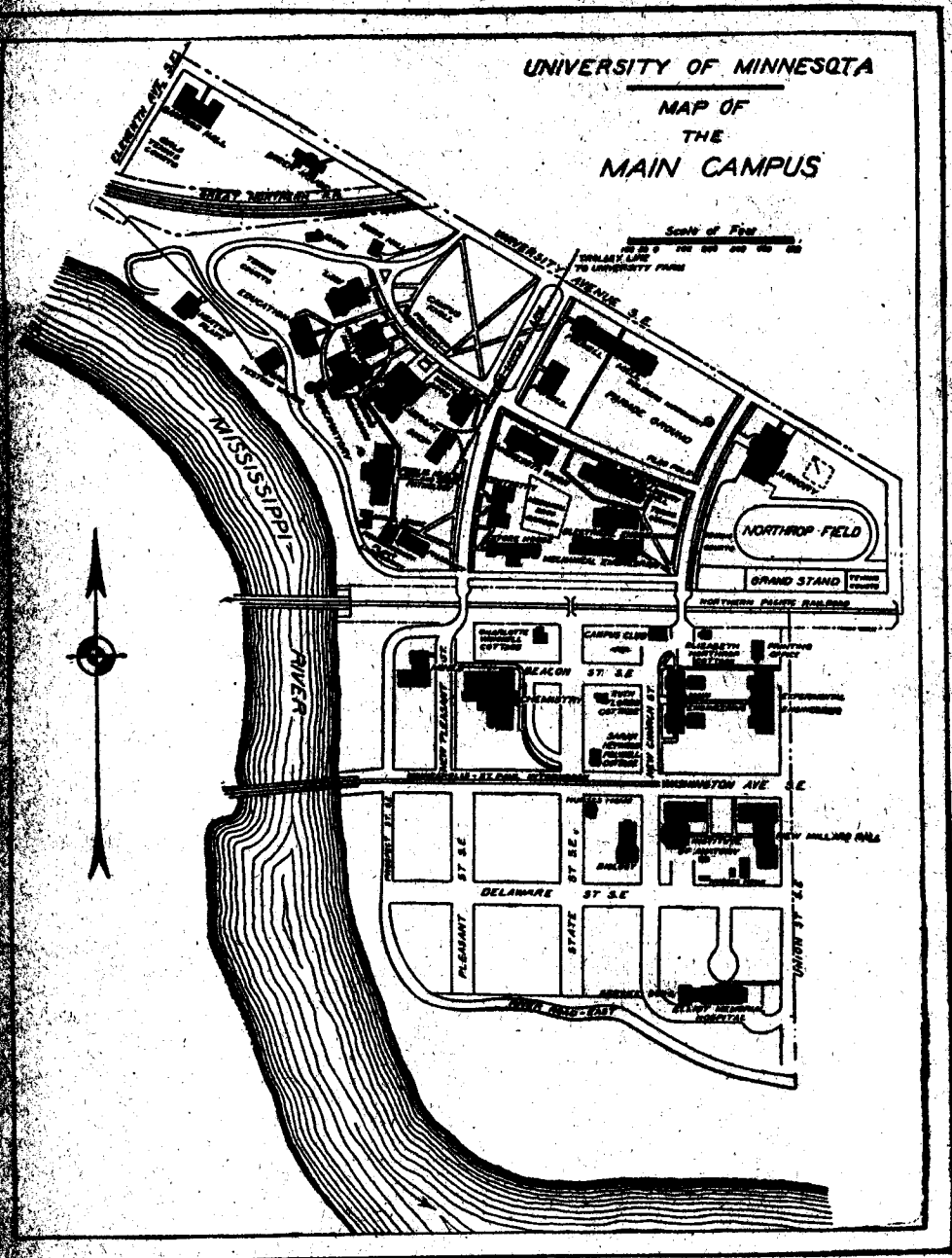
	Men	Women	Totals
College of Science, Literature, and the Arts.....	944	1381	2325
College of Engineering and Architecture	457	4	461
Department of Agriculture	2713	2034	4747
Law School	132	2	134
Medical School (including Embalmers)	301	14	315
School for Nurses .....	.....	87	87
College of Dentistry	336	4	340
School of Mines	74	.....	74
College of Pharmacy	59	18	77
School of Analytical and Applied Chemistry.....	97	2	99
College of Education (including University High School)	126	249	375
Graduate School	221	106	327
Minneapolis Summer Session	165	400	565
Total	5625	4301	9926
Less duplicates	42	5	47
Net total for resident students	5583	4296	9879
Extension Division	1196	1038	2234
Total registration for University	6779	5334	12113

3.

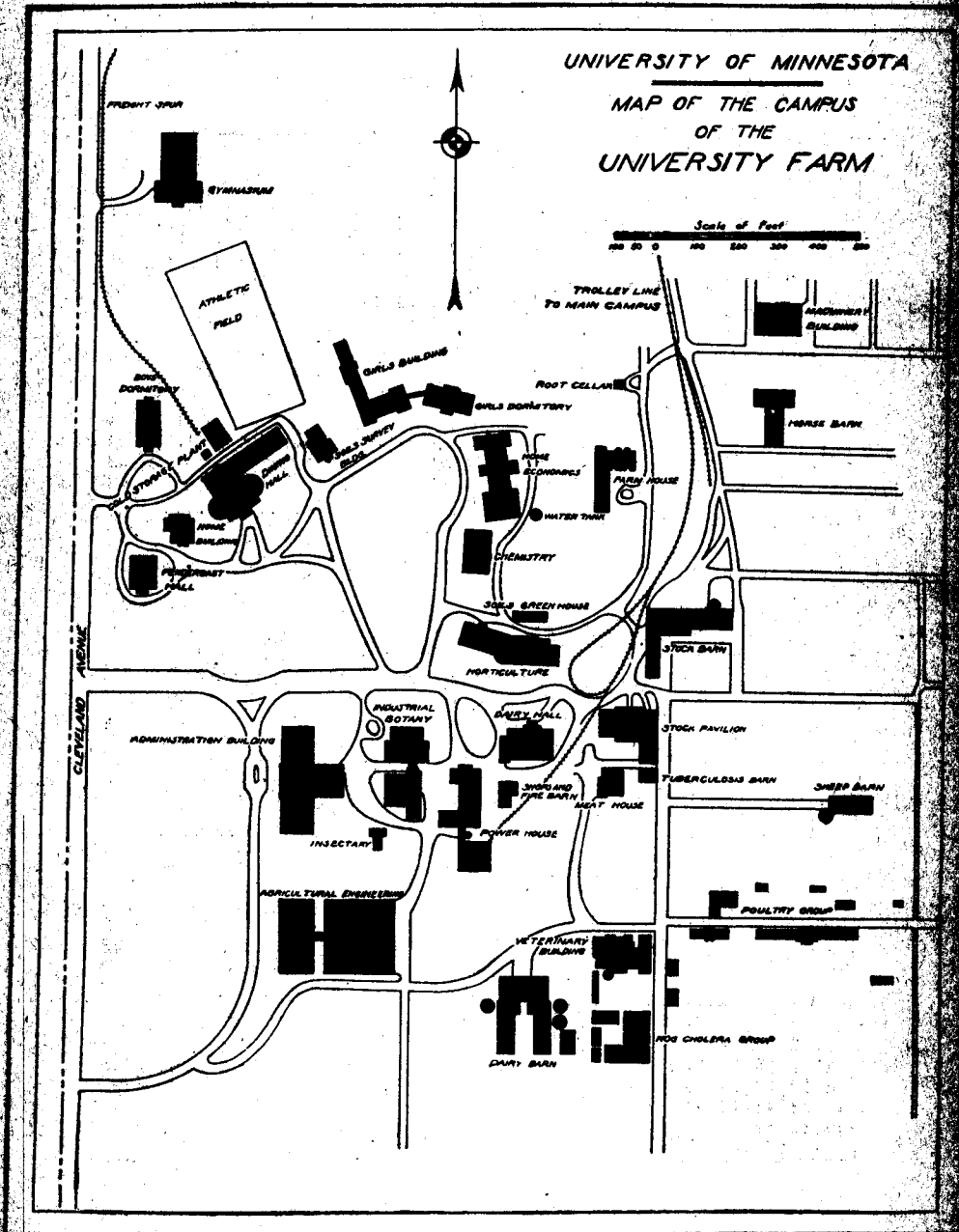
**THE COLLEGE OF
SCIENCE, LITERATURE
AND THE ARTS**

**ANNOUNCEMENT OF COURSES
FOR THE YEAR**

1918-1919



Area of Main Campus, 108.5 acres



Area of University Farm, 422.56 acres

1918							1919													
JULY							JANUARY							JULY						
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	..	..
..
AUGUST							FEBRUARY							AUGUST						
..
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	..	..	..	..	..	..
SEPTEMBER							MARCH							SEPTEMBER						
1	2	3	4	5	6	7	..	..	..	..	..	..	..	1	2	3	4	5	6	7
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	..	..	..	..	..	..	..	..	..	..	..	..
OCTOBER							APRIL							OCTOBER						
..	..	1	2	3	4	5	..	..	1	2	3	4	5	..	..	1	2	3	4	5
6	7	8	9	10	11	12	6	7	8	9	10	11	12	6	7	8	9	10	11	12
13	14	15	16	17	18	19	13	14	15	16	17	18	19	13	14	15	16	17	18	19
20	21	22	23	24	25	26	20	21	22	23	24	25	26	20	21	22	23	24	25	26
27	28	29	30	31	..	..	27	28	29	30	..	..	..	27	28	29	30	31	..	..
..
NOVEMBER							MAY							NOVEMBER						
..	..	..	..	..	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	..	..	..	..	..	..
DECEMBER							JUNE							DECEMBER						
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
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UNIVERSITY CALENDAR

1918-1919

1918			
September	11	Wednesday	Registration closes except for new students
September	11-18	Week	Fees payable except for new students
September	17-24	Week	Examinations for removal of conditions and entrance examinations
September	23-24		Registration and payment of fees for new students
September	25	Wednesday	First semester begins
September	30	Monday	First semester evening extension classes begin
October	17	Thursday	Senate meeting, 4:00 p.m.
November	5	Tuesday	General Election Day; a holiday
November	27	Wednesday	Thanksgiving recess begins 9:00 p.m.
December	2	Monday	Thanksgiving recess ends 8:00 a.m.
December	21	Saturday	Christmas vacation begins 12 m.
1919			
January	2	Thursday	Christmas vacation ends 8:00 a.m.
January	20	Monday	Second semester registration closes except for new students
January	24	Friday	First semester evening extension classes close
January	27	Monday	Final examinations begin
January	27	Monday	Payment of second semester fees closes except for new students
January	31	}	Registration and payment of fees for new students
February	1		
February	3	Monday	Second semester begins
February	3	Monday	Second semester evening extension classes begin
February	12	Wednesday	Lincoln's Birthday; a holiday
February	20	Thursday	Senate meeting, 4:00 p.m.
February	22	Saturday	Washington's Birthday; a holiday
April	17	Thursday	Easter recess begins 9:00 p.m.
April	22	Tuesday	Easter recess ends 8:00 a.m.
April	22-28	Week	Condition examinations in certain colleges
May	15	Thursday	Senate meeting, 4:00 p.m.
May	23	Friday	Final examinations begin 2:00 p.m.
May	23	Friday	Second semester evening extension classes close
May	30	Friday	Memorial Day; a holiday

SCIENCE, LITERATURE, AND THE ARTS

May	31	Saturday	Second semester closes
June	1	Sunday	Baccalaureate service
June	2	Monday	Senior Class Day exercises
June	4	Wednesday	Alumni Day
June	5	Thursday	Forty-seventh Annual Commencement
June	6	Friday	Summer vacation begins
June	16	Monday	Summer Session begins

The University year for 1919-20 probably will begin Tuesday, September 16. Classes will begin September 24.

Program of Entrance Examinations 1918-1919

Entrance examinations for admission to the various colleges of the University will be conducted according to the following schedule, in Room 112, Library Building, unless otherwise specified.

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

Tuesday,	Sept. 17	9 a.m.	Business subjects, elementary algebra, plane geometry.
		2 p.m.	Manual subjects, domestic art and science, agriculture, higher algebra, solid geometry
Wednesday, Sept. 18	9 a.m.	Astronomy, botany, geology, chemistry, physiography, zoology, physics, physiology	
	2 p.m.	American government, history, economics, commercial geography, history of commerce, economic history of England, economic history of the United States	
Thursday, Sept. 19	9 a.m.	English	
	2 p.m.	German, Greek, French, Latin, Scandinavian, Spanish	

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.

Condition Examinations

Examinations for the removal of conditions are given only at the following times: (1) the week following the Easter recess, (2) the registration week in September, and (3) the week following the Thanksgiving recess, for students in the College of Agriculture, Forestry, and Home Economics.

The examinations in second-semester courses are given in the September period and those in first-semester courses are given after the Easter recess or in September, or at both times, as each school or college may determine. No student may take more than one examination to remove a condition.

Examination schedules for the respective schools and colleges may be secured at the Registrar's office.

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- *KARL S. LASHLEY, Ph.D., Instructor in Psychology
- CHARLES F. LINDSLEY, M.A., Instructor in Rhetoric 1109 S. E. 7th St.
- GEORGINA LOMMEN, Instructor in Education Ladies Hall, University Farm
- FRANCES LOWELL, B.A., Instructor in Psychology
- THOMAS MATHER, Instructor in Rhetoric
- JAY A. MYERS, Ph.D., Instructor in Anatomy 506 S. E. Oak St.
- A. W. OLMSTEAD, M.A., LL.B., Instructor in Rhetoric
- ABE PEPINSKY, Instructor in Violin 968 Marshall Ave., St. Paul
- ETHEL L. PHELPS, B.S., Instructor in Textiles and Clothing
1160 Raymond Ave., St. Paul
- WILLIAM D. REEVE, B.S., Instructor in Mathematics and Education, Uni-
versity High School 820 University Ave. S. E.
- GERTRUDE REEVES, Instructor in Pianoforte 5526 Pillsbury Ave.
- MARTIN B. RUUD, Ph.D., Instructor in Rhetoric 303 S. E. Walnut St.
- GERTRUDE B. SCHILL, B.A., Instructor in Physical Education for Women
1309 S. E. 7th
- CARL L. SCHUMAN, Ph.D., Instructor in Chemistry 317 17th Ave. S. E.
- FRANK SMOYER, B.A., Instructor in Rhetoric 2021 Girard Ave. S.
- J. WARREN STEHMAN, M.A., Instructor in Economics
503 Washington Ave. S. E.
- GEORGE MALCOLM STEPHENSON, Ph.D., Instructor in History

* Absent on leave, 1918-19.

- WOLDEMAR M. STERNBERG, Ph.D., Instructor in Chemistry
510 S. E. Ontario St.
- MARION TEBBETTS, B.A., Supervisor of Practice Field Work in Social and
Civic Work, Director of Hospital Social Service Department
- ALICE HOPKINS TOLG, M.D., Instructor in Physical Education for Women
1200 W. 25th St.
- GUSTAAF VAN ROOSBROECK, M.A., Instructor in Romance Languages
404½ 14th Ave. S. E.
- ELIZABETH VERMILYE, B.A., Instructor in Foods and Cookery
2116 Knapp St., St. Paul
- PERCIVAL W. VIESSELMAN, M.A., LL.B., Instructor in Political Science
401 S. E. Oak St.
- JOHN G. WEST, Jr., B.S., Instructor in Physical Education for Men
1537 Midway Parkway, St. Paul
- EDWIN H. ZEYDEL, M.A., Instructor in German
1312 S. E. 7th St.

ASSISTANTS AND SCHOLARS

1918-19

ANIMAL BIOLOGY

- EMILY PAYNE, M.A., Assistant
- ADOLPH RINGOEN, M.A., Assistant
- ROYAL N. CHAPMAN, M.A., Teaching Fellow
- GEORGE A. THIEL, B.A., Teaching Fellow
- HELEN S. CHAPMAN, B.A., Artist

BACTERIOLOGY

- SIEGFRIED F. HERRMANN, B.S., Assistant

BOTANY

- LOIS CLARK, M.A., Assistant
- VINNIE A. PEASE, M.S., Assistant
- PAUL A. HARVEY, M.S., Teaching Fellow
- ARTHUR M. JOHNSON, B.A., Teaching Fellow

CHEMISTRY

- JAMES J. GUENTHER, B.S., Assistant
- THORFIN R. HOGNESS, B.S., Assistant
- DORIS HOLT, B.A., Assistant
- BARBARA LUND, M.A., Assistant
- GEORGE W. PEARSON, B.A., Assistant
- EDNA WOLF, B.S., Assistant
- WILL F. WOLF, Ph.B., Assistant

ENGLISH

- MARY ELLEN CHASE, M.A., Assistant
- FRANCES KELLEY, M.A., Assistant

HISTORY

MARY S. GOLD, Assistant
 FAITH THOMPSON, B.A., Assistant
 ALICE H. FELT, M.A., Teaching Fellow
 PAUL S. SMITH, M.A., Teaching Fellow
 GEORGINA TALBOT, M.A., Teaching Fellow

MATHEMATICS

ELLA THORP, B.A., Assistant

PHILOSOPHY AND PSYCHOLOGY

ALICE H. SULLIVAN, B.A., Assistant

ROMANCE LANGUAGES

CLEMENT J. DE BÈRE, Bachelier en Philosophie et en Droit, Assistant.
 JOSEPHINE DE BOER, B.S., Assistant
 ETHEL ELLIOTT, Teaching Fellow
 MINA GILDERSLEEVE, Teaching Fellow
 VALBERG OLSON, Teaching Fellow
 LUCY TOMLINSON, B.A., Teaching Fellow
 RUTH UNDERWOOD, B.A. in Educ., Teaching Fellow

SOCIOLOGY AND ANTHROPOLOGY

BRUCE L. MELVIN, Teaching Fellow

GENERAL INFORMATION

ADMISSION

Admission is either by certificate or by examination. Candidates must have completed the equivalent of a four-year high-school course and must present:

1. Four units of English; or three units of English and four units of a foreign language; or three units of English and two units in each of two foreign languages.
2. One unit of algebra and one unit of plane geometry.
3. Enough additional work to make in all fifteen units, of which not more than four may be in Group F.

A detailed statement of admission requirements may be found in the Bulletin of General Information.

Attention is called to the following rules governing students entering with advanced standing:

Credits of advanced standing are to be provisional and finally adjusted upon the following basis: Any student who, after one year's residence, has failures in at least six hours' work shall lose all advanced credit except in those courses which have been continued in this College with a grade of at least C. Credits forfeited in this way can be secured only by special examination.

Students entering with advanced standing must earn an average of one honor point per credit hour for all work taken in this College which is to be counted toward a degree.

A student entering the Senior College, who at the end of the first semester, does not meet the requirement of one honor point per credit hour carried, will be enrolled in the Junior College.

For admission to courses restricted to juniors and seniors, such students must have had a standing in their previous work equivalent to that required of students who take the freshman and sophomore work in this College.

CLASS ROUTINE AND SCHOLASTIC REQUIREMENTS

Classes are held every week-day except Saturday afternoon. Recitation periods are fifty minutes long and begin at eight, nine, ten, eleven, one, two, three, four, and five o'clock. A general assembly of Faculty and students is held at eleven on certain Thursdays.

Most of the courses of instruction are given in three periods a week on alternate days. Students are advised to arrange their programs so as to secure as even a distribution of classes as possible.

Examinations are held at the close of each semester. A student's grade is based upon his class work and examinations. Four grades, A, B, C, and D, are given for work done satisfactorily. Work not done satisfactorily is marked E (condition), or F (failure). Work of a satisfactory character but not finished is marked I (incomplete). An "incomplete" must be removed within one month after the opening of the fol-

lowing semester; otherwise it becomes a "condition." A "condition," if not removed before the opening of the corresponding semester of the following year becomes a "failure." A "failure" in a subject required for the given student must be removed by pursuing the work again in class the next time the course is offered.

Requirements for graduation are expressed in credit hours, indicating amount of work; and in honor points, indicating grade of work. Each credit hour demands on the average three hours a week of the student's time; that is, one recitation with two hours of preparation, or three hours of laboratory work. Honor points are computed as follows: each credit hour with the grade of A carries three honor points; each credit hour with the grade of B, two honor points; each credit hour with the grade of C, one honor point.

Continued residence in the College is conditioned on reasonable advance toward graduation. The Administrative Board will at any time drop from the rolls of the College any student who does not make such reasonable advance. A student so dropped will not be allowed to re-enter the University until a full semester has elapsed.

The student must secure in any semester credit in at least sixty per cent of the work carried, together with as many honor points as the Administrative Board may prescribe.

No student will be considered to have a wholly satisfactory standing who fails to secure in the course of any year the normal advance of one honor point for each credit hour carried. Students who fall below this normal standard will be subject to special consideration as individual cases by the Administrative Board.

Any student who, either in speaking or in writing, habitually uses bad English will be reported by his instructor to the Dean with all available evidence. If this evidence seems to the Dean sufficient he will require the student to take without credit such further work in rhetoric as the head of the Rhetoric Department may designate.

THE JUNIOR AND SENIOR COLLEGES

1. The College distinguishes between the Junior College, consisting of the first two years, and the Senior College, consisting of the third and fourth years.

2. All courses which are open to freshmen or sophomores are designated Junior College courses. All courses which are open only to juniors, seniors, or graduates are designated Senior College courses.

3. The courses of the Senior College may be taken only by students who have satisfied the requirements for promotion from the Junior to the Senior College.

4. Beginning with the class which entered in the fall of 1917, there shall be required for promotion to the Senior College the completion of fifty-six credits and fifty-six honor points including the studies prescribed for freshmen and sophomores.

5. Senior College courses shall have as prerequisites courses amounting to six credits when the department is not open to freshmen, or to

nine credits when the department itself, or the department which offers the prerequisite courses, is open to freshmen. Senior College courses are starred courses.

6. In foreign language departments sophomore students who have had five years of the language, including one year in the College, are allowed to elect those Senior College courses for which they have had the prerequisites.

7. Students registered in combined courses shall secure thirty credits and thirty honor points per year of work required in this College before being recommended for entrance to the work of the professional school. In order that such students may receive the bachelor's degree after completion of the required professional work the Faculty of the professional school shall certify that they have maintained an equivalent standing in the work of the professional school which is counted toward the degree given by this College.

8. Any student who fails to complete the Junior or Senior College requirements within the normal period will, in order to complete the work, be required to continue in that college for one or more University sessions. During this period, such students will be required to secure an average of one honor point for every credit hour of work carried.

SENIOR EXAMINATIONS

Notice.—The rule of the Faculty by which seniors have been excused from examinations at the close of the second semester under certain conditions, has been abolished. In 1919 and thereafter all seniors will take examinations.

COURSES OF STUDY

A student may, while registered in the College of Science, Literature, and the Arts, pursue one of the following courses:

Courses given within this College:

A general course leading to the degree of Bachelor of Arts.

An intensive course leading to the degree of Bachelor of Arts with Honors.

A four-year course leading to the degree of Bachelor of Music.

A four-year course in Business Education leading to the degree of Bachelor of Science.

A five-year course in Training for Social and Civic Work, leading to the degrees of Bachelor of Science and Master of Arts.

Combined arts and professional courses:

A six-year course leading to the degrees of Bachelor of Arts and Bachelor of Laws.

A five-year course leading to the degrees of Bachelor of Arts and Bachelor of Science in Chemistry.

An eight-year course leading to the degrees of Bachelor of Arts and Doctor of Medicine.

A seven-year course leading to the degrees of Bachelor of Science and Doctor of Medicine.

A six-year course leading to the degrees of Bachelor of Arts and Doctor of Dental Surgery.

A four-year course leading to the degree of Bachelor of Arts with special training in Military Science and Tactics.

A six-year course leading to the degree of Bachelor of Science and the appropriate degree in Architecture.

REGULATIONS APPLYING TO ALL COURSES

Military Drill is required of all freshmen and sophomore men, and Physical Education of all freshmen men and women.

Rhetoric 1-2 is required of all freshmen.

No student may elect work during any semester in more than five departments.

Students, except those in the third and fourth years of the Honors Course, must elect at least fourteen hours a week. Permission to take less than this number must be secured from the Administrative Board.

Students may ordinarily elect not more than seventeen credit hours. After the freshman year a student who has, during the preceding semester or two semesters, earned an average of one and one-half honor points for each credit hour taken and who has had no condition or failure the preceding semester, may elect eighteen hours.

I. GENERAL COURSE LEADING TO THE DEGREE OF
BACHELOR OF ARTS

The degree of Bachelor of Arts will be conferred by the College of Science, Literature, and the Arts, upon any student who fulfills all the requirements stated below.

AMOUNT AND GRADE OF WORK

1. During his entire course the student must earn one hundred and twenty hours of credit and one hundred and twenty honor points.
2. No student may receive credit for more than two beginning modern language courses except upon the recommendation of a department in which the student requires such additional languages for his advanced work.
3. At least thirty credits must be earned in residence at this College. If the term of residence is only one year, that year must be the senior year; and, in any case, at least half of the work of the senior year must be done in residence.

DISTRIBUTION OF WORK

REQUIREMENTS FOR FRESHMEN AND SOPHOMORES

Rhetoric 1-2 to be taken in the freshman year, and one year-course each year in each of the following groups of subjects.

A year-course consists of the continuous study of closely related subject matter through the year. When two courses are designated by a department to serve as a year-course both semesters must be completed, to meet this requirement. Either in the freshman or the sophomore year the subject chosen from Group C must be a laboratory science.

GROUP A	GROUP B	GROUP C
OPEN TO FRESHMEN AND SOPHOMORES		
Ancient and Modern Languages	History	Mathematics Animal Biology Botany Chemistry *Physics
ADDITIONAL SUBJECTS OPEN TO SOPHOMORES		
English Rhetoric Public Speaking Architecture	Economics Philosophy Political Science Psychology Sociology and Anthropology	Astronomy Geology and Mineralogy Physics

* Physics open to a limited number of freshmen under special conditions. See departmental statement.

Subjects for which freshmen register must be continued throughout the year.

REQUIREMENTS FOR JUNIORS AND SENIORS

Thirty credits in starred courses of which twelve credits must be in one department.

ELECTION OF SUBJECTS IN OTHER COLLEGES OR SCHOOLS

Certain courses given in other colleges or schools of this University are open to junior and senior students of this College who have the specified prerequisites. Provided no duplication of subjects occurs, these courses may be taken on the same terms as courses given in this College and will count toward the B.A. degree. Such courses are listed in the program.

THE UNIVERSITY STATE TEACHERS' CERTIFICATE

Beginning with the year 1919-20, students entering the junior class who expect to receive the teacher's certificate from the University of Minnesota must register in the College of Education. Students registered in this College who expect to graduate in 1918-19 or 1919-20 may secure the teacher's certificate at the time of graduation from the College of Science, Literature, and the Arts. They must include the following prescribed work in their course and receive the recommendation of at least two departments concerned with high-school studies:

a. General Psychology 6 credits
(Normally taken during the sophomore year)

b. Prescribed work in Education

This work must include all of the following courses
except in the case of honor students

Practice Teaching 3 credits
Teachers' Course in two subjects, together carrying at least 3 credits
Technique of Teaching 3 credits
History of Education 3 credits
Social Aspects of Education 3 credits

Honor students must take Psychology, Practice Teaching, Teachers' Courses, and at least one of the last three subjects named.

Part of this work must be taken in the junior year. The student must inform himself in advance so as to arrange his program properly.

SPECIAL COURSES FOR TWIN CITY TEACHERS

Arrangements have been made for offering courses in various departments at times which will make them readily available for teachers in the Twin Cities and environs. These courses will be scheduled to come Saturday mornings or week-days after four p.m.

II. COURSE LEADING TO THE DEGREE OF BACHELOR OF ARTS WITH HONORS

The degree of Bachelor of Arts with Honors is given upon the completion of a specialized and intensive course of study.

Students who desire this degree are strongly advised to register for it and seek the advice of the major department as early in their course as possible. The election of the honors course must be made and the major subject chosen before the end of the sophomore year.

Students electing the honors course must present at the end of the sophomore year sixty credits and ninety honor points and must demonstrate to the major department their ability to use one or more foreign languages specified by the department.

The honors course requires one hundred and five credits in class work and a satisfactory thesis in the major subject. The student must maintain an average standing of B in the major subject and also in the work of the junior and senior years, and must be recommended for graduation by the staff of the major department.

A student in good standing in the honors course may transfer to the general course, and a student who at any time falls below the standing required in the honors course will be transferred to the general course by the Administrative Board. The conditions of the transfer in all cases are to be determined by the Board.

OUTLINE OF COURSE

The requirements in the freshman and sophomore years are the same as for all students.

The requirements for the junior and senior years are as follows:

1. Major Subject

The student shall devote half his time during these two years to work defined by the major department and approved by the Advisory Committee. All such courses must rest on sophomore work as prerequisites. The departments shall provide for an advancing sequence in the student's work during the junior and senior years. At least one year (six credits) must consist of individual work in advanced courses whose object is to prepare the student for independent investigation. The thesis shall be prepared in connection with this work and under the direction of the instructor.

The thesis shall give evidence of ability to use successfully the laboratory and library materials and methods required in the subject and a thoro command of present knowledge on the topic selected.

2. Electives

In addition to the major, the student shall complete enough elective courses to make a total of one hundred and five credits. The student is advised to take from twenty-four to thirty hours in his junior year.

III. FOUR-YEAR COURSE IN ARTS AND MUSIC, LEADING TO THE DEGREE OF BACHELOR OF MUSIC

Students who entered this course in 1917-18 or earlier will receive the degree Bachelor of Arts in Music.

Before entering the course, students must secure the approval of the department.

The requirements for admission are the same as those for admission to the regular freshman class, together with one of the following requirements in Music, according to the instrument selected:

Pianoforte: Candidate must be able to play Czerny's *School of Velocity*, and the easier Haydn and Mozart sonatas.

Violin: Candidate must be able to play the first ten of Kreutzer's *Forty Etudes*, and the easier Handel and Mozart sonatas.

Violoncello, organ, and orchestral instruments: Candidate must pass entrance examinations equal to the above grade.

Voice: Candidate must possess good natural equipment, some previous vocal training, be a ready sight reader, and have a reading knowledge of the standard German and English songs.

The number of credits required for the degree in Music is one hundred and twenty, not counting Military Drill or Physical Education, which are required the same as for the B.A. degree. During the four years the student must earn one hundred and twenty honor points, including forty-eight honor points in applied music.

The number of credit hours a semester is the same as for the B.A. degree.

Two one-half hour lessons, plus twelve to fifteen hours' practice a week for one semester, are required in order to gain four credits in applied music.

Students who elect voice as their major study must earn twenty credits and, by special permission of the Faculty of the department, may be allowed to earn twenty-four credits in voice during the four years. During each of the first two years, four credits must be earned in voice and four in piano. In the junior year the student may be permitted, and in the senior year will be expected, to take additional work in voice in place of the instrumental work.

Students who elect other subjects than voice as their major must earn twenty-four credits in the chosen subject, specializing in the junior and senior years.

OUTLINE OF COURSE

Freshman Year (Sixteen or seventeen credits each semester)

1. Elect four credits from A, or four credits from B, including Voice.

A	B
Piano (4)	Piano (2)
Violin (4)	Violin (2)
Cello (4)	Cello (2)
*Organ (4)	Voice (2)

* Not offered during 1918-19.

2. Harmony (3)
3. Rhetoric (3)
4. Beginning modern language (6) or two 3-hour courses if entrance credits are offered in two languages.
5. Orchestra (1) elective.

Sophomore Year (Sixteen or seventeen credits)

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|---|--|
| <p>A</p> <ol style="list-style-type: none"> 1. Piano (4) Violin (4) Cello (4) <ol style="list-style-type: none"> 2. Counterpoint (2) 3. Acoustics (3) first semester. General Psychology (3) second semester. 4. Modern language (3) 5. History (3) 6. Ear Training (1) 7. Orchestra (1) elective. | <p>B</p> <ol style="list-style-type: none"> Piano (2) Violin (2) Cello (2) Voice (2) |
|---|--|

Junior Year (Seventeen or eighteen credits)

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| <p>A</p> <ol style="list-style-type: none"> 1. Piano (4) Violin (4) Cello (4) <ol style="list-style-type: none"> 2. English Survey (3) 3. History of Music (3) 4. Normal Piano (3) or Public School Music (3). The subject elected must be continued through two years. 5. Elect four credits from A (public school music students must include Appreciation of Music). | <p>B</p> <ol style="list-style-type: none"> Piano (2) Violin (2) Cello (2) Voice (2) |
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| <p>A</p> <ol style="list-style-type: none"> Ensemble (2) Appreciation of Music (1) Musical Composition (2) Analysis (1) <ol style="list-style-type: none"> 6. Orchestra (1) elective. | <p>Required subjects for public school music students</p> <ol style="list-style-type: none"> Technic of Teaching (3) Appreciation of Music (1) |
|--|--|

Senior Year (Twelve or thirteen credits)

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|---|--|
| <p>A</p> <ol style="list-style-type: none"> 1. Piano (4) Violin (4) Cello (4) <ol style="list-style-type: none"> 2. Bach and Beethoven (2) first semester. Brahms and Wagner (2) second semester. 3. Elective (3); for public school music students, Aspects of Social Education (3) History of Education (3) required. 4. Advanced Normal Piano (3) or Advanced Public School Music (3). 5. Orchestra (1) elective. | <p>B</p> <ol style="list-style-type: none"> Piano (2) Violin (2) Cello (2) Voice (2) |
|---|--|

IV. FOUR-YEAR COURSE IN BUSINESS EDUCATION, LEADING TO THE DEGREE OF BACHELOR OF SCIENCE

PURPOSE OF THE COURSE

In order to make all the resources of the University available to students who wish training for business, the College of Science, Literature, and the Arts announces a separate course of study under the direction of a staff of instruction organized for this purpose.

The course is a recognition of the fact that mastery of scientific method, as applied to business data, and ability to deal intelligently with problems of human relationship in business are foundations of business effectiveness. The object of the course is education rather than information, and it aims to combine with a thoro university education the kind of training which will enable students to analyze business situations accurately and to synthesize the results of analysis into practical working plans. This purpose determines the sequence of studies.

It is the aim in the freshman and sophomore years to give a broad training in those subjects which furnish the foundations for the study of business processes, to acquaint the student with the relation of those processes to the social organization, and to provide the common tools needed in these studies and in the prosecution of business dealings.

In the junior and senior years students proceed to more specialized study in such branches of business organization as accounting, finance, employment, and other subjects which have to do with the principal business functions. Elective courses offer opportunity for further work in those subjects like Economics, Political Science, and Law, which constitute a part of the general equipment of the business executive. There is also opportunity for limited specialization in particular business lines.

The course differs from the general B.A. course in two ways, first in that a somewhat higher grade of scholarship is required for advancement and graduation, and second, in the opportunity given the student to devote a larger part of his time to studies of especial value in preparation for business.

SPECIAL REQUIREMENTS

Language requirement.—Before beginning the work of the senior year the student must satisfy the language department concerned, by examination, that he can read readily business and economic literature in French, German, or Spanish. The examination, if taken earlier in the course or at the time of entrance, will relieve the student of further required courses in modern languages.

Scholarship requirement.—Scholarship in advance of the regular passing grade in the University will be required for advancement and graduation. A student whose work does not give promise of effectiveness in the business field will be discouraged from continuing the course.

COURSES OF STUDY

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FRESHMAN YEAR

	Credits
Rhetoric 1-2	6
Modern language	12 or 6
Laboratory science or Mathematics.....	0 or 6
History 3-4 (English History).....	6
Physical Geography (Geology 37).....	3
Industries and Commerce (Economics 2).....	3
	30

SOPHOMORE YEAR

	Credits
Psychology	6
Principles of Economics (Economics 3-4).....	6
Principles of Accounting (Economics 35-36).....	6
The following, if not completed in the freshman year:	
Laboratory science or Mathematics.....	6
Modern language (see requirement above).....	6
If the above have been completed in the freshman year, the student will take an equal number of hours in Political Science or History.	
	30

In the third and fourth years there is some variation in the course according to the branch of business that the student expects to enter. The faculty advisers will direct students in the choice of subjects appropriate for the fields chosen.

The National City Bank of New York offers each year to students in this course one or more scholarships for the purpose of training young men in banking and foreign trade. These scholarships provide for expenses during certain periods of practical work and study in the National City Bank.

V. FIVE-YEAR COURSE IN SOCIAL AND CIVIC WORK, LEADING TO THE DEGREES OF BACHELOR OF SCIENCE AND MASTER OF ARTS

This course is organized in response to a demand for distinctive technical training for professional social service. It covers both undergraduate and graduate work. Satisfactory completion of the four-year course leads to the B.S. degree. A fifth year's work is designed leading primarily to a special certificate of proficiency; but students whose programs satisfy the requirements of both the training course and the Graduate School may receive the M.A. degree in addition to the special certificate.

The organization of the course of study aims to give the undergraduate the fundamentals of a broad modern education with considerable emphasis upon history, economics, political science, psychology, and language. To this end all intensive specialization is reserved for the fourth and later years of study.

The fourth year includes comparatively few required courses, but a long list of advised electives, for which other electives may be substituted according to the individual student's needs. While the four year's course as arranged should confer upon the student a certain degree of familiarity with the problems of social and civic work, really adequate professional preparation demands at least one year of graduate study. With this professional instruction in view, during the fifth and later years of study only an irreducible minimum of specified courses is required; the emphasis is laid upon providing individual programs to meet the student's special inclination, aptitudes, or need.

FIRST-YEAR STUDIES

REQUIRED

Rhetoric, modern language, science, and History to meet requirements of the Arts College.

Attendance (without credit) at a series of lectures on graphic methods.

ELECTIVE

Courses open to freshmen in languages, History, science, or Mathematics

SECOND-YEAR STUDIES

REQUIRED

Modern language or English, and a year of science to meet requirements of the Arts College.

Sociology and Anthropology

Introduction to Sociology and Anthropology

Psychology

General Psychology

Economics

General Economics

Political Science

American Government

ELECTIVE

Sociology and Anthropology

Cultural Anthropology

Modern Social Reform Movements

Philosophy

Logic or Ethics

Courses in History

THIRD-YEAR STUDIES

REQUIRED

Sociology and Anthropology

Treatment of Defectives and Dependents

Treatment of Delinquents

Child Welfare

Housing

Economics

Labor Problems

Political Science

American Municipal Administration

(European Municipal Administration should be elected if possible)

ELECTIVE

Courses in English, modern language, or History

Education

Social Aspects of Education

History of Education

Sociology and Anthropology

Rural Sociology

Social Psychology

State Care of Dependents, Defectives, and Delinquents

Physical Anthropology

The Negro

COURSES OF STUDY

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THIRD-YEAR STUDIES—Continued

ELECTIVE—Continued

Economics
Socialism
Wages
Trade Unions
Political Science
State and Local Government
Business Law
Bacteriology
General Bacteriology
Courses on Public Health

FOURTH-YEAR AND GRADUATE STUDIES

REQUIRED

Sociology and Anthropology
Social Psychology (if not already elected)
Social and Industrial Legislation
Social Statistics and Social Surveys
The Family
Social Progress
Methods of Community Organization and Social Work in Small Towns and Country

ELECTIVE

Sociology and Anthropology
The American People
Field Work in Hospital Social Service
Charitable Administration, Finance, and Publicity
Technique of Family Treatment
Juvenile Courts and Probation
Settlement and Social Center Work
The Immigrant
Seminars in Sociology and Anthropology
Courses on Recreation and Playground Work
Courses on Public Health
Economics
Public Finance
Principles of Accounting
Political Science
Constitutional Law
Legislative Power and Methods
Police Power
Animal Biology
Eugenics
Psychology
Abnormal Psychology
Mental Retardation
Child Development
Courses in Education if not already elected
Physical Education
Hygiene of the Family
Courses in Home Economics (especially Dietetics and Household Administration)
Sanitary Engineering

(SPECIAL NOTE)

For a fifth year's work consisting of 9 hours class work and 12 hours of supervised field work per week for two semesters the student will receive a special certificate. He will be eligible for the Master's degree if his program is approved by the Graduate School and if he prepares a satisfactory thesis in addition to the work required for the special certificate.

VI. FOUR-YEAR COURSE IN INTERIOR DECORATION LEADING TO THE DEGREE OF BACHELOR OF SCIENCE

This course offers to students of the College of Science, Literature, and the Arts, the opportunity to prepare themselves for certain lines of work such as drafting, domestic architecture, and interior decoration without taking the full technical course in Architecture.

Students registering in this course should first secure the approval of the staff in Architecture and the advice of the staff should be sought with regard to the choice of electives and of special courses in Architecture.

FRESHMAN YEAR

<i>First Semester</i>		<i>Second Semester</i>	
	Credits		Credits
Mathematics	3 or 5	Mathematics	3 or 5
Rhetoric	3	Rhetoric	3
Language	6	Language	6
Medieval History	3	Medieval History	3
Physical Culture		Physical Culture	
<hr/>		<hr/>	
Total	15 or 17	Total	15 or 17

SOPHOMORE YEAR

<i>First Semester</i>		<i>Second Semester</i>	
	Credits		Credits
English or foreign language.....	3	English or foreign language.....	3
Elective in Group B.....	3	Elective in Group B.....	3
Architecture	5	Architecture	5
Drawing 9, Arch. 31		Drawing 10, Arch. 32	
Physics	4	Physics	4
<hr/>		<hr/>	
Total	15	Total	15

JUNIOR YEAR

<i>First Semester</i>		<i>Second Semester</i>	
	Credits		Credits
General Elective	6	General Elective	6
Architecture	9	Architecture	9
Arch. 21, 33, 43		Arch. 22, 34, 44	
<hr/>		<hr/>	
Total	15	Total	15

SENIOR YEAR

<i>First Semester</i>		<i>Second Semester</i>	
	Credits		Credits
General Elective	3	General Elective	3
Architecture	12	Architecture	12
<hr/>		<hr/>	
Total	15	Total	15

OTHER VOCATIONAL COURSES

For information and advice regarding the selection of studies in preparation for various vocations, the student should consult the heads of the

departments concerned. The studies offered by the College are so varied and the opportunities for election are so great that the student who first forms an intelligent plan can usually find an excellent combination and sequence of courses serving his particular purpose. It is important in preparation for a vocation, not only to secure training in the major subjects, but also in the related subjects.

Women students may consult the Vocational Adviser for Women for information in regard to the selection of courses, the choice of a vocation, and the means of securing professional training. The office in Shevlin Hall is open from nine to twelve during the week preceding the opening of the University, and from eight-thirty to five during the entire academic year. A collection of training school bulletins and general information in regard to topics related to women's occupations is available for use by the students. Women are urged to make appointments with the Vocational Adviser, and to consult the collection of occupational information.

The attention of women students is called to the new opportunities offered by the Training Course in Social and Civic Work, the Course in Business Education, the Course in Interior Decoration and the special courses in drafting, and in food conservation offered this year.

COMBINED ARTS AND PROFESSIONAL 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.

REGULATIONS GOVERNING COURSES LEADING TO THE BACHELOR OF ARTS DEGREE

1. The degree of Bachelor of Arts shall be voted by the Faculty of the College of Science, Literature, and the Arts.

2. The student shall be registered for the first three years of his course in the College of Science, Literature, and the Arts, and be subject to all the regulations of that College.

3. One full year of professional work may be offered as the equivalent of the senior year (thirty credits) of the College of Science, Literature, and the Arts, provided

- (a) That the professional courses taken have as a prerequisite at least two years of collegiate work,
 - (b) That there is no duplication of courses already taken in the College of Science, Literature, and the Arts,
 - (c) That no substitution of professional courses for courses in the College of Science, Literature, and the Arts has been permitted.
- (Note.—It will be the policy of the College of Science, Literature, and the Arts to introduce into its curriculum those courses in other colleges or schools which in the judgment of the Faculty may properly be credited toward the B.A. degree.)

4. The student shall be required to have not less than fifteen credits in starred courses in the College of Science, Literature, and the Arts.

5. The student shall be required to secure one hundred twenty credits and one hundred and twenty honor points in the four years.

VII. SIX-YEAR COURSE IN ARTS AND LAW, LEADING TO THE DEGREES OF BACHELOR OF ARTS AND BACHELOR OF LAWS

The work of the first three years of this course is done in the College of Science, Literature, and the Arts and is subject to the regulations which govern the work of other Arts students. During these three years the student must secure not less than ninety credits, including fifteen credits in starred courses. The first year of the course in the Law School counts as the equivalent of the fourth year (thirty credits) of the Arts course. During the four years the student must earn one hundred and twenty honor points.

SHORTER PRE-LEGAL COURSES

While the Faculty of the Law School strongly recommends the above course, two other courses are open to students who wish the degree of Bachelor of Laws alone. They may take two years' work in the College of Science, Literature, and the Arts, under the regulations which govern other Arts students, or they may take the special pre-legal course outlined below. The student's registration blank must show which course is chosen and that course must be followed without variation. In either case the student must secure at least fifty-eight credits in order to be eligible for admission to the Law School.

In case any student after taking the special pre-legal course shall become a candidate for the B.A. degree, he must satisfy all 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 1-2.....	6
Mathematics or science	6 (or 10)
(1) The student must complete the equivalent of Mathematics 1 and 2, or 3 and 4. If he has had this, he may elect 6 credits in science.	
Language	6 (or 12)
(1) The student with two or more units of entrance credits in Latin is strongly advised to take Latin (6 credits).	
(2) The student not taking Latin must take French or German.	

History 3-4	6	} 6-18
Economics 3-4	6	
Political Science I	6	
Military Drill and Gymnasium, for men.		

28-36

SOPHOMORE YEAR

		Credits
Rhetoric 15-16	6	
Language	4-6	
A continuation of same language taken in freshman year.		
History 5-6		
Economics:		} 6-18
3-4 (if not previously taken), and not more than three		
of the following courses: 2, 18, 76, 35-36, 41, 43-44, 59		
Political Science:		
Not less than one of the following courses: 1 (if not		
previously taken), 3, 5		
Military Drill, for men		

28-34

VIII. FIVE-YEAR COURSE IN ARTS AND CHEMISTRY, LEADING TO THE DEGREES OF BACHELOR OF ARTS AND BACHELOR OF SCIENCE IN CHEMISTRY

During his first three years, the student does his work in the College of Science, Literature, and the Arts subject to the regulations governing other Arts students, and must secure at least ninety credits, including fifteen credits in starred courses. This work must include:

- a. Rhetoric 1-2 and twelve credits in German.
- b. Twelve credits in Group B (see page 11).
- c. The following courses:
 - General Chemistry and Qualitative Analysis, or equivalent.
 - Quantitative Analysis, one year.
 - Technical Drawing 33-34, one year.
 - Geology 21, one semester.
 - Geology 21, one semester.
 - Metallurgy 2 (men) or Geology 22 (women), one semester.
 - Biological science, one year.
 - General Physics with laboratory work, one year.
 - Mathematics, ten credits.
 - Glass Blowing, one credit.

For students entering in 1918 and thereafter the requirements under c will be as follows:

General Chemistry 5-6, 8 credits.
 Qualitative Analysis, 5 credits.
 Quantitative Analysis, 5 credits.
 Theoretical Chemistry, 2 credits.
 Drawing 23, 3 credits.
 Geology 21, 3 credits.
 Physics 1, 2, 3, and 4, 8 credits.
 Metallurgy 2 (men) or Geology 22 (women), 3 credits.
 Mathematics, 10 credits.

The fourth year of the course is the same as the junior year of the Analytical Course of the School of Chemistry and counts as the equivalent of the fourth year (thirty credits) of the Arts course. During the four years the student must earn one hundred and twenty honor points.

POST-SENIOR YEAR

The student's fifth year is the same as the fourth year of the Analytical Course of the School of Chemistry, and upon its completion he will be entitled to the degree of Bachelor of Science in Chemistry.

During the senior and post-senior years the student, if prepared, has the privilege of specializing for not less than two semesters along one of the following lines: organic chemistry, physical chemistry, analytical chemistry, applied chemistry, photochemistry, physiological chemistry, geochemistry, bromatology.

IX. EIGHT-YEAR COURSE IN ARTS AND MEDICINE, LEADING TO THE DEGREES OF BACHELOR OF ARTS AND DOCTOR OF MEDICINE

During the first three years of this course, the student does his work in the College of Science, Literature, and the Arts subject to the regulations governing other Arts students and must secure ninety credits including fifteen credits in starred courses. The first year of the course in the Medical School counts as the equivalent of the fourth year (thirty credits) of the Arts course. During the four years the student must earn one hundred and twenty honor points.

FRESHMAN AND SOPHOMORE YEARS

The following subjects must be included:

Rhetoric 1-2, six credits.
 Zoology 1-2, six credits.
 Qualitative Analysis and Medical Organic Chemistry with the elementary courses prerequisite to them.
 French or German sufficient to secure a reading knowledge, to be tested by a committee of the Medical Faculty.
 Physics 1, 2, 3, and 4, (not Physics 21-22), eight credits. This work must be preceded by Mathematics 1 and 2, ten credits, or 3 and 4, six credits.

The following subjects are recommended as electives: Economics, Free-Hand Drawing, and Psychology.

JUNIOR YEAR

The work of the junior year is elective, subject to the requirement of fifteen credits in starred courses.

SENIOR YEAR

This year is taken in the Medical School, and is counted toward the B.A. degree.

X. SEVEN-YEAR COURSE IN SCIENCE AND MEDICINE, LEADING TO THE DEGREES OF BACHELOR OF SCIENCE AND DOCTOR OF MEDICINE

To be eligible for admission to the Medical School, students in this course must secure in the College of Science, Literature, and the Arts not less than sixty credits including the subjects required during the freshman and sophomore years of the Eight-Year Course in Arts and Medicine.

JUNIOR AND SENIOR YEARS

The work during these two years is taken in the Medical School, and is credited toward the B.S. degree. To secure this degree the student must have one hundred and twenty credits and one hundred and twenty honor points.

Students who have completed elsewhere two or more years of collegiate or university work which includes the required subjects specified above and which 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 Bachelor of Science on recommendation of the Faculty of the College of Science, Literature, and the Arts, provided they meet the scholarship requirements stated above. The credit value of work done elsewhere shall be determined by the Administrative Board 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 Medical School of the University of Minnesota.

XI. SIX-YEAR COURSE IN ARTS AND DENTISTRY, LEADING TO THE DEGREES OF BACHELOR OF ARTS AND DOCTOR OF DENTAL SURGERY

During the first three years of this course the student does his work in the College of Science, Literature, and the Arts, subject to the regulations governing other Arts students and must secure ninety credits, including fifteen credits in starred courses. The final year of the course

in the College of Dentistry counts as the equivalent of the fourth year (thirty credits) of the Arts course. During the four years the student must earn one hundred and twenty honor points.

XII. MILITARY SCIENCE AND TACTICS

REQUIRED WORK

All physically fit male students are required to take military training during the first two undergraduate years of their course unless they have secured such training at an approved institution endorsed by the Military Department. When this course is entered upon it must be carried to completion as a prerequisite for graduation. No credits are allowed for this work.

ELECTIVE WORK

(a) Any student, having completed the two years of required Military Training, may continue the work for credit in the third and fourth years. Credit for such work is allowed in practically all of the colleges of the University, the maximum being three credits a year.

(b) Juniors and seniors who have completed two years of drill may register for the course required by General Orders No. 49 of the War Department for members of the Reserve Officers' Training Corps. Such students sign a written agreement to continue in this corps for the remainder of the college course. The completion of this work is a prerequisite to appointment.

Juniors and seniors who take the course required by General Orders No. 49 which includes two camps of four weeks each, will receive an allowance of thirty cents per day for subsistence while pursuing the course and will have all expenses paid to and from the encampments. They also are eligible for appointment as temporary second lieutenants in the infantry branch of the Regular Army for six months with a salary of one hundred dollars per month upon graduation and commission in the Reserve Corps. The Reserve Corps furnishes officers for citizens' training camps in time of peace and commissions in the United States Volunteers in time of war, such officers having preference for commissions in the volunteers immediately below experienced officers in the federal service.

For students of the College of Science, Literature, and the Arts who elect this work two sets of requirements are made. The Military Department requires three hours a week of drill and two hours a week of study in the Reserve School. The College expects the usual requirements for graduation to be met and in addition specifies certain courses which are accepted by the Military Department as fulfilling certain requirements of the General Orders No. 49 of the War Department. The combined requirements may be stated as follows:

Freshman and sophomore students who expect to elect the Reserve Officers' work in the junior and senior years are advised to take Mathe-

matics in the freshman year and to take Physics, Mechanical Drawing, Industries and Commerce, and American Government in the sophomore year.

In the junior and senior years the Reserve School requires two credits each semester. Other subjects required by the college are:

Elementary Psychology, 3 credits.

Surveying, 3 credits.

Military History, 3 credits.

Transportation and Supply, 3 credits.

International Law, 3 credits.

Diplomatic Relations, 3 credits.

Electives, to complete the credits required for the degree.

XIII. SIX-YEAR COURSE IN ARTS AND ARCHITECTURE

Preliminary announcement is made of a course designed to combine with the full technical course in Architecture a broad cultural training in languages, history, and the social sciences. The course will lead to the degree of Bachelor of Science at the end of four years and to either Master of Science or an appropriate degree in architecture at the end of six years.

Students wishing to elect this course should consult the Department of Architecture. For the first two years the requirements will not differ materially from those laid down in the course in interior decoration. (See page 30.)

DEPARTMENTAL STATEMENTS

EXPLANATION OF COURSE NUMBERS

Odd numbers indicate first-semester courses; even numbers, second-semester courses. A combination of the two (e.g., 5-6) indicates courses continuing through the year. The suffixes *a* and *b* apply to one-semester courses offered both semesters, *a* indicating the first semester and *b* the second semester (e.g., 3a,b; 4a,b). Courses marked with a *t* are given at hours convenient for teachers.

All undergraduate courses are numbered from 1 to 100. All courses open to undergraduates and graduates are numbered from 101 to 200. Strictly graduate courses are numbered from 201 up.

For graduation a student must secure, during the junior and senior years, thirty credits in starred courses of which twelve credits must be in one department.

The following abbreviations are used: A, Armory; AB, Animal Biology; Ar indicates that the days, hours, or room are to be arranged (for information, apply to head of the department concerned); C, Chemistry Building; Ed, Education Building; En, Engineering Building, University Farm; F, Folwell Hall; G, Greenhouse; He, Home Economics Building, University Farm; L, Law Building; Lib, Library Building; MA, Mechanic Arts; ME, Main Engineering Building; Mech E, Mechanical Engineering Building; MH, Millard Hall; Mu, Music Building; O, Observatory; P, Pillsbury Hall; PH&P, Institute of Public Health and Pathology; Ph, Physics Building; WGm, Women's Gymnasium.

The symbol ¶ indicates that the instructor is to be assigned.

ANIMAL BIOLOGY

Professors HENRY FRANCIS NACHTRIEB, HAL DOWNEY, JOHN B. JOHNSTON, WILLIAM A. RILEY, THOMAS S. ROBERTS, CHARLES P. SIGERFOOS; Assistant Professors ROYAL N. CHAPMAN, ELMER J. LUND, OSCAR W. OESTLUND; Instructors GEORGE DELWIN ALLEN, CHARLES E. JOHNSON; Assistants EMILY H. PAYNE, ADOLPH RINGOEN; Teaching Fellow GEORGE A. THIEL; Artist HELEN S. CHAPMAN.

REQUIREMENTS OF THE DEPARTMENT

For B.A. with Honors, freshman year, Course 1-2; sophomore year the student may elect from Courses 7-8, 15-16, 19-20, 23-24; during the junior year the student must elect from Courses 35-144, and must include some line of work begun in the sophomore year which he expects to pursue during the senior year under 161-162.

For a Teacher's Certificate an average of one and one-half honor points in Courses 1-2, 31-32, and six other credits in Animal Biology. One year of Botany is advised.

DEPARTMENTAL STATEMENTS

		COURSES			
No.	Credits	Title	Offered to	Prerequisite courses	
1-2	6†	General Zoology‡	All	None	
		Sec. 1, Lab. 8, 9	MW		
		Lect. 8, 9	F		
		Sec. 2, Lab. 10, 11	MW		
		Lect. 10, 11	F		
		Sec. 3, Lab. 1, 2	M		
		2, 3	W		
		Lect. 1	WF		
		Sec. 4, Lab. 8, 9	TTh		
		Lect. 8, 9	S		
		Sec. 5, (extra) Lab. 10, 11	TS		
7-8	6†	Histology-Embryology ...	Soph., jr., sr.	1-2	
		10, 11	MWF 201, 211AB	Downey	
12	3	Histology Technique	Soph., jr., sr.	1-2 and 7	
		See Anatomy Schedule			
15-16	6†	General Physiology	Jr., sr.	12 credits in An. Biol.; or 6 cr. in An. Biol. and 6 cr. in Chem. or Physics	
		2, 3	MWF 10AB	Lund	
19-20	6†	Comp. Gross Anat. of Vert.	Soph., jr., sr.	1-2	
		2, 3	MWF 107-109, 211AB	Johnson	
23-24	6†	General Entomology	Soph., jr., sr.	1-2	
		10, 11	MWF 208-210AB	Oestlund	
		8, 9	TThS 208-210AB	Oestlund	
28	3	Ornithology	Soph., jr., sr.	1-2	
		2, 3, 4	TTh 211, 314AB	Roberts	
*31-32	3†	Nature Study	Jr., sr.	12 credits in An. Biol.	
		1, 2, 3	T 213AB	Sigerfoos	
35	3	Animal Parasites	Soph., jr., sr.	1-2	
		2,3	MWF 208-210AB	Riley	
36	3	Rel. of Insects to Disease	Soph., jr., sr.	23-24 and 35	
		10, 11	MWF 208-210AB	Riley	
*56	3	Morphology of Invertebr.	Jr., sr.	9 cr. incl. 1-2	
		8, 9	TThS 213AB	Sigerfoos	
*101-102	6	Adv. General Entomology	Jr., sr., grad.	1-2, 23-24	
		2, 3	MWF 208-210AB	Oestlund, Chapman	
*103	3	Biol. & Taxon. Aphididae	Jr., sr., grad.	1-2, 23-24	
		10, 11	TS 208AB	Oestlund	
		10	Th		
*105-106	6†	Hist. & Devel. Insects...	Jr., sr., grad.	1-2, 23-24	
		Ar	Ar 206, 211AB	Riley	
*107-108	6	General Ecology	Jr., sr., grad.	1-2, 23-24	
		2, 3, 4	TTh 208-210AB	Chapman	
*115-116	6	Mammalogy	Jr., sr., grad.	1-2, 7-8, or 19-20	
		4, 5	MWF 107-109, 211AB	Johnson	
*117	3	Protozoology	Jr., sr.	9 cr. incl. 1-2	
		8, 9	TThS 213AB	Sigerfoos	
*119-120	6	Vertebrate Histology	Sr., grad.	1-2, 7-8, Anat. 112	
		3, 4	TThS 201, 211AB	Downey	
*123-124	6†	Blood of Vertebrates.....	Sr., grad.	1-2, 7-8, Anat. 112 131-132, reading knowledge of French and German	
		3, 4	TThS 201, 211AB	Downey	

† Both semesters must be completed before credit is given for the first semester.

‡ So far as possible students should register for both lecture and laboratory work in the same section.

No.	Credits	Title	Offered to	Prerequisite courses
*131-132	6†	Embryology	Jr., sr., grad.	1-2, 7-8
		10, 11 MWF	202, 211AB	Nachtrieb
*143-144	6	Genetics and Eugenics...	Sr., grad.	1-2
		2, 3, 4 TTh	202, 211AB	Nachtrieb
*161-162	6 or 12	Problems	Sr., grad.	102 and other courses prescribed by the Department.

Hours, days, and rooms Ar

† Both semesters must be completed before credit is given for the first semester.

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

- 1-2. GENERAL ZOOLOGY. A survey of the animal kingdom, emphasizing the principles of structure, physiology, embryology, classification, and evolution of animals. Textbook, lectures, and quizzes. SIGERFOOS, LUND, ALLEN, RINGOEN, H. CHAPMAN.
- 7-8. HISTOLOGY AND EMBRYOLOGY. A comparative microscopic study of the origin and structure of the tissues of vertebrates and invertebrates, and of the organs of mammals. Textbook, lectures, and laboratory. DOWNEY and Assistant.
- 15-16. GENERAL PHYSIOLOGY. Fundamental processes; nutrition, growth, regeneration, respiration, secretion; movement, heat, light; comparative study of the nervous system, sense organs, and reactions in lower animals. Suitable for foundation for various lines of biological work. Laboratory, lectures, reading. LUND.
- 19-20. COMPARATIVE GROSS ANATOMY OF VERTEBRATES. (a) Dissection and study of selected types, cyclostomes to reptiles or birds inclusive; special consideration of history of organ systems. (b) Mammalian anatomy. An intensive study of the cat. Textbook, laboratory guide. Laboratory, lectures, quizzes. JOHNSON and Assistants.
- 23-24. GENERAL ENTOMOLOGY. Elements of entomology leading up to discussion of the principles of taxonomy and their application to the classification of insects. Textbook, lectures, quizzes, and laboratory work. OESTLUND and Assistant.
28. ORNITHOLOGY. Study of structure, classification, and habits of birds with special reference to birds of Minnesota. Considerable time devoted to field study. Bird or field glasses and handbook required. Laboratory, lectures, and quizzes. Limited to ten. ROBERTS.
30. ELEMENTS OF NEUROLOGY. A brief study of the nervous system; intended for students in psychology and the social sciences. Not given in 1918-19. JOHNSTON.

- *31-32. NATURE STUDY. Discussions, reference, field and laboratory work, through the year once a week and, in addition, field trips Saturday afternoons during the autumn and spring months. Especially for the fitting of teachers in secondary schools. SIGERFOOS.
35. ANIMAL PARASITES AND PARASITISM. A consideration of the origin and biological significance of parasitism, and of the structure, life history, and economic relations of representative animal parasites. Methods of control and prevention will be emphasized. Lectures and laboratory work. RILEY.
36. RELATION OF INSECTS TO DISEASE. The causation and transmission of diseases by insects and other arthropods. Life history, habits, and methods of control of hominoxious species. RILEY.
- *56. MORPHOLOGY OF INVERTEBRATES. An intensive study of the Crustacea and some of the smaller phyla of the animal kingdom. Mainly reference and laboratory work. SIGERFOOS.
- *101-102. ADVANCED GENERAL ENTOMOLOGY. Advanced work in the lines of morphology and classification of insects with lectures on the history of entomology. Lectures and laboratory. OESTLUND.
- *103. BIOLOGY AND TAXONOMY OF THE APHIDIDAE. Intensive study of the natural history and classification of the Aphididae. OESTLUND.
- *105-106. HISTOLOGY AND DEVELOPMENT OF INSECTS. Lectures and laboratory work on the histology, embryonic, and postembryonic development of insects. RILEY.
- *107-108. GENERAL ECOLOGY. General ecology with special reference to the insects of Minnesota. Lectures, laboratory, assigned reading, and field work. R. CHAPMAN.
- *115-116. MAMMOLOGY. Structure and classification of North American mammals. The mammalian skeleton; its modifications; consideration of our domestic animals; dissection of a typical mammal. Classification, natural history and geographic distribution with special reference to Minnesota mammals. JOHNSON.
- *117. PROTOZOOLOGY. Lectures, reference, and laboratory work on the structure and life-histories of Protozoa. Special reference is paid to the relations of the Protozoa to diseases of animals. SIGERFOOS.
- *119-120. VERTEBRATE HISTOLOGY. Primarily advanced work on vertebrate tissues. Conference, reference, and laboratory work. DOWNEY.
- *123-124. BLOOD OF VERTEBRATES. A comparative study of blood and blood-forming organs of vertebrates. A portion of time to be devoted to research. DOWNEY.
- *131-132. EMBRYOLOGY. A brief survey of general embryology, and the organogeny of the vertebrates with special reference to the circula-

tory system. Conference, reference, and laboratory work with Kellicott's *General Embryology* and *Outlines of Chordate Development* as texts. Not given in 1918-19. NACHTRIEB.

- *143-144. GENETICS AND EUGENICS. Facts and theories of heredity and the application of the laws governing natural inheritances for the improvement of a race. Lectures, reference, conference, and laboratory work NACHTRIEB.
- *161-162. PROBLEMS. Advanced work in some special line. NACHTRIEB, DOWNEY, JOHNSTON, SIGERFOOS, LUND, OESTLUND.

ENTOMOLOGY AND ECONOMIC ZOOLOGY

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

Professors WILLIAM A. RILEY, FREDERICK L. WASHBURN; Associate Professors WILLIAM MOORE, ARTHUR G. RUGGLES.

For program, see program of College of Agriculture, Forestry, and Home Economics.

4. ECONOMIC VERTEBRATE ZOOLOGY. Relation of birds and other wild animals to agriculture. Lectures, laboratory, field work. Identification and studies of Minnesota birds and animals affecting the horticulturist and agriculturist, methods of combating injurious and of conserving useful forms. WASHBURN.
12. FOREST ZOOLOGY. Forest Animals. Relation of birds and of various four-footed animals to forest protection. Habits, range, usefulness; the manner of protecting the important large and small game, fish and birds; fish culture. WASHBURN.
- *111-112. INSECTICIDES AND THEIR ACTION. A study of the chemical composition, the physical properties, and the physiological action of standard, of little known and of new insecticides. Prerequisite, Agricultural Biochemistry 7-8, or equivalent. MOORE.
- *117. METHODS IN ECONOMIC ENTOMOLOGY. Identification of immature stages of insects; methods of breeding; insect photography; insecticides; bibliographic aids and sources of literature. MOORE, RUGGLES.
- *119-120. INTRODUCTION TO RESEARCH. Preparation for investigational work in lines of entomology, parasitology or economic zoology. Advanced laboratory, field and library work; training in the preparation of bibliographies and of manuscripts; special problems. Students are advised to plan for summer work when possible.
Systematic Entomology, OESTLUND.
General Economic Entomology, RUGGLES.
Insect Ecology, CHAPMAN.
Insecticides, MOORE.
Parasitology; Insect Morphology. RILEY.
Economic Vertebrate Zoology, WASHBURN.

ARCHITECTURE

Professor FREDERICK M. MANN; Assistant Professors SAMUEL C. BURTON,
 JAMES H. FORSYTHE; Instructor JEFFERSON M. HAMILTON; Special
 Lecturer JOHN O. CEDERBERG.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
15	2	Architectural History (Ancient)	Jr.	Hist. 1, 2
		11 T	217ME	Forsythe
		10 Th	217ME	Forsythe
16	2	Arch. Hist. (Renaissance)....	Jr.	Hist. 1, 2
		11 T	217ME	Forsythe
		10 Th	217ME	Forsythe
17	2	Arch. Hist. (Medieval).....	Sr.	Arch. 15
		11 WF	217ME	Mann
18	2	Arch. Hist. (Modern)	Sr.	Arch. 16
		11 WF	217ME	Mann
21-22	4	Freehand Drawing (Elementary)	Soph.	None
		2, 3 MWF	312ME	Burton
23	2	Freehand Drawing	Jr.	Arch. 22
		9, 10, 11 TTh	312ME	Burton
24	2	Freehand Drawing	Jr.	Arch. 23
		9, 10, 11 TTh	312ME	Burton
25-26	4	Freehand Drawing	Sr.	Arch. 24
		9, 10, 11 MWF	312ME	Burton
27-28	4	Life Drawing	Sr.	Arch. 26
		Ar Ar	Ar	Burton
31	3	Elements of Architecture.....	Soph.	None
		9, 10 MW	309ME	Hamilton, Forsythe
		9 F	309ME	Hamilton, Forsythe
		1, 2 TTh	309ME	Hamilton, Forsythe
32	3	Elements of Architecture.....	Jr.	Arch. 31
		9, 10 MW	309ME	Hamilton, Forsythe
		9 F	309ME	Hamilton, Forsythe
		1, 2 TTh	309ME	Hamilton, Forsythe
33-34	8	Arch. Design (Elementary)...	Soph.	Arch. 22
		9-12 S	317ME	Hamilton
		2-5 MWF	317ME	Hamilton
35-36	12	Arch. Design (Intermediate)...	Jr.	Arch. 34
		2-5 MTWThF	319ME	Forsythe
		9-12 S	319ME	Forsythe
37-38	16	Arch. Design (Advanced)....	Sr.	Arch. 36
		Ar Ar	320ME	Mann
43	3	Specifications and Working Drawings	Jr.	Arch. 31, 32
		9, 10, 11 MWF	317ME	Cederberg
44	3	Specifications and Working Drawings	Jr.	Arch. 31, 32
		9, 10, 11 MWF	317ME	Cederberg
57	2	Decorative Composition	Sr.	Arch. 24
		Ar Ar	Ar	Mann
58	2	Decorative Comp. (Modeling).	Sr.	Arch. 24
		Ar Ar	Ar	Burton
65-66	2	Theory of Architecture.....	Jr.	Arch. 34
		1 Th	217ME	Forsythe

No.	Credits	Title	Offered to	Prerequisite courses
67	2	History of Sculpture and		
		Painting	Soph.	Hist. 1, 2
		Ar Ar	Ar	Burton
68	2	Architectural Practice	Sr.	Arch. 36
		Ar Ar	Ar	Mann

General.—The course in Architecture aims to meet the exacting requirements of the professional practice of architecture. The scientific and liberal studies of the course form a necessary foundation for the special studies in architecture, which culminate in the study of original design. The graduate is of immediate value as architect's assistant, and after a period of practical experience, is prepared for independent practice.

Students who wish to extend and broaden their course in Architecture can arrange a six-year schedule leading to the degree of B.S. in the College of Science, Literature, and the Arts; and B.S. in Architecture, in the College of Engineering and Architecture.

15. ARCHITECTURAL HISTORY. Technical study of architecture of Ancient Egypt, Assyria, Persia, Greece, and Rome, with emphasis on the latter two. Study of political, social, and economic conditions affecting architecture of this period. Illustrated lectures and library research. FORSYTHE.
16. ARCHITECTURAL HISTORY. Technical study of the architecture of the Renaissance, mainly in Italy. Study of political, social, and economic conditions affecting the architecture of the 15th, 16th and 17th centuries. Illustrated lectures and library sketches and research. FORSYTHE.
17. ARCHITECTURAL HISTORY. Technical study of architecture of the Middle Ages; the sources and influences in the development of the Romanesque and Gothic styles, particularly in France. Lectures and library research. MANN.
18. ARCHITECTURAL HISTORY. Study of the development of architecture from the seventeenth century to the present time, particularly in France, England, and America. Spirit of Modern and Early Renaissance architecture contrasted. Lectures and library research. MANN.
- 21-22. ELEMENTARY FREEHAND DRAWING. Drawing with charcoal, pencil, pen and ink, and color from architectural ornament and details of the figure: drawing from memory. The course is arranged to give an appreciation of balance in light and shade. BURTON.
- 23-24. FREEHAND DRAWING. Drawing from the antique in charcoal, pen and ink, pastel, and pencil. Painting from still life in oils and water-color. Study of the elementary principles of composition and of color arrangement.
- 25-26. FREEHAND DRAWING. Drawing and painting from the antique and from life. The study of draperies in preparation for work in decora-

tive figure composition, and of the application of the figure to mural decoration. BURTON.

- 27-28. LIFE DRAWING. Drawing from life. Figure composition; studies in mural decoration; decoration of architectural spaces. BURTON.
31. ELEMENTS OF ARCHITECTURE. Study of elements, forms and principles of architecture. Exercises in drawing; theory and practice of wash rendering; architectural lettering. Original problems in the architectural treatment of walls, doors, windows, and mouldings. Lectures and library research. FORSYTHE, HAMILTON.
32. ELEMENTS OF ARCHITECTURE. Study of the elements, forms, and principles of architecture. Original problems in elementary architectural design. Rendered compositions of architectural fragments. Lectures and library research. FORSYTHE, HAMILTON.
- 33-34. ARCHITECTURAL DESIGN.* Original problems dealing in general with elements of elevation, and their composition into simple architectural units. Sketch problems dealing with elementary plan composition. Individual criticism and library research. HAMILTON.
- 35-36. ARCHITECTURAL DESIGN. Original problems dealing in general with the elements of plan. Composition of simple complete buildings. Sketch problems dealing with plan composition. Individual and general criticism and library research. FORSYTHE.
- 37-38. ARCHITECTURAL DESIGN. Original problems dealing with composition of single buildings or groups of buildings and those of special character. Subjects of decorative or imaginative interest. Sketch problems. MANN, FORSYTHE.
43. SPECIFICATIONS AND WORKING DRAWINGS. Wood construction, properties and uses of wood. Preparation of plans and detail working drawings of frame house. Written reports from buildings under construction, with measured drawings of roofs, dormers, cornice, windows, stairs, fireplace, cupboards, etc. CEDERBERG.
44. SPECIFICATIONS AND WORKING DRAWINGS. Masonry construction. Materials, their manufacture and properties. Preparation of plans and detail working drawings for a simple fireproof building. Written reports from buildings under construction, with measured drawings of important details of construction. Specifications. CEDERBERG.
57. DECORATIVE COMPOSITION. Historic ornament and color as applied to architectural decoration. MANN.

* Work in all the design courses is carried on simultaneously and students pass from one to the next in sequence in varying lengths of time, according to their accomplishment, and irrespective of University time units. The normal time required to complete the six courses is three years. To students completing them in less, special advance work is open.

58. DECORATIVE COMPOSITION. Clay modeling. Design of relief decoration. Manipulation of scale models of architectural subjects. Drawing and clay modeling. BURTON.
- 65-66. THEORY OF ARCHITECTURE. Study of the guiding principles of architectural composition. Discussion of character, scale, proportion, etc. Exercises in program analysis. Consideration of the requirements of different classes of buildings. Lectures and library research. MANN, FORSYTHE.
67. HISTORY OF SCULPTURE AND PAINTING. Historical study of ancient and modern sculpture and of the modern schools of painting. BURTON.
68. ARCHITECTURAL PRACTICE. Relations of the architect, owner, and builder; forms of contracts, professional ethics, and office administration. MANN.

ASTRONOMY

Professor FRANCIS P. LEAVENWORTH; Assistant Astronomer WILLIAM O. BEAL.

REQUIREMENTS OF THE DEPARTMENT

For *B.A. with Honors*, the general requirements, Courses 51-52, 101-102 (as a twelve credit 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 five-inch star camera; 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.	Credits	Title	Offered to	Prerequisite courses
11a	3	Descriptive Astronomy....	Soph., jr., sr.	None
		9 MWF	124F	Leavenworth
		10 TThS	124F	Beal
11b	3	Descriptive Astronomy....	Soph., jr., sr.	None
		11 MWF	124F	Leavenworth
		10 TThS	124F	Beal
13-14†	6	Descr. Astr. & Obs. Pract.	Soph., jr., sr.	None
		9 TThS	124F	Beal
17	3	Navigation	All	Consult Dept.
		11 MWF	124F	Leavenworth
21-22	6	Introduction to Astr.....	Soph., jr., sr.	None
		1 MWF	124F	Beal
*51-52†	6	General Astronomy.....	Jr., sr.	9 credits in Math. or Physical Science
		10 MWF	124F	Leavenworth
*62a	3	Elements of Pract. Astr..	Jr., sr.	1 yr. Mathematics and Ast. 11, or 13, or 21, or 51
		Ar Ar	124F	Beal

No.	Credits	Title	Offered to	Prerequisite courses
*62b	3	Elements of Pract. Astr..	Jr., sr.	1 yr. Mathematics and Ast. 11, or 13, or 21, or 51
		Ar Ar	124F	Beal
*101-102	6 or 12	Practical Astronomy.....	Jr., sr., grad.	Math. 7 and 11 and Ast. 11 or 13, or 21, or 51
		10 TThS or MTWThFS	O	Leavenworth
*140	3	Method of Least Squares	Sr., grad	Math. 51
		Ar Ar	O	Leavenworth

† Both semesters must be completed before credit is given for the first semester.

11a,b. DESCRIPTIVE ASTRONOMY. Lectures on the elements of astronomy, illustrated by lantern slides. LEAVENWORTH, BEAL.

13-14. DESCRIPTIVE ASTRONOMY AND OBSERVATORY PRACTICE. Lectures and recitations on the elements of astronomy; lectures illustrated by lantern slides. Laboratory exercises, problems, and telescopic observations. No credit given until both semesters are completed. BEAL.

17. NAVIGATION. A study of the principles of piloting, dead reckoning, nautical astronomy, rules of the road, etc. This course prepares men for positions as ensigns and as officers in the merchant marine. LEAVENWORTH.

21-22. INTRODUCTION TO ASTRONOMY. Lectures and recitations on the general principles and fundamental facts of astronomy. Illustrated by lantern slides, simple problems, naked eye observations, and telescopic observations. BEAL.

*51-52. GENERAL ASTRONOMY. A thoro study of the general principles of astronomy, illustrated by lantern slides and telescopic observations. No credit is given until both semesters are completed. LEAVENWORTH.

62a,b. ELEMENTS OF PRACTICAL ASTRONOMY. Theory and use of astronomical instruments in determining time, latitude, longitude, and positions of heavenly bodies. BEAL.

*101-102. PRACTICAL ASTRONOMY. 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. LEAVENWORTH.

*140. METHOD OF LEAST SQUARES. The combination and adjustment of observations and the discussion of their precision as applied especially to engineering, physics, and astronomy. LEAVENWORTH.

BACTERIOLOGY

Associate Professor WINFORD P. LARSON; Instructors ANNE BENTON, ARTHUR T. HENRICI;¹ Assistant SIEGFRIED F. HERRMANN.

¹ Absent on leave, 1918-19.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
6a	3	Elementary Bacteriology..	All	None
		M 2, 3; W 2, 3; F 1	Lab.PHP	Larson, et al.
6b	3	Elementary Bacteriology..	All	None
		M 3, 4; W 3, 4; F 3	Lab.PHP	Larson, et al.
104	4	General Bacteriology.....	All	Gen. Chem., Biol. 1-2 or Bot. 1-2
		1, 2 MWF	PHP ² 11	Larson
105	3	Special Bacteriology.....	Soph., jr., sr.	104
		8, 9 MTF		
		8, 9, 10 W	Ar	Larson
114	1½	Advanced Bacteriology....	All	6a or 6b
		TTh 2, 3, 4 (2:30-5:30)	Lab.PHP	Larson, et al.

6a,b. **ELEMENTARY BACTERIOLOGY.** Principles, technique of general bacteriology. Studies in morphologic and biologic characters of common bacteria. Preparation of culture media. Disinfectants, disinfection. Bacteriology of water and food products. Students of Home Economics, Agriculture, Nursing, etc. 80 hours. LARSON, BENTON, HERRICK, HERRMANN.

104. **GENERAL BACTERIOLOGY.** The preparation of culture media; the morphology of bacteria; methods of staining and identification; anaerobic bacteria; principles of sterilization and disinfection; examination of air, water, milk; relation of bacteriology to the industries. LARSON.

105. **SPECIAL BACTERIOLOGY.** The study of pathogenic bacteria, especially in relation to definite diseases; bacteriological methods in clinical diagnosis; principles of infection and immunity, with practical application of serum reactions. LARSON.

*114. **ADVANCED BACTERIOLOGY.** An advanced course giving additional work in bacteriology and the opportunity of working out special problems. Limited to ten students. 48 hours. LARSON.

BOTANY

Professors CARL OTTO ROSENDAHL, ELIAS J. DURAND, JOSEPHINE E. TILDEN; Assistant Professors FREDERIC K. BUTTERS, WILLIAM S. COOPER,¹ NED L. HUFF; Assistants LOIS CLARK, VINNIE A. PEASE; Teaching Fellows PAUL A. HARVEY, ARTHUR M. JOHNSON.

REQUIREMENTS OF THE DEPARTMENT

For *B.A. with Honors*, the general requirements; thirty-six credits in Botany, of which twenty-four shall be selected from advanced Courses 105-106; to 123-124, inclusive.

For a *major recommendation for a Teacher's Certificate*, 18 credits in Botany with an average of at least one and one-half honor points per

¹ Absent on leave, 1918-19.

credit hour, and six credits in Animal Biology. Course 121a or 121b in the College of Education is required.

For a minor recommendation, 12 credits in Botany and an average of at least one and one-half honor points per credit hour. One year of Animal Biology is advised. Course 121a or 121b in the College of Education is required.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
12-26	6	General Botany	All	None
	Lect. sec. 1,	2 M	210P	1
	Lect. sec. 2,	11 S	210P	1
	Lect. sec. 3,	2 T	210P	1
	Lab. sec. 1,	8, 9 MW	207P	1
		9 F	207P	1
	Lab. sec. 2,	10, 11 MW	207P	1
		10 F	207P	1
	Lab. sec. 3,	3, 4 M	207P	1
		2, 3, 4 F	207P	1
	Lab. sec. 4,	8, 9 TTh	207P	1
		9 S	207P	1
	Lab. sec. 5,	3, 4 T	207P	1
		2, 3, 4 Th	207P	1
1b	3	General Botany	All	None
	1	8, 9 MWF	205P	1
	2	8, 9 TThS	205P	1
2a	3	General Botany	All	1 or equiv.
	1	8, 9 MWF	214P	1
	2	2, 3, 4 TTh	214P	1
5a	3	Morphology of Land Plants	All	2
	1	10, 11 MWF	204P	Butters
5b	3	Morphology of Land Plants	All	2
	1	2, 3, 4 MF	204P	Butters
	2	8, 9 MWF	204P	Huff
8	3	Taxonomy	Soph., jr., sr.	2
	1	10, 11 MWF	17P	Rosendahl
9-10	3	Physiology and Ecology..	Soph., jr., sr.	2
	1	1, 2, 3 MF	Greenhouse	Cooper
19	3	Anatomy and Histology..	Soph., jr., sr.	2
	1	2, 3, 4 TTh	204P	Butters
*105-106	6	Algae	Jr., sr., grad.	9 cr.
	1	1, 2, 3 TTh	212P	Tilden
*107	3	Mosses and Liverworts...	Jr., sr., grad.	5
	1	Ar Ar	205P	Butters
*108	3	Pteridophytes	Jr., sr., grad.	5 and 19
	1	Ar Ar	205P	Butters
*111-112	6	Advanced Taxonomy	Jr., sr., grad.	9 credits, incl. 8
	1	Ar Ar	18P	Rosendahl
*115-116	6	Adv. Plant Physiology...	Jr., sr., grad.	9-10
	1	Ar Ar	ArP	1
*117-118	6	Cytology	Jr., sr., grad.	12 credits
	1	Ar Ar	18P	Rosendahl
*119-120	6	Adv. Industrial Botany..	Jr., sr., grad.	11-12
	1	10 Th	212P	Tilden
*123-124	6	Taxonomy and Morphology of the Algae	Sr., grad.	105-106
	1	10, 11 T	212P	Tilden

- 1a,b. GENERAL BOTANY. A study of the external form, microscopic structure, and functions of the organs of flowering plants. DURAND, BUTTERS, HUFF, and Assistants.
- 2a,b. GENERAL BOTANY. A comparative study of selected types of plants, illustrating the evolution of plants from the simplest forms to the flowering plants. DURAND, BUTTERS, HUFF, and Assistants.
- 5a,b. MORPHOLOGY OF LAND PLANTS. A comparative study of the form, structure, and life history of liverworts, mosses, ferns, and seed plants. BUTTERS, HUFF.
8. TAXONOMY. A general study of the classification and relationships of flowering plants. Laboratory and field practice in the determination of species, together with lectures and quizzes. ROSENDAHL.
- 9-10. PHYSIOLOGY AND ECOLOGY. Laboratory and greenhouse study of the growth and behavior of plants, and field study of plant communities and their environment in fall and spring. COOPER.
- 11-12. INDUSTRIAL BOTANY. Morphology and histology of plants yielding products of economic value. Not given in 1918-19. TILDEN.
19. ANATOMY AND HISTOLOGY OF VASCULAR PLANTS. A study of the microscopic structure of vascular plants, the cell, tissues and tissue systems with particular attention to the development and evolution of the vascular system in the root, stem, and leaf. BUTTERS.
- *105-106. ALGAE. A study of living freshwater forms, based on collections made by the class, and of the more important marine species. TILDEN.
- *107. COMPARATIVE MORPHOLOGY OF LIVERWORTS AND MOSSES. Designed for students who wish to pay special attention to the morphology and taxonomy of bryophytes. Lectures, laboratory and field work. BUTTERS.
- *108. MORPHOLOGY AND TAXONOMY OF PTERIDOPHYTES. A comparative study of lycopods, ferns, and their allies, their structure and history with special attention to the classification of living forms. Lectures, reference reading, and laboratory work. BUTTERS.
- *110. MORPHOLOGY AND TAXONOMY OF GYMNASPERMS. A comparative study of cycads, conifers, and their allies, their structure and history with special attention to the classification of living forms. Lectures, reference reading, and laboratory work. Not given in 1918-19. BUTTERS.
- *111-112. ADVANCED TAXONOMY. An advanced course in which special attention is given to the taxonomy of difficult natural groups involving systematic principles and practice, rules of nomenclature, systems of classification, etc. ROSENDAHL.

- *113. FIELD ECOLOGY. Field study of the plant communities and successions of the Minneapolis region, followed by a detailed written report, and by a study of the general principles of plant association and succession. Not given in 1918-19. COOPER.
- *114. FOREST GEOGRAPHY OF NORTH AMERICA. Preliminary discussion of plant distribution, followed by a detailed study of the forest regions of North America. Reading, discussion, lantern slides, distribution maps, microscopic work, written reports. Should be preceded by field ecology, but not necessarily. Not given in 1918-19. COOPER.
- *115-116. ADVANCED PLANT PHYSIOLOGY. The interrelations of factor, function, and structure with special reference to the food cycle (photosynthesis, respiration, and growth). Discussions, quizzes, and greenhouse work.
- *117-118. CYTOLOGY. A survey of cell structure and the various phenomena of division, fusion, and metamorphosis, together with a review of the history of cytological investigation. Methods of cytological research indicated in the laboratory. ROSENDAHL.
- *119-120. ADVANCED INDUSTRIAL BOTANY. A study of the structure, origin, distribution, and cultivation of plants yielding products of economic value; the nature and uses of these products and the processes by which they are obtained from the plants. TILDEN.
- *123-124. TAXONOMY AND MORPHOLOGY OF THE ALGAE. Advanced studies in selected groups. Lectures, reports, and discussions of current literature. TILDEN.

CHEMISTRY

THE SCHOOL OF CHEMISTRY

Professors LAUDER W. JONES,¹ GEORGE B. FRANKFORTER,¹ CHARLES F. SIDENER; Associate Professors EVERHART P. HARDING, WILLIAM H. HUNTER, STERLING TEMPLE;² Assistant Professors ROSS A. BAKER,¹ FRANK W. BLISS,¹ LILLIAN COHEN, FRANK H. MACDOUGALL, EDWARD E. NICHOLSON; Instructors ARTHUR R. CADE, ISAAC W. GEIGER, CARL L. SCHUMAN, WOLDEMAR STERNBERG, GUY H. WOOLLETT; Assistants MAX DONAUER, JOHN J. GUENTHER, THORFIN R. HOGNESS, DORIS HOLT, BARBARA L. LUND, HATTIE SPAHR, EDNA WOLF, WILL F. WOLF; Lecturer FRED L. BARDWELL.

COURSES

<i>Division of General and Inorganic Chemistry</i>				
No.	Credits	Title	Offered to	Prerequisite courses
1-2	6†	General Chemistry.	Those entering without chem.	None
		8-9 TThS	110C	¶
		10-11 MWF	110C	¶

¹ Absent on leave, 1918-19.

† Both semesters must be completed before credit is given for the first semester.

No.	Credits	Title	Offered to	Prerequisite courses
21-22	10†	Inorganic and Qual. Chem.	Those entering without chem.	None
	Lect.	11 S	111C	†
	Lab.	8-9 TThS	110C	†
	Rec.	10 TThS	111C	†
3-4	6†	Adv. Gen. Chemistry and Qual. Analysis	Fr., soph., jr.	Entrance cr. in Chem.
	Lect.	11 S	100C	†
	Lab.	2, 3 MF	110C	†
	Rec.	2 or 3 W	111C	†
	Lab.	8, 9 MF	110C	†
	Rec.	8 or 9 W	115C	†
5-6	8†	General Chemistry	Fr., soph., jr.	Entrance cr. in Chem. (Arts & Chem.)
	Rec.	10 ThF		
	Lect.	1 T		
	Lab.	2-5 T		
7-8	6†	Qualitative Analysis	Soph., jr., sr.	1-2 Nicholson
		8-9 MWF	210C	
10	1	Glass Blowing	Jr., sr.	Open only to those tak- ing practice teaching in Chem.
17	2	Ar Ar Inorganic Colloquium	49C Sr.	Az 11-12
		8 MF	111C	Ar
20	2	Teachers' Course	Ar	3-4 or 7-8 or 21-22
		8 TTh	Ar	Geiger
*169-170	4†	Chem. of Rare Elements. Ar Ar	Jr., sr. Ar	11-12 Nicholson
<i>Division of Analytical Chemistry</i>				
*11-12	6 or 8†	Quantitative Analysis	Soph., jr., sr.	3-4 or 7-8 or 21-22 and 1 yr. Math. or Physics I
		1-4 M	310C	Sidener
		2-5 W	310C	Sidener
		1-5 F	310C	Sidener
*107-108	6†	Adv. Quan. Analysis..... Ar Ar	Jr., sr. 317C	11-12 Sidener
<i>Division of Organic Chemistry</i>				
13-14	6†	Medical Organic Chem...	Soph.	3-4 or 7-8 or 21-22
	Lect.	11 MWF	100C	Hunter
	Lab.	2-5 W or F	10C	Hunter
	Rec.	Ar Ar	Ar.C	
18	2	Organic Colloquium	Sr.	35-36
		Ar Ar	115C	Schuman
*35-36	8†	Organic Chemistry	Soph., jr., sr.	3-4 or 7-8 or 21-22; 1 year Biol. Science
	Lect.	11 MWF	100C	Hunter
	Lab.	2-5 MW	10C	Schuman
	Rec.	1 W	111C	Schuman
*115	2	Adv. Organic Chem.	Sr.	35-36
		9 MWF	325C	Hunter
*116	2	Theoretical Org. Chem. ...	Sr.	35-36
		9 MWF	325C	Hunter
<i>Division of Physical Chemistry</i>				
*121-122	4†	Physical Chemistry	Jr., sr.	35-36, Physics 2 & 4
		9 WF	115C	MacDougall

No.	Credits	Title	Offered to	Prerequisite courses
*123-124	2†	Physico-Chemical Lab. ...	Jr., sr.	Must be taken in conjunction with 121-122
		9-12 M	117C	MacDougall
		2-5 F	117C	MacDougall
*125-126	6†	Adv. Physical Chemistry.	.....	.....
		Ar Ar	Ar	MacDougall
<i>Division of Technological Chemistry</i>				
27-28	2†	Chem. in Every-Day Life.	Jr., sr.	3-4 or 7-8 or 21-22
		Ar Ar	Ar	Geiger
<i>Division of Industrial Chemistry</i>				
15	2	Photochemistry	Jr., sr.	3-4 or 7-8 or 21-22
		Ar Ar	27C	†

† Both semesters must be completed before credit is given for the first semester.

DIVISION OF GENERAL AND INORGANIC CHEMISTRY

- 1-2. **GENERAL CHEMISTRY.** A study of the metallic and non-metallic elements, and the underlying laws and theories of chemistry. COHEN and Assistants.
- 3-4. **ADVANCED GENERAL CHEMISTRY AND QUALITATIVE ANALYSIS.** This course includes a study of the chemical elements and their more important compounds, the acid and basic qualitative analysis, and a consideration of the important laws and theories of chemistry. MAC-DOUGALL and Assistants.
- 5-6. **GENERAL AND INORGANIC CHEMISTRY.** An introduction to descriptive chemistry. Open only to students taking Arts and Chemistry. and Assistant.
- 7-8. **QUALITATIVE ANALYSIS.** 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. NICHOLSON and Assistants.
10. **GLASS BLOWING.** Demonstrations of glass manipulation. The construction and repair of simple glass apparatus. Open only to those who have taken or are taking practice teaching in chemistry. Three hours laboratory practice per week.
17. **COLLOQUIUM IN INORGANIC CHEMISTRY.** A systematic review.
20. **TEACHERS' COURSE.** For those who expect to teach chemistry. GEIGER.
- 21-22. **INORGANIC AND QUALITATIVE CHEMISTRY.** This includes a study of the non-metals, metals, and qualitative analysis, together with a discussion of the fundamental laws and theories of chemistry. COHEN.
- *167-168. **ADVANCED INORGANIC CHEMISTRY.** Designed to systematize and broaden the student's knowledge of inorganic chemistry. Based largely on the periodic system. Important types of chemical reactions studied with reference to their analytical and industrial significance. Lectures, recitations, assigned reading. Not offered in 1918-19 BAKER.

- *169-170. CHEMISTRY OF THE RARE ELEMENTS. The descriptive chemistry of the rare elements and their analytical separation. NICHOLSON.

DIVISION OF ANALYTICAL CHEMISTRY

- 11-12. QUANTITATIVE ANALYSIS. First semester: a general discussion of quantitative methods with laboratory work in gravimetric analysis. Second semester: a discussion of standard solutions and the necessary stoichiometric calculations with laboratory work in volumetric analysis. SIDENER.

- *107-108. ADVANCED QUANTITATIVE ANALYSIS. The work in this course will be adapted as far as possible to the needs and desires of the individual students. SIDENER.

DIVISION OF ORGANIC CHEMISTRY

- 13-14. MEDICAL ORGANIC CHEMISTRY. The chemistry of carbon, including the preparation of some of the important organic compounds. Emphasis laid on the parts of organic chemistry most important in medicine. Open only to students in Arts and Medicine Course. HUNTER.

18. COLLOQUIUM IN ORGANIC CHEMISTRY. A thoro quiz in general organic chemistry.

- 35-36. ORGANIC CHEMISTRY. The aliphatic and the aromatic series with the preparation of the more important compounds. HUNTER, SCHUMAN, and Assistants.

- *115. ADVANCED ORGANIC CHEMISTRY. Selected topics: constitution work, quinones, etc.; the study of organic reactions. HUNTER.

- *116. THEORETICAL ORGANIC CHEMISTRY. A consideration of theories that apply especially to carbon compounds, such as relation of properties to constitution, the carbon valence theory. HUNTER.

DIVISION OF PHYSICAL CHEMISTRY

- *121-122. PHYSICAL CHEMISTRY. A consideration of the theories and laws, phenomena, and processes which form the basis of chemical science. Charts, models, and experiments employed to supplement and illustrate the discussions. MACDOUGALL.

- *123-124. PHYSICOCHEMICAL LABORATORY PRACTICE. Physicochemical methods and measurements. MACDOUGALL.

- *125-126. ADVANCED PHYSICAL CHEMISTRY. The theories of chemistry treated systematically from the standpoint of thermodynamics and the molecular theory. Suited to the needs of candidates for higher degrees and all others interested in advances of modern physical chemistry. MACDOUGALL.

DIVISION OF TECHNOLOGICAL CHEMISTRY

27-28. CHEMISTRY OF EVERY-DAY LIFE. A discussion of the inorganic and organic substances used in every-day life. GEIGER.

DIVISION OF INDUSTRIAL CHEMISTRY

15. PHOTOCHEMISTRY. A discussion of the general principles of photochemistry and their application to scientific photography and photosynthesis, etc. WARD.

COMPARATIVE PHILOLOGY

Professor FREDERICK KLAEBER.

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.

As a matter of course, candidates for the Master's degree must have a knowledge of Latin and German; candidates for the Doctor's degree must have a knowledge of Greek also.

Students are advised to confer with the department before selecting courses.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
*101	2	Science of Language..... 2 TTh	Jr., sr., grad 205F	See bulletin statement Klaeber
*105	1	Universal Language..... 10 S	Jr., sr., grad. Ar	Same as for 101 Klaeber
*106	2	The Life of Words..... 2 TTh	Jr., sr., grad. 205F	Same as for 101 Klaeber
*141-142	4	Historical Grammar of the English Language 2 WF	Jr., sr., grad 205F	See bulletin statement Klaeber
*162	2	Phonetics 4 MW	Jr., sr., grad 207F	See bulletin statement Kroesch

*101. GENERAL INTRODUCTION TO THE SCIENCE OF LANGUAGE. Prerequisite, one of the following groups: (1) five years foreign language, four may be in high school and one in college; (2) two years foreign language in college; (3) six credits Old English; (4) Courses 3 and 5 in English. KLAEBER.

*102. SCIENCE OF LANGUAGE (Advanced Course). Investigation of linguistic problems. Study of standard works, Reports on recent publications. Prerequisites the same as those for Course 101. Alternates with Course 106. Not given in 1918-19. KLAEBER.

*105. UNIVERSAL LANGUAGE. Comparison of families of languages grammatically and lexically. Movement for creation of an international language. Consideration of Volapük, Esperanto, Ido, etc. KLAEBER.

- *106. THE LIFE OF WORDS. Etymology and semasiology. Growth of vocabulary; change of words in form and meaning. Special reference to English and Germanic languages. Alternates with Course 102. KLAEBER.
- *109-110. HISTORY OF THE GERMAN LANGUAGE. Lectures, discussions, assigned readings. Prerequisites, German 53-54. This course is identical with German 109-110. Alternates with Course 141-142. Not given in 1918-19. KLAEBER.
- *141-142. HISTORICAL GRAMMAR OF THE ENGLISH LANGUAGE. I. Sounds and spelling. II. Accidence and syntax. Alternates with Course 109-110. KLAEBER.
- *162. PHONETICS. A study of speech sounds and the nature of their production with special reference to English, French, and German. Open to students of the modern languages. Prerequisite, two credits in starred courses. Identical with German 162. KROESCH.

DRAWING AND DESCRIPTIVE GEOMETRY

Professor WILLIAM H. KIRCHNER; Assistant Professors ROBERT W. FRENCH, OTTO S. ZELNER; Instructors INGVALD KVITRUD, MAURICE B. LAGAARD.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
31a,b	2	Drafting and Tracing.... 2, 3, 4 TTh	Soph., jr., sr. 225ME	None
33-34	4	Technical Drawing 8, 9 TThS	All 225ME	None

31a,b. DRAFTING AND TRACING. Intensive course on instruments, elementary projection, lettering, drafting-room methods and conventions, including tracing and blue-printing. A special war service course of instruction open to women students. Primarily designed to meet the demand of the industries. KIRCHNER, FRENCH, and Assistants.

33-34. TECHNICAL DRAWING. A general course in the theory and practice of drawing. Sketching, lettering, tracing, blue-printing, and mechanical drawing. The use in instruments, projections (constructive geometry), and working drawings. KIRCHNER, ZELNER.

ECONOMICS

Professors WILLARD E. HOTCHKISS, GEORGE W. DOWRIE, E. DANA DURAND,¹ JOHN H. GRAY;¹ Associate Professors ROY G. BLAKEY, WILLIAM W. CUMBERLAND; Assistant Professors JOHN D. BLACK, J. HUGH JACKSON, EDWIN CLYDE ROBBINS; Professorial Lecturer J. FRANKLIN EBERSOLE; Instructor J. WARREN STEHMAN; in the General Extension Division, Associate Professors CHARLES H. PRESTON, CLARE L. ROTZEL.

¹ Absent on leave, 1918-19.

DEPARTMENTAL STATEMENTS

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COURSES

No.	Credits	Title	Offered to	Prerequisite courses
‡2	3	Industrial and Commercial Society of the United States	Fr., soph.	None
		Sec. 1 8 MWF	102MA	Robbins
		Sec. 2 9 MWF	102MA	Robbins
		Sec. 3 2 MWF	209MA	Robbins
3-4	6†	General Economics	Soph., jr., sr.	None
		Sec. 1 8 TThS	209MA	Stehman
		Sec. 2 9 TThS	209MA	Dowrie
		Sec. 3 9 TThS	109MA	Stehman
		Sec. 4 10 MWF	209MA	Blakey
		Sec. 5 3 MWF	202MA	James
		Sec. 6 3 MWF	209MA	Stehman
18	3	Problems in Agr. Econ... 11:40 MWF	Soph., jr., sr. Farm	3 Black
19	3	Marketing of Farm Prod.. 11:40 MWF	Jr., sr. Farm	3 Cumberland
35-36	6†	Accounting Principles....	Soph., jr., sr.	None
		Sec. 1 Lect. & Quiz. 10 WF	301MA	Ar
		Sec. 2 Lect. & Quiz. 11 TS	301MA	Ar
		Sec. 1 Lab. 1, 2 T	301MA	Ar
		Sec. 2 Lab. 1, 2 Th	301MA	Ar
		Sec. 3 Lect. & Quiz. 2 MF	301MA	Ar
41	3	Financial History	Soph., jr., sr.	3
		11 MWF	209MA	Blakey
43-44	6†	Mechanism of Exchange.. 10 TThS	Soph., jr., sr. 202MA	3 Dowrie
*52	3	Corporation Finance	Jr., sr. 3F	6 cr. incl. 3 Ar
		9 TThS		
*59	3	Insurance	Jr., sr. 102MA	3-4 James
		10 TThS		
*76	3	Commercial Policies	Jr., sr. 209MA	6 cr. incl. 3 Blakey
		11 MWF		
*85	3	Marketing of Products... 9 TThS	Jr., sr. 202MA	3-4 James
		10 TThS		
*86	3	Advertising and Selling.. 10 TThS	Jr., sr. 209MA	85 James
		9 TThS		
*88	3	Retail Marketing	Jr., sr. 213MA	6 cr. incl. 85 James
		9 TThS		
*101	3	Statistics	Jr., sr., grad.	6 cr. incl. 3
		Lect. & Quiz. 1 W	303MA	Black
		Lab. 1, 2 MF	303MA	Black
*107	3	Land Tenure	Jr., sr., grad.	18 or 4
		8:55 TThS	Farm	Black
*108	3	Agricultural Statistics ... 8:55 TThS	Jr., sr., grad. Farm	101 Black
		8:55 TThS		
*123	3	Business Organization and Management	Jr., sr., grad.	3-4
		10 MWF	109MA	Hotchkiss
*124	3	Business and Government. 10 MWF	Jr., sr., grad. 109MA	3-4 Hotchkiss

† Both semesters must be completed before credit is given for the first semester.

*131	3	Cost Accounting	Jr., sr., grad.	35-36
		9 MWF	301MA	Ar
*133-134	6†	Auditing	Jr., sr., grad.	135-136
		8 MWF	213MA	Rotzel
*135-136	6†	Accounting Problems	Jr., sr., grad.	35-36
		11 MWF	301MA	Ar
*139	3	Bank Administration	Jr., sr., grad.	‡43
		3 MWF	213MA	Ebersole
*142a	3	Investments	Jr., sr., grad.	6 cr. incl. 3
		2 MWF	202MA	Ebersole
*142b	3	Investments	Jr., sr., grad.	6 cr. incl. 3
		3 MWF	213MA	Ebersole
*144	3	Business Cycles	Jr., sr., grad.	43
		2 MWF	202MA	Ebersole
*151-152	6†	Seminar in Business Policy	Sr., grad.	‡123 and 3 credits in starred courses
		Ar Ar	Ar	Hotchkiss
*161	3	Labor Problems	Jr., sr., grad.	6 cr. incl. 3
		10 TThS	209MA	Robbins
*173	3	Railway Problems	Jr., sr., grad.	6 cr. incl. 3
		9 TThS	3P	Ar
*191	3	Public Finance	Jr., sr., grad.	6 cr. incl. 3
		9 MWF	209MA	Blakey
*192	3	State and Local Taxation..	Jr., sr., grad.	191
		9 MWF	209MA	Blakey
*195-196	6†	Seminar in Finance.....	Sr., grad.	‡12 cr. incl. 43-44
		Ar Ar	Ar	Dowrie, Ebersole
*261-262	Ar	Seminar	Grad.	‡12 cr. in starred courses
		Ar Ar	Ar	Hotchkiss, et al

† Both semesters must be completed before credit is given for the first semester

‡ Course 2 can not be taken concurrently with 3-4.

§ Admission conditioned also on approval of instructor.

2. INDUSTRIAL AND COMMERCIAL SOCIETY OF THE UNITED STATES. An introductory study of modern industry as a foundation for the further study of economics. Land, labor, capital, enterprise as divisions of the productive process. Exchange. Ways in which society influences production. ROBBINS.

†2a,b. See Course 2. ROBBINS.

3-4. GENERAL ECONOMICS. Principles that underlie the present industrial order. Application of principles to economic problems such as labor, insurance, finance, transportation, industrial combination, government control. DOWRIE, BLAKEY, STEHMAN.

†3a,b. See Course 3-4. CUMBERLAND, BLACK, ROBBINS.

9. INDUSTRIAL HISTORY SINCE 1750. Economic effects of inventions, wars, political changes, increased supply of precious metals, improved transportation, and modification of business organization; chief emphasis on Great Britain. Not given in 1918-19. GRAY.

†18. PROBLEMS IN AGRICULTURAL ECONOMICS. The economic facts and principles underlying the practical problems confronting the farmer

- as producer, consumer, and citizen, such as what to produce, intensity of cultivation, farm labor, tenancy, land settlement, farm credit, marketing, and taxation. BLACK.
- †19. MARKETING OF FARM PRODUCTS. The organization and methods of marketing; the functions of middlemen; the costs of marketing various products; cooperative marketing. CUMBERLAND.
- 35-36. PRINCIPLES OF ACCOUNTING. The purpose and principles of account classification; capital and revenue; accruals; valuation; depreciation; preparation and interpretation of balance sheets, income accounts, and other statements; corporation accounts. A laboratory course with supplementary lectures. JACKSON.
41. FINANCIAL HISTORY OF THE UNITED STATES. American monetary and fiscal legislation from colonial times with especial emphasis upon the distinction between maintaining a standard of value and the providing of a revenue for the needs of government. BLAKEY.
- 43-44. THE MECHANISM OF EXCHANGE. Relation to industrial system. Monetary principles with special reference to United States. American banking and bank organization, principles of commercial banking, non-commercial banking, relation of government to banking, comparative study of leading foreign systems. DOWRIE.
- *52. CORPORATION FINANCE. The organizing, financing, and managing of corporations. The relation of the government to the corporation. The operations of the stock exchange and a study of corporate securities for purposes of investment and speculation.
- *59. INSURANCE. Principles of insurance with special reference to fire, life, and accident insurance. Critical examination of policy contracts, the premium, reserve, and rights and obligations of policy holders. Public regulation of insurance companies. JAMES.
- *76. COMMERCIAL POLICIES. Theory of international commerce; free trade, reciprocity, and protection, with special emphasis on the tariff history and policy of the United States; commercial treaties and foreign politics. Lectures, assigned readings, and reports. BLAKEY.
- *85. MARKETING OF PRODUCTS. Domestic merchandising methods of manufacturers. Problems of wholesalers and commission men; distributing system and market organization; price policies. JAMES.
- *86. ADVERTISING AND SELLING. Functions and principles of advertising; advertising media; planning and executing an advertising campaign. Copy. Sales management and personal salesmanship. JAMES.
- *88. RETAIL MARKETING. Problems and methods of the so-called regular retailer, department stores, and chain stores. Development of retail trade centers. Cooperation between the retailer and the local board of trade. The retailer and the consumer. JAMES.

- *101. STATISTICS. Principles of collection, tabulation, and interpretation of statistical material, illustrated by present-day statistical data. Lectures, assigned readings, and special investigations by individual members of the class. BLACK.
- *102. ADVANCED STATISTICS. A continuation of Course 101, dealing with more advanced problems connected with assembling, tabulating, interpreting, and using statistical information. As far as practicable the data used will be drawn from business. Not given in 1918-19.
- *103. DISTRIBUTION OF WEALTH. An advanced course in economic theory devoted chiefly to a study of recent theories of distribution. Assigned readings, reports, and discussions. Not given in 1918-19.
- *104. HISTORY OF ECONOMIC IDEAS. History of economic thought; scope and logical methods, relation to other social sciences; methods of investigation and instruction. Assigned readings, reports, and class discussions. Not given in 1918-19.
- §*107. LAND TENURE. A study of several problems arising out of the land basis of civilization, such as property in land, land utilization, land classification, land settlement, status of the agricultural classes, farm labor, farm ownership and tenancy. BLACK.
- §*108. AGRICULTURAL STATISTICS. Study and practice of the special methods of statistical investigation, analysis, and presentation which have been developed for agriculture, together with descriptive statistics of agriculture. BLACK.
- §*118. ADVANCED PROBLEMS IN AGRICULTURAL ECONOMICS. CUMBERLAND.
- §*119-120. SEMINAR IN AGRICULTURAL ECONOMICS. CUMBERLAND, BLACK.
- *123. BUSINESS ORGANIZATION AND MANAGEMENT. Organization: principles applying to business in general and to particular concerns; evolution, objects, adjustments, limits, functional division; specialization—functional and other forms; standardization. Management: coordination of functions, handling of men, employment, external versus internal factors. HOTCHKISS.
- *124. BUSINESS AND GOVERNMENT. Business expansion, diversification, and conflicting interests. Laissez faire versus regulation. Enforcement of minimum standards. Administration of business legislation. Cooperation between government and business. Public coordination of business forces. Reaction of emergency measures on permanent policy. HOTCHKISS.
- *131. COST ACCOUNTING. Analysis of production cost; methods of recording materials, labor, and machine costs; apportioning indirect expenses; relation of cost to general accounts; use of cost data to enforce operating efficiency. Laboratory with lectures.

- *133-134. **AUDITING.** Preparation for, and conduct of, an audit; the auditor's report and certification, and legal responsibilities. Textbook, assigned readings, class discussions, and lectures. ROTZEL.
- *135-136. **ACCOUNTING PROBLEMS.** A study of the preparation of business and financial statements, chiefly from the standpoint of administrative statistics; based on problems from C. P. A. examinations and other sources. JACKSON.
- *139. **BANK ADMINISTRATION.** The modern commercial bank from the manager's point of view. Legal problems, department functions, profit making methods, credits. Adjustment of bank policy to prospective business conditions. Lectures, and laboratory work in local banks. EBERSOLE.
- *142a,b. **INVESTMENTS.** The social process of saving and investment; government, municipal, corporation, and real estate loans; stock exchange operations and money market influences as they affect the prices and net yield of prime securities. EBERSOLE.
- *144. **BUSINESS CYCLES.** American business conditions since 1890 with regard to the great cycles of alternate prosperity and depression and financial panics. Critical examination of all the available business barometers designed to forecast similar conditions. EBERSOLE.
- *145. **THE MODERN BUSINESS CORPORATION.** The organizing, financing, and managing of corporations; the corporation before the law; methods of accounting; the relation of the government to the corporation; the question of trusts in its various phases. Not given in 1918-19. GRAY.
- *146. **PUBLIC UTILITIES.** Economic and legal bases of classification. Relative advantages of public ownership and regulation. Central and municipal regulation compared. The basis of rates; relative rates; rates and service. Different theories of valuation. Not given in 1918-19. GRAY.
- *151-152. **SEMINAR IN BUSINESS POLICY.** Individual investigations and reports upon fundamental questions of business policy. The investigations will have to do with the public relations of particular concerns and with their relations to customers, creditors, competitors, and employees. HOTCHKISS.
- *161. **LABOR PROBLEMS.** Modern labor problems; woman and child labor, industrial education, unemployment, poverty, industrial hygiene, welfare work, profit-sharing, coöperation, labor unions, strikes, boycotts, conciliation, and arbitration; economic causes and effects of immigration. ROBBINS.
- *173. **RAILWAY PROBLEMS.** The theory and practice of railway rate making. Railway organization and finance viewed historically and scientifically. Government regulation, the conflict between state and federal authorities and suggested improvements in railway control.

- *191. PUBLIC FINANCE. Public expenditures; public debt; budgetary legislation; tax systems. BLAKEY.
- *192. STATE AND LOCAL TAXATION. Problems of state and local taxation. Historic survey of various taxes and examination of present procedure in taxing different kinds of property; tax reforms. Particular attention given to conditions in Minnesota. BLAKEY.
- *195-196. SEMINAR IN FINANCE. The various unsettled monetary and banking problems of the United States will furnish topics for individual investigation. DOWRIE, EBERSOLE.
- *251-252. SEMINAR IN STATISTICS. Individual research in statistical problems and methods. Not given in 1918-19. DURAND.
- *259-260. SEMINAR IN CORPORATION AND TRUST PROBLEMS. Practical and independent investigation by each student, under the guidance of the instructor, of some specific problem pertaining to corporations, trusts, and other monopolies. Not given in 1918-19. DURAND.
- *261-262. SEMINAR FOR GRADUATES EXCLUSIVELY. Research to be arranged with individual instructors in the various fields of economics. Prerequisites: twelve credits in starred courses and the approval of the department. HOTCHKISS and other members of the department.

EDUCATION

Professors LOTUS D. COFFMAN, ALBERT W. RANKIN, FLETCHER H. SWIFT; Assistant Professor MARVIN J. VAN WAGENEN; Instructors JEAN H. ALEXANDER, REWEY BELLE INGLIS, WILLIAM D. REEVE; Special Lecturers THADDEUS P. GIDDINGS, GEORGINA LOMMEN.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
*1a	3	Brief course in History of Education	Jr., sr. 205Ed	Psychol. 1-2
		8 TThS	205Ed	Alexander
		9 TThS	205Ed	Alexander
		9 MWF	205Ed	Alexander
		10 MWF	205Ed	Alexander
*1b	3	Brief Course in History of Education	Jr., sr. 205Ed	Psychol. 1-2
		9 TThS	205Ed	Alexander
*3a	3	Social Aspects of Education	Jr., sr. 204Ed	Psychol. 1-2
		4 MWF	204Ed	¶
*3b	3	Social Aspects of Education	Jr., sr. 204Ed	Psychol. 1-2
		8 MWF	204Ed	Rankin
*11a	3	Technique of Teaching...	Jr., sr. 205Ed	Psychol. 1-2
		8 MWF	205Ed	¶
		9 MWF	204Ed	¶
*11b	3	Technique of Teaching...	Jr., sr. 204Ed	Psychol. 1-2
		9 MWF	204Ed	¶
*15a	3	Practice Teaching.....	Sr., grad. Ar	See statement
		Ar	Ar	¶

DEPARTMENTAL STATEMENTS

*15b	3	Practice Teaching..... Ar Ar	Sr., grad. Ar	See statement
*101	3	Hist. Found. of Mod. Educ. 11-12:30 TS	Jr., sr., grad. 205Ed	Psychol. 1-2 and 6 cr. in Dept. of History Swift
*103	3	Educational Classics..... 10 TThS	Jr., sr., grad. 205Ed	1 or 101-102 Alexander
*104	3	Educational Classics..... 10 TThS	Jr., sr., grad. 205Ed	1 or 101-102 Alexander
*105	3	Educational Psychology... 11 MWF	Sr., grad. 202Ed	Psychol. 1-2 Van Wageningen
*106	3	Educational Psychology... 11 MWF	Sr., grad. 202Ed	Psychol. 1-2 Van Wageningen
*109	2	Educational Diagnosis.... 10-11:40 S	Sr., grad. 204Ed	1 or 101-102 and 3 Van Wageningen
*110	3	Psychology of Secondary School Subjects..... 4 MWF	Sr., grad. 204Ed	Psychol. 1-2 Van Wageningen
*114	2	Psychology of Learning... 8-9:40 S	Sr., grad. 202Ed	Psychol. 1-2 Van Wageningen
*115	2	Psychology of Elementary School Subjects..... 10-11:40 S	Sr., grad. 111Ed	Psychol. 1-2 Van Wageningen
*119	3	School Curricula..... 4 MWF	Sr., grad. 205Ed	1 or 101-102 and 3 Rankin
*121a	3	School Organ. and Admin. 3 MWF	Sr., grad. 205Ed	1 or 101-102 and 3 Rankin
*121b	3	School Organ. and Admin. 3 MWF	Sr., grad. 205Ed	1 or 101-102 and 3 Rankin
*123	3	Theory of Supervision.... 11 MWF	Sr., grad. 205Ed	1 or 101-102 and 3 Coffman
*124	3	Educational Administration 3 MWF	Sr., grad. 111Ed	121 Coffman
*125	2	Methods in Educ. Research 3 MW	Sr., grad. 111Ed	1 or 101-102 and 3 Van Wageningen
*132	3	Foreign Schools..... Ar Ar	Sr., grad. Ar	1 or 101-102 and 3 Alexander
*134	2	Mental Diagnosis..... 10-11:40 S	Sr., grad. 206Ed	Psychol. 1-2
*135	2	Mental Tests..... 2-4 WF	Jr., sr., grad. 202Ed	Psychol. 1-2
*136	2	Experimental Education... 4-6 TTh	Jr., sr., grad. 202Ed	Psychol. 1-2 Van Wageningen
*137-138	1 to 6	Psycho-Educational Clinic. 12:30-2:30 MWF	Sr., grad. 126-128MH	Psychol. 1-2; Ed. 109, 134, or 135
*141	3	School Sanitation..... 8 MWF	Sr., grad. 204Ed	1 or 101-102 and 3 Rankin
*142	3	Industrial Education.... 4 MWF	Sr., grad. 205Ed	1 or 101-102 and 3 Rankin
*146	3	Hist. & Prin. of Religious Education..... 9 TThS	Jr., sr., grad. 203Ed	Psychol. 1-2 Swift
*148	3	History of Elementary and Secondary Education in the United States..... 2 MWF	Jr., sr., grad. 205Ed	Psychol. 1-2 Alexander

*201-202	4	Seminar in Selected Problems in Educ. Hist....	Grad.	101-102 and 6 cr. in Dept. History
		4-5:30 T	214Ed	Swift
*205-206	4	Seminar in Educ. Admin.	Grad.	124, 215
		4-5:30 W	203Ed	Coffman
*207-208	4	Seminar in Amer. School	Grad.	1 or 101-102 and 3
		4-5:30 Th	203Ed	Swift

HISTORY OF EDUCATION

*12 or 1b. A BRIEF COURSE IN THE HISTORY OF EDUCATION. Current school problems and educational theories in the light of their history. Emphasis upon secondary education and those aspects of education of most immediate concern to high-school teachers. ALEXANDER.

*101. FOUNDATIONS OF MODERN EDUCATION. Elements in modern education derived from the Hebrews, Greeks, Romans, Middle Ages, and Renaissance. Emphasis laid upon secondary and higher education, origin and results of monopoly of the cultural conception of education and cultural studies. SWIFT.

*102. HISTORY OF EDUCATION FROM THE REFORMATION TO THE PRESENT TIME. Modern educational institutions, theories, and problems in the light of their history. Special emphasis upon elementary education. Not offered in 1918-19. SWIFT.

*103. EDUCATIONAL CLASSICS. An intensive study of selected writings of educational leaders, ancient, medieval, and renaissance. ALEXANDER.

*104. EDUCATIONAL CLASSICS. An intensive study of selected writings of educational leaders, from Locke to the present time. ALEXANDER.

*148. HISTORY OF ELEMENTARY AND SECONDARY EDUCATION IN THE UNITED STATES. A study of the evolution of American educational institutions and practices from colonial times to the present. ALEXANDER.

*201-202. HISTORY OF EDUCATION SEMINAR. Topic for the year 1918-19: history of public school support in the United States. In certain cases students will be allowed to devote themselves to other topics selected from an approved list. SWIFT.

PRINCIPLES OF EDUCATION

*11a or 11b. TECHNIQUE OF TEACHING. Types of classroom exercises; preparation of teaching plans; hygiene of instruction; classroom management; the professional ethics of teaching; observation of high-school work.

EDUCATIONAL PSYCHOLOGY

*105. EDUCATIONAL PSYCHOLOGY. Advanced work in genetic psychology, origin and nature of the human organism; origin, development, and control of instincts; their relations to group activities; relation of instincts to formation of habits; introductory to psychology of learning. VAN WAGENEN.

- *106. EDUCATIONAL PSYCHOLOGY. The psychology of learning. Methods of measuring the rate of learning; study of typical learning experiments; examination of the conditions of the most economic learning; study of individual differences; and the psychology of school subjects. VAN WAGENEN.
- *109. EDUCATIONAL DIAGNOSIS. Typical educational problems involving the use of educational scales and standard tests. Nature of the tests, methods of their use, analysis of results obtained, and programs of remedial educational procedure based on results of the test. VAN WAGENEN.
- *110. PSYCHOLOGY OF SECONDARY SCHOOL SUBJECTS. A review of experimental results dealing with the high-school curriculum, the bearing of these results upon the selection of the content of the high-school subjects, and the methods of presenting it effectively. VAN WAGENEN.
- *114. PSYCHOLOGY OF LEARNING. Various elements entering into the learning process of children; discussion of these elements in the learning of the subject-matter of the elementary school curriculum; practical bearing of these elements in planning of classroom activities. VAN WAGENEN.
- *115. PSYCHOLOGY OF ELEMENTARY SCHOOL SUBJECTS. A review of experimental results dealing with elementary school subject-matter, discussion of direct bearing of these findings upon the selection and method of presentation of the content of various subjects of the elementary school curriculum. VAN WAGENEN.
- *134. MENTAL DIAGNOSIS OF SCHOOL CHILDREN. Study of mental variation in children, its nature, degree, causes, and effects. (Introductory to course) series of lectures on the anatomy, physiology, and pathology of childhood. Methods of treating superior and sub-normal children in schools.
- *135. MENTAL TESTS. A study of individual differences by means of mental tests. Laboratory work in giving and taking tests introductory to the use of group tests for the measurement of age-level, etc.
- *136. EXPERIMENTAL EDUCATION. The application of experimental methods to educational research. Problems in mental measurement, educational and mental diagnosis, and the psychology of learning will be set as individual problems for properly prepared students. VAN WAGENEN.
- *137-138. PSYCHO-EDUCATIONAL CLINIC. Close cooperation with Medical School clinics in pediatrics, nervous and mental diseases. Mental examination and diagnosis. Practical experience in use of standardized tests, family history, school records. Study and treatment of several individual cases.

SCHOOL ADMINISTRATION

- *3a or 3b. SOCIAL ASPECTS OF EDUCATION. The school as a community factor; the present peculiar relation of the school to social problems; the function of the school in these relations. RANKIN.
- *3bt. SOCIAL ASPECTS OF EDUCATION. Same as above for teachers. RANKIN.
- *5. AMERICAN SCHOOL. A brief survey of the factors determining the problem of public education in America, followed by a brief account of the development and organization of typical state school systems. SWIFT.
- *119. SCHOOL CURRICULA. A study of the ideas implicit in a democratic society and an attempt to apply those ideas in the selection of the material of school curricula. Constructive aims and methods of education. RANKIN.
- *121a. SCHOOL ORGANIZATION AND ADMINISTRATION. An introductory course in school administration for students of teaching experience and for those looking forward to work as principals and superintendents. RANKIN.
- *121b. Same as Course 121a. RANKIN.
- *123. THEORY OF SUPERVISION. The problems involved in the training of teachers in service; studies of qualities of merit in teachers; factors in service; factors in selecting teachers; the distribution of subject matter by grades; time allotment of studies. COFFMAN.
- *124. EDUCATIONAL ADMINISTRATION. The interpretation of present tendencies in the administration of state and city school systems. COFFMAN.
- *125. METHODS IN EDUCATIONAL RESEARCH. A study of statistical and other methods as applied to educational investigation. This course is ordinarily required of all candidates for advanced degrees. VAN WAGENEN.
- *205-206. SEMINAR IN EDUCATIONAL ADMINISTRATION. COFFMAN.
- *207-208. SEMINAR IN AMERICAN SCHOOL. A research course devoted to an intensive study of certain factors determining the problem of public education in America. Typical problems: school population, teaching population, education of the immigrant, elementary school support. SWIFT.

SCHOOL SANITATION AND HYGIENE

- *141. SCHOOL SANITATION AND PUBLIC HEALTH. A course in school hygiene in its broader aspects. Designed for all teachers and supervisors who are responsible for the health of school children. Treats of medical supervision and other problems arising from school environment. RANKIN.

INDUSTRIAL EDUCATION

- *142. INDUSTRIAL EDUCATION. Existing types of industrial and vocational schools and systems of training. Comparison of conditions in America and foreign countries. Organization of course of study. RANKIN.

FOREIGN SCHOOLS

- *132. FOREIGN SCHOOLS. A survey and comparison of existing school systems in France, England, Germany, Denmark, and other European countries with emphasis on present problems. ALEXANDER.

RELIGIOUS EDUCATION

- *146. HISTORY AND PRINCIPLES OF RELIGIOUS EDUCATION. Part I: The influence of religion and religious education as social and spiritual forces among certain selected types. Part II: Principles of education as applied to religious instruction and training. Pursued as a graduate course under certain conditions. SWIFT.

PRACTICE TEACHING

- *15a,b. PRACTICE TEACHING. Teaching under supervision in the University High School and in the Minneapolis city schools, in the regular secondary school subjects. The course calls for one period daily at the school where the work is assigned.

ENGLISH, RHETORIC, AND PUBLIC SPEAKING

Chairman for English, CARLETON BROWN; Chairman for Rhetoric and Public Speaking, JOSEPH M. THOMAS.

Professors CARLETON BROWN, RICHARD BURTON, HARDIN CRAIG,¹ OSCAR W. FIRKINS, FREDERICK KLAEBER, ELMER E. STOLL, JOSEPH M. THOMAS; Associate Professors JOSEPH W. BEACH, FRANK M. RARIG; Assistant Professors DANIEL FORD, CHARLES W. NICHOLS, GEORGE N. NORTHROP,² ANNA H. PHELAN, HELEN A. WHITNEY; Professorial Lecturer CECIL A. MOORE; Instructors SAMUEL N. BEHRMAN, THOMAS E. BREECE, ELIZABETH HAWTHORN, CYRIL A. HERRICK, JAMES T. HILLHOUSE, SIGURD B. HUSTVEDT, ELIZABETH JACKSON, RIVERDA H. JORDAN, CHARLES F. LINDSLEY, THOMAS R. MATHER, A. W. OLMSTEAD, MARTIN B. RUUD, FRANK SMOYER; Assistants MARY ELLEN CHASE, FRANCES KELLEY.

REQUIREMENTS OF THE DEPARTMENT

For B.A. with Honors in English, the general requirements; twenty-four credits in English, a reading knowledge of French, German, Italian, Greek, or Latin, and a final year's work in seminar for which a sequence shall have been specially arranged.

¹ Absent on leave, 1918-19.

For B.A. with Honors in Rhetoric, the general requirements; a reading knowledge of either Latin, French, or German; at least fifteen credits in starred courses in Rhetoric, including Course 201-202.

For a Teacher's Certificate in English.

a. English as the major subject of teaching:

English 1-2, 3, 5 or 7, and 27; Rhetoric 1-2, either 11-12 or 15-16, and 41-42.

b. English as the minor subject of teaching:

English 1-2, and 3; Rhetoric 1-2, and either 11-12 or 15-16.

In order to be recommended, a student must secure an average of at least one and one-half honor points for each credit hour of all the work taken in English and Rhetoric.

For a Teacher's Certificate in Public Speaking, a student must satisfy the department that he is actively interested in some phase of public speaking either as a member of a literary or debating society, or as a participant in a contest or dramatic performance, or as a lecturer; must have the approval of the department; and must complete the following courses: Rhetoric 1-2, 11-12 or 15-16, 41-42, and six additional hours in Public Speaking.

COURSES IN ENGLISH

No.	Credits	Title	Offered to	Prerequisite courses
1-2	6	General Survey Eng. Lit.	Soph., jr., sr.	Rhet. 1-2
		11 MWF	301F	†
		11 MWF	213F	†
		11 MWF	204F	†
		11 MWF	110F	†
		3 MWF	301F	†
		3 MWF	204F	†
		3 MWF	110F	†
		3 MWF	205F	†
3a	3	Old English	Soph., jr., sr.	1-2†
		9 TThS	110F	Firkins
3b	3	Old English	Soph., jr., sr.	1-2†
		9 TThS	205F	Klaeber
5a	3	Chaucer	Soph., jr., sr.	1-2†
		9 TThS	204F	Brown
5b	3	Chaucer	Soph., jr., sr.	1-2†
		9 TThS	110F	Firkins
7	3	Shakespeare	Soph., jr., sr.	1-2†
		10 TThS	301F	Stoll
27	1	History of English Lang.	Jr., sr.	3
		11 S	206F	Klaeber
*51	3	Spenser	Jr., sr.	1-2
		2 MWF	110F	Firkins
*56	3	Advanced Old English...	Jr., sr.	1-2 and 3
		10 TThS	205F	Klaeber
*58	3	Nineteenth Century Prose.	Jr., sr.	1-2
		10 MWF	301F	Beach
*6a	3	Milton	Jr., sr.	1-2
		9 MWF	204F	Moore
*65	3	Browning and Tennyson..	Jr., sr.	1-2
		10 MWF	301F	Burton

DEPARTMENTAL STATEMENTS

*80a§	3	Teachers' Course	Jr., sr., grad.	See statement
		3:4:30 TTh	206Ed	Inglis
*80b§	3	Teachers' Course	Jr., sr., grad.	See statement
		3:4:30 TTh	206Ed	Inglis
*105	3	Eighteenth Century Poetry	Jr., sr., grad.	1-2, and 6 credits in courses below 10
		9 MWF	204F	Moore
*113-114	6	Drama	Sr., grad.	1-2, 7, and 3 credits in courses below 10
		3 MWF	206F	Firkins
*117	2	Bible as Literature.....	Jr., sr., grad.	1-2, and 6 credits in courses below 10
		11 TS	107F	Burton
*119-120	6	Prin. of Literary Criticism	Jr., sr., grad.	1-2, and 6 credits in courses below 10
		10 TThS	110F	Firkins
*123-124	4	Studies in Victorian Novelists	Sr., grad.	1-2, and 6 credits in courses below 10
		3, 4 T	221F	Beach
*129	3	Modern Drama	Sr., grad.	1-2, 7, and 3 credits in courses below 10
		11 MWF	113F	Burton
*136	3	Advanced Shakespeare ...	Jr., sr., grad.	1-2, 7, and 3 credits in courses below 10
		10 TThS	304F	Stoll
*140	2	Advanced Chaucer	Jr., sr., grad.	1-2, 5a or 5b, and 3 credits in courses below 10
		9 TTh	204F	Brown
*141-142	4	Historical English Grammar	Jr., sr., grad.	1-2, 3, and 27
		2 WF	205F	Klaeber
*145	3	Medieval Allegory	Jr., sr., grad.	1-2, and 6 credits in courses below 10
		10 TThS	302F	Brown

† This course may be taken at the same time with English 1.

‡ This course may be taken at the same time with English 2.

§ Carries credit only in Department of Education.

COURSES IN RHETORIC

No.	Credits	Title	Offered to	Prerequisite courses
1-2	6	Composition and Rhetoric.	Fr.	None
		8 MWF		To be assigned on registration
		9 MWF		To be assigned on registration
		11 MWF		To be assigned on registration
		2 MWF		To be assigned on registration
		3 MWF		To be assigned on registration
		8 TThS		To be assigned on registration
		9 TThS		To be assigned on registration
		10 TThS		To be assigned on registration
1b	3	Composition and Rhetoric.	Fr.	None
		10 MWF		To be assigned on registration
		3 MWF		To be assigned on registration
		8 TThS		To be assigned on registration

2a	3	Composition and Rhetoric.	Fr.	None
	10	MWF		To be assigned on registration
	3	MWF		To be assigned on registration
	8	TThS		To be assigned on registration
11-12	6	Exposition, Description, Narration	Soph., jr., sr.	1-2
	9	MWF	311F	Hillhouse
	10	MWF	311F	Ruud
	11	MWF	305F	Hawthorne
	3	MWF	306F	Phelan
	9	TThS	311½F	Whitney
	10	TThS	306F	Phelan
15-16	6	Exposition and Argument.	Soph., jr., sr.	1-2
	9	MWF	303F	Ford
	10	TThS	304F	Jackson
*80a	3	Teachers' Course	Jr., sr.	See note
	3-4:30	TTh	206Ed	Inglis
*80b	3	Teachers' Course	Jr., sr.	See note
	3-4:30	TTh	206Ed	Inglis
*102	3	Versification	Jr., sr., grad.	See note
	10	TThS	302F	Nichols
*103-104	6	Studies in Structure and Style	Jr., sr., grad.	1-2, 11-12; or 15-16
	2	MWF	303F	Ford
*107	3	Imitative Writing	Jr., sr., grad.	See note
	11	MWF	304F	Thomas
*110	3	Short-Story Writing	Jr., sr., grad.	See note
	11	MWF	304F	Thomas
*119-120	4	Seminar in Writing	Sr., grad.	See note
	1:30-3:20	T	302F	Thomas
*201-202	6	Seminar in Rhetoric	Sr., grad.	See note
	1:30-3:20	Th	302F	Thomas

NOTE

80. Open to juniors, seniors, graduates, qualifying for a certificate to teach English as a major subject. Credit only in Education.
102. Open to those who have taken 11-12 or 15-16, and have taken or are taking 6 hours in the historical study of English poetry.
- 107, 110. Open to those who have taken 11-12 or 15-16 and have received a grade of A or B in either semester.
- 119-120. Open with special permission to seniors and graduates. Prerequisites: Courses 1-2, 11-12, and at least one other course in Rhetoric.
- 201-202. Open to graduates and to seniors taking the Honors Course. Prerequisites: Courses 1-2, 11-12, or 15-16, and at least one other course.

COURSES IN PUBLIC SPEAKING

No.	Credits	Title	Offered to	Prerequisite courses
41-42	6	Public Speaking	Soph., jr., sr.	1-2
	8	MWF	308F	Lindsley
	9	MWF	308F	Olmstead
	10	MWF	308F	Olmstead
	2	MWF	308F	Rarig
	8	TThS	308F	Olmstead
	9	TThS	308F	Lindsley
	10	TThS	308F	Lindsley
45-46	6	Argumentation and Debate	Soph., jr., sr.	See note
	10	MWF	306F	Lindsley

No.	Credits	Title	Offered to	Prerequisite courses
47	3	Advanced Debate	See note 308F	Rarig, Linsley, Olmstead
*81-82	6	Ar Ar Interpretative Reading ..	Jr., sr. 308F	1-2, 41-42 Rarig
*83-84	6	Advanced Public Speaking 3 MWF	Jr., sr. 308F	1-2, 41-42 Rarig

NOTE

- 45-46. Open to those who have completed 1-2 and 41-42, or 1-2 and have had training in debating in preparatory school.
47. Open to juniors and seniors who are awarded places on the intercollegiate debating squad, or are chosen to represent the University in the Northern Oratorical League contest.
- 1-2. GENERAL SURVEY OF ENGLISH LITERATURE. Lectures, recitations, and assigned readings. Designed to prepare for more minute study of special periods. These courses may be taken in either order and credited independently of each other. BROWN, STOLL, BEACH, MOORE.
- 3a,b. OLD ENGLISH. The language, with reading of representative selections of Old English prose and poetry. The relation to modern English is particularly emphasized. First semester, FIRKINS; second semester, KLAEBER.
- 5a,b. CHAUCER. The grammar and literary forms of fourteenth century English, with selected readings from Chaucer's works. Special attention to *The Canterbury Tales*. First semester, BROWN; second semester, FIRKINS.
7. SHAKESPEARE. An introductory study of Shakespeare's development as a poet and dramatist up to *King Lear*, with reading of representative plays. STOLL.
- *27. HISTORY OF THE ENGLISH LANGUAGE. Outlines of the history of the language. Lectures and assigned readings. KLAEBER.
- *51. SPENSER. The forms and literary influences in the Elizabethan period illustrated in the poetry of Edmund Spenser, with brief readings from the minor poems and extended study of *The Faerie Queene*. FIRKINS.
- *54. AMERICAN LITERATURE. Lectures on American Literature, with extensive readings from the principal poets and prose writers of the United States. Not given in 1918-19. MOORE.
- *56. ADVANCED OLD ENGLISH. A continuation of Course 3. KLAEBER.
- *58. NINETEENTH CENTURY PROSE. Studies in the more important prose writers of the nineteenth century, with reference to their styles, personalities, opinions, and relations to their period. Readings by students, and essays on approved topics. BEACH.
- *62. MILTON. A special study of Milton, with some consideration of his contemporaries. MOORE.

- *65. BROWNING AND TENNYSON. A reading of the representative work of the two major poets of the Victorian era, in order to show their quality and contrasted power. BURTON.
- *67. THE ENGLISH NOVEL. Principles and personalities in the evolution of the English novel. Written reports on selected novels. Not given in 1918-19. BURTON.
- *80a,b. TEACHERS' COURSE. Methods of teaching English in high schools. Course of study, textbooks, and equipment; visits to Minneapolis and St. Paul high schools; theme correcting. Open to juniors, seniors, and graduates qualifying for a certificate to teach English as a major or minor subject. Credit only in Education. INGLIS.
- *101. INTRODUCTION TO MIDDLE ENGLISH. An outline of Middle English grammar, including the interpretation of selected texts. Not given in 1918-19. KLAEBER.
- *105. EIGHTEENTH CENTURY POETRY. The rise of naturalism and romanticism. Eighteenth century poetry from Pope to Burns, with special reference to the rise and growth of naturalism and romanticism. MOORE.
- *107. EIGHTEENTH CENTURY PROSE. Lectures on eighteenth century prose and prose writers; readings by the students and essays on approved topics; special study of fiction and the essay. Not given in 1918-19. MOORE.
- *108. THE ROMANTIC MOVEMENT. The Romantic School of poets from Wordsworth to Keats and the influence of the revolution in France. Not given in 1918-19. CRAIG.
- *109-110. ENGLISH HUMORISTS. Manifestations of the comic spirit in modern English literature; humor, wit, comedy, and satire, with special reference to their use in a criticism of life; illustrations from dramatists, novelists, essayists, poets. Not given in 1918-19. BEACH.
- *112. SEVENTEENTH CENTURY PROSE. General survey of the prose of the century to 1660. Course 3-4 in History is a desirable prerequisite. Not given in 1918-19. NORTHROP.
- *113-114. THE DRAMA: STRUCTURE AND EVOLUTION. 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. FIRKINS.
- *117. THE BIBLE AS LITERATURE. A literary study of the Old Testament with special attention to forms and the critical study of selected readings. BURTON.
- *119-120. PRINCIPLES OF LITERARY CRITICISM. Elements in literature, e.g., clearness, vigor, beauty, etc.; exposition of literary types, e.g., the

- lyric, epic, short story, etc., in relation to standards of judgment. FIRKINS.
- *123-124. STUDIES IN VICTORIAN NOVELISTS. 1918-19, both semesters, George Meredith. In the alternate year, first semester, Thomas Hardy; second semester, Henry James. BEACH.
- *125-126. BIOGRAPHY. Development of English biography, with attention to journals, memoirs, and letters. Open to graduate students having undergraduate major in English or History; upon approval of the instructor, to seniors with twelve credits in English. Not offered in 1918-19. NORTHROP.
- *129. MODERN DRAMA. Contemporary drama from 1870 to the present; the new impulse in dramatic literature under the stimulus of latter-day thought. BURTON.
- *133. THE ENGLISH AND SCOTTISH POPULAR BALLADS. The study of a large number of traditional ballads, English and foreign, and the study of ballad style and origins. Not offered in 1918-19. STOLL.
- *136. ADVANCED SHAKESPEARE. Shakespeare's development traced to the end. A careful analysis of four plays. Problems in the interpretation of Shakespeare's dramatic methods. STOLL.
- *140. ADVANCED STUDY OF CHAUCER. Further study of the *Canterbury Tales* and of the minor poems. BROWN.
- *141. HISTORICAL GRAMMAR OF THE ENGLISH LANGUAGE, I. Sounds and spelling. This course is identical with Comparative Philology 141. KLAEBER.
- *142. HISTORICAL GRAMMAR OF THE ENGLISH LANGUAGE, II. Accidence and syntax. This course is identical with Comparative Philology 142. KLAEBER.
- *143. RECENT ENGLISH POETRY. Poetry in England and America since 1870. The main poetic traditions and tendencies now prevailing. Not given in 1918-19. BEACH.
- *145. MEDIEVAL ALLEGORY. A general introduction to the allegory as a type of literature, with special consideration of the more important examples, both religious and secular, in Middle English. BROWN.
- *146. THE METRICAL ROMANCES. A study of the more important Middle English romances: designed as an introduction to the great stories of love and chivalry current in the Middle Ages, particularly those connected with Arthur and the Round Table. Not given in 1918-19. BROWN.

- †1-2. COMPOSITION AND RHETORIC. Practical training in the art of writing; the principles of structure and analysis of specimens of good prose. THOMAS, FORD, PHELAN, WHITNEY, BREECE, HAWTHORN, HERRICK, HILLHOUSE, HUSTVEDT, JACKSON, RUUD, SMOYER.
- †1b. COMPOSITION AND RHETORIC. Same as Course 1.
- 2a. COMPOSITION AND RHETORIC. Same as Course 2.
- 3-4. COMPOSITION FOR ENGINEERS. In the College of Engineering. NICHOLS, JORDAN.
- 11-12. EXPOSITION, DESCRIPTION, AND NARRATION. Analysis of specimens; short themes and fortnightly essays, with emphasis on planning and amplification; informal exposition during the first half of the first semester, followed by description and narration. Number in each section limited to twenty. PHELAN, WHITNEY, HILLHOUSE, RUUD.
- 15-16. EXPOSITION AND ARGUMENT. Exposition during the first half of the first semester, followed by argument. The study of a text and the analysis of specimens, accompanied by weekly essays, and shorter themes. Number in each section limited to twenty. FORD.
31. TECHNICAL WRITING. See program for College of Engineering.
- *80a,b. TEACHERS' COURSE. Methods of teaching English in high schools. Course of study, textbooks, and equipment; visits to Minneapolis and St. Paul high schools; theme correcting. INGLIS.
- *102. VERSIFICATION. The nature of poetry and a detailed analysis of English meters and the various English verse forms. The theory accompanied by criticism of current poetry and practice in writing verse. NICHOLS.
- *103-104. STUDIES IN STRUCTURE AND STYLE. Theory of structure and style; rhetorical analysis of standard English prose; themes based on personal observation, current reading, and investigation; preparation of essays with particular classes of readers in view. FORD.
- *107. IMITATIVE WRITING. 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. THOMAS.
- *110. SHORT-STORY WRITING. The technique of the short story accompanied by constructive work in story writing. THOMAS.

† All students taking Rhetoric 1-2 shall be regarded as on probation during the first four weeks of the course. At the end of that period 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*. To be eligible to enter the course again the next semester, such students must make up their deficiency in preparation by devoting at least three hours each week to regular instruction in this subject outside the College, and must pass an examination given by the department. Until this examination is passed such students will not be permitted to carry more than fourteen hours of college work.

- *111-112. **ESSAY-WRITING.** Practice in writing didactic, biographical, critical, informal essays. Extended composition. Two essays a semester. Individual aid in gathering of material, planning of papers, and criticism of essays. Analysis of a considerable body of modern essays. Not given in 1918-19.
- *115-116. **DRAMATIC TECHNIQUE.** Principles of plotting, characterization, climax, dialogue, and scenario-making. Writing of three plays—two original, one dramatized short story. Required readings, laboratory work, criticisms of local productions. Not given in 1918-19.
- *119-120. **SEMINAR IN WRITING.** Open to advanced students who write with facility and who desire personal direction. Criticism of manuscripts submitted. Lectures on fundamental principles of English composition. THOMAS.
- *201-202. **GRADUATE SEMINAR.** (Required of seniors taking the Honors Course.) Lectures, discussions and reports. For 1918-19: Study of critical theory beginning with Plato and Aristotle and emphasizing more important English and French writers. THOMAS.

Honorable Mention 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 a student must (1) have represented his class in the freshman-sophomore debate, or won a place in the freshman-sophomore oratorical contest; (2) have taken part in an intersociety debate; (3) have represented the University in an intercollegiate debate, or won a place in the Pillsbury oratorical contest.

- 41-42. **A GENERAL COURSE IN PUBLIC SPEAKING.** Fundamentals of effective speaking; breathing, voice-production, enunciation, and action; delivery of extracts from the works of well-known writers and speakers; principles underlying speech-making applied in both oral and written compositions. Each section limited to twenty-five. RARIG, LINDSLEY, OLMSTEAD.
- 45-46. **ARGUMENTATION AND DEBATING.** Analysis, gathering of evidence, briefing. Critical study of models, including Lincoln-Douglas debates. Principles governing persuasive speaking applied in practice debates. Students in extension debating must register for this course to get credit for their work. LINDSLEY.
47. **INTERCOLLEGIATE DEBATE AND ORATORY.** The question for intercollegiate debate studied and briefed, and frequent practice debates held. RARIG, LINDSLEY, OLMSTEAD.
- *81-82. **INTERPRETATIVE READING.** The interpretation and expression of the various forms of literature, such as the essay, the short story, lyric and narrative poetry, and the drama. The aim is intelligent and sympathetic reading. RARIG.

*83-84. **ADVANCED PUBLIC SPEAKING.** The distinctive characteristics of oratorical style; analysis of the styles of representative orators. Written and extemporaneous speeches. Individual criticism and direction. Those desiring to prepare for the Pillsbury contest should register for this course. RARIG.

JOURNALISM

Assistant Professor PHIL C. BING.

COURSES

Introductory Courses

No.	Credits	Title	Offered to	Prerequisite courses
13	3	Reporting, Lab. & Class. 1 MWF	Soph., jr., sr. 3F	Rhet. 1 yr. Bing
14	3	Advanced Reporting 1 MWF	Soph., jr., sr. 3F	13 Bing
16	3	Copy Reading 2 MWF	Jr., sr. 3F	13 Bing
17	3	News Editing 2 MWF	Jr., sr. 3F	16 Bing

13. **REPORTING.** Organization, methods, and material in newspaper production; newspaper stories; methods of gathering and writing news; laboratory practice by assignments on University publications. Regular news assignments and weekly conference with the instructor required. BING.
14. **ADVANCED REPORTING.** More extended practice in actual work on University publications. Weekly conferences with instructor required. BING.
16. **COPYREADING.** Instruction and practice in editing copy, correcting proof, writing headlines, making-up, re-writing, and other details of editing; and in the organization and methods of local, state, and national news-gathering. BING.
17. **NEWS EDITING.** Continuation of Course 16 with detailed attention to make-up, headline writing. State and national papers will be studied from the point of make-up, balance, and arrangement. BING.

GEOLOGY AND MINERALOGY

Professors WILLIAM H. EMMONS, CLINTON R. STAUFFER;¹ Associate Professor FRANK F. GROUT; Assistant Professors A. WILFRED JOHNSTON,¹ CHESSLEY J. POSEY, TERENCE T. QUIRKE; Instructor THOMAS M. BRODERICK; in the General Extension Division, Assistant Professor EDWARD M. LEHNERTS.

¹ Absent on leave, 1918-19.

REQUIREMENTS OF THE DEPARTMENT

For B.A. with Honors, Courses 11, 29, 105, 111, 124, and a field course; and twelve credits selected from the following courses:

- 57, 58, 108, 109 in Paleontology
- 106, 131, 132, 140 in Petrology
- 112, 124, 137, 140, 144 in Economic Geology
- 106, 112, 124 in Structural Geology
- 36, 39, 116, 118 in Geography

For a Teacher's Certificate in Geography

- a. Major recommendation: 21 credits; Courses 29, 30, 36, 55, 116 or 118 required, and the remaining credits from Courses 5, 34, 35, 37, 116 or 118, 188.
- b. Minor recommendation: 15 credits; Courses 29, 30, 36, 55 required, and the remaining credits from Courses 5, 34, 37, 39, 116, 118, 188.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1	3†	General Geology	Soph., jr., sr.	None
		8 MWF	105P	Johnston
		10 TThS	110P	Emmons
		11 MWF	110P	Johnston
3	1	General Geology Lab.	Soph., jr., sr.	Supports 1
		Ar Ar	112P	Quirke
4	3	Geology of Minnesota....	Soph., jr., sr.	Course 1
		11 MWF	110P	Johnston
*5	3	Economic Geology	Jr., sr.	1 and 6
		9 MWF	104P	Quirke
6	3†	Historical Geology	Soph., jr., sr.	Course 1
		8 MWF	105P	Johnston
		10 TThS	110P	Emmons
		3 MWF	105P	Quirke
8	1	Historical Geology Lab....	Soph., jr., sr.	Supports 4 and 6
		Ar Ar	112P	Quirke
10	3	Elements of Paleontology.	Soph., jr., sr.	Course 1
		10 MWF	104P	Stauffer
*11	3	Paleontology	Jr., sr.	Course 6
		Lect. 9 M	104P	Stauffer
		Lab. 2-4 WF	104P	Stauffer
*12	3	Paleontology	Jr., sr.	Course 11
		Lect. 9 M	104P	Stauffer
		Lab. 2-4 WF	104P	Stauffer
14	3	Applied Geol. for Civ. Eng.	Soph., jr., sr.	Course 1
		9 TThS	110P	Quirke
15a or 15b	1	Minerals and Rocks	Jr., sr.	1
		Ar Ar	100P	Grout
21	3	Essentials of Mineralogy.	Soph., jr., sr.	See bulletin statement
		Lect. 11 TS	110P	Broderick
		Lect. 8 M	110P	Broderick
		Lab. 1-5 M	100P	Broderick

† Geology 1 and 6 constitute a year's course; both semesters must be completed before credit is given for the first semester.

No.	Credits	Title	Offered to	Prerequisite courses
23	4	Elements of Mineralogy..	Soph., jr., sr.	See bulletin statement
		Lect. 8 TWThS	Ar	Broderick
		Lab. 1-5 M	100P	Broderick
24	2	Elements of Mineralogy..	Soph., jr., sr.	See bulletin statement
		Lect. 8 ThS	110P	Broderick
		Lab. 8 & 9 T	100P	Broderick
27a or 27b	1	Outlines of Mineralogy..	Jr., sr.	None
		Ar Ar	100P	Grout
29	3	General Physiography ...	Soph., jr., sr.	None
		10 TThS	105P	Posey
30	3	Principles of Geography..	Soph., jr., sr.	None; 29 desirable
		10 MWF	105P	Posey
34	3	Meteorology	Soph., jr., sr.	None
		8 TThS	105P	Posey
35	1	Laboratory work	Soph., jr., sr.	See bulletin statement
		Ar Ar	104P	Posey
*36	3	Geog. of North America.	Jr., sr., grad.	1 or 29 and 3 creds. from 5, 6, 30, 34, 39
		10 TThS	105P	Posey
37	3	Physical and Com. Geog..	Fr.	None
		9 MWF	210P	Posey
*39	3	Geographic Influences ...	Jr., sr., grad.	3 cred. from 1, 29, 30, and History 5 or its equivalent
		10 MWF	105P	Posey
*55	3	Teachers' Course in Geog.	Jr., sr., grad.	Any one of 36, 39, 116, or 118
		8 TThS	105P	Posey
*57	3	Paleontology	Jr., sr.	6
		9-11 TThS	104P	Stauffer
*58	3	Paleontology	Jr., sr.	57
		9-11 TThS	104P	Stauffer
*61	3	Physical Mineralogy	Jr., sr.	22
		Ar Ar	Ar.P	Grout
*65	3	Morphology of Minerals..	Jr., sr.	22
		Ar Ar	Ar.P	Grout
*105	3	Elements of Rock Study..	Jr., sr., grad.	See bulletin statement
		2-4 TTh	200P	Grout
*106	3	Petrology	Jr., sr., grad.	105
		2-4 TTh	200P	Grout
*108	3	Paleontologic Practice ...	Jr., sr., grad.	58
		2-4 MWF	107P	Stauffer
*109	3	Advanced Paleontology ..	Jr., sr., grad.	58
		8-10 MWF	107P	Stauffer
*110	3	Advanced Paleontology ..	Jr., sr., grad.	109
		8-10 MWF	107P	Stauffer
*111	4	Ore Deposits	Sr., grad.	6, 22, 105
		8 TWThF	110P	Emmons
*112	4	Problems in Ore Deposits	Sr., grad.	111
		2-6 W	104P	Emmons
*118	3	Geog. of Eurasia.....	Jr., sr., grad.	6 cred. from 1, 6, 29, 30, 34, 36, 39
		9 MWF	105P	Posey
*124	3	Structural & Metam. Geol.	Sr., grad.	6, 22, 105
		10 TThS	112P	Johnston
*131-132	6	Advanced Petrology	Jr., sr., grad.	106
		Ar Ar	200P	Grout

No.	Credits	Title	Offered to	Prerequisite courses
*137	3	Testing Econ. Minerals..	Jr., sr., grad.	6, 22, 105
	Lect. 11	MW	200P	Grout
	Lab. 2-4	W	200P	Grout
*140	3	Applied Petrology	Jr., sr., grad.	See bulletin statement
	Ar	Ar	200P	Grout
*144	3	Construction of Geol. Maps	Jr., sr., grad.	1, 6
	1-4	TTh	112P	Quirke
*150	8	Field Geol. (Black Hills). Spring of 1919	Jr., sr., grad.	See members of Dept. Johnston, Emmons
*151	3	Advanced General Geol..	Jr., sr., grad.	6
	11	MWF	104P	Stauffer
*152	3	Advanced General Geol..	Jr., sr., grad.	151
	11	MWF	104P	Stauffer
*160	6	Field Geology	Jr., sr., grad.	See bulletin statement
*188	6	Field Work in Geography.	Jr., sr., grad.	See bulletin statement

1. GENERAL GEOLOGY. A synoptical treatment of materials of the earth and of geologic processes. Physiographic, dynamic, and structural geology, with a brief introduction to historical geology. Lectures, laboratory work, field excursions, map study, and conferences. EMMONS, JOHNSTON.
3. LABORATORY WORK. Supplements Course I with study of rocks and ores, topographic and geologic maps, and reference reading. JOHNSTON and Assistants.
4. GEOLOGY OF MINNESOTA. The physical geography and geologic history of Minnesota. The relations of industrial development to geological features. The principles of pre-Cambrian geology as exemplified in Minnesota. JOHNSTON.
- *5. ECONOMIC GEOLOGY. The mineral resources of the United States. The origin, distribution, and uses of the important minerals and mineral fuels. Lectures and field excursions. QUIRKE.
6. HISTORICAL GEOLOGY. The geological history of the North American continent; the more important types of fossils and their relations. EMMONS, JOHNSTON, QUIRKE.
8. HISTORICAL GEOLOGY LABORATORY WORK. The interpretation of geologic maps and sections; structural relations; study of fossils and rock specimens. JOHNSTON.
10. ELEMENTS OF PALEONTOLOGY. An introduction to the study of fossil organisms. Lectures supplemented by field excursions. STAUFFER.
- *11. PALEONTOLOGY. Index fossils of North America; a study of fossils and their uses in correlation. A course intended primarily for mining geologists. STAUFFER.
- *12. PALEONTOLOGY. A continuation of Course II. STAUFFER.
- *14. APPLIED GEOLOGY FOR CIVIL ENGINEERS. Occurrence, properties, production, and uses of building stones, cements, clays, fuels, and road

- metals. *A brief introduction to the study of ore deposits and historical geology. QUIRKE.
- *15a or 15b. MINERALS AND ROCKS. An outline study of general principles of petrography; classification of minerals and rocks and practice in their identification. GROUT.
21. ESSENTIALS OF MINERALOGY. Crystal systems; morphological, physical, chemical character of minerals. Occurrence, genesis, and uses of minerals of economic value. Determinative work, blowpipe analysis, sight identification. For those who wish to take but one semester's work in mineralogy. BRODERICK.
23. ELEMENTS OF MINERALOGY. Crystal systems; morphological, physical, and chemical character of minerals; occurrence, genesis, and uses of minerals and their derived products; attention given mainly to ores of the metals. Determinative work in laboratory, blowpipe analysis, sight identification. BRODERICK.
24. ELEMENTS OF MINERALOGY. Continuation of Course 23, special attention being given to the rock forming minerals and to the non-metallic minerals of economic importance. Laboratory work, reference reading, and field excursions. BRODERICK.
- *27a,b. OUTLINES OF MINERALOGY. A course designed especially for teachers. Methods of identification of minerals, laboratory practice, conferences, reference reading. GROUT.
29. GENERAL PHYSIOGRAPHY. Principles of earth sculpture; physiographic changes in progress, and agencies causing them; hydrography and oceanography; planetary relations; climatology; field excursions. POSEY.
30. PRINCIPLES OF GEOGRAPHY. A study of life reactions to the major types of geographic environment; influences of climate, topography, soils, and mineral resources upon human affairs. POSEY.
34. METEOROLOGY. The properties and phenomena of the atmosphere, including composition, temperature, pressure, and circulation; the work of the Weather Bureau; the major climatic divisions of the earth and their climates. POSEY.
35. LABORATORY WORK. A course in the interpretation of topographic maps. Supplements and should accompany Courses 29 and 31, tho not required in connection with them. Should be taken by those who are preparing to teach Physiography. POSEY.
- *36. GEOGRAPHY OF NORTH AMERICA. The regional geography of the United States and Canada; their physiography, climate, natural resources, and people. The utilization and conservation of natural resources emphasized. POSEY.

37. **PHYSICAL AND COMMERCIAL GEOGRAPHY.** A study of the origin of the earth's physical features, of the distribution of natural resources, and of the geographic factors influencing the production and exchange of commodities. Required of commerce students. POSEY.
- *39. **GEOGRAPHICAL INFLUENCES IN THE DISCOVERY AND DEVELOPMENT OF AMERICA.** A study of the influence of geographic factors of location, topography, climate, and natural resources upon the economic, social, and political development of America. Given in alternate years. POSEY.
- *55. **TEACHERS' COURSE IN GEOGRAPHY.** A critical study of the materials and methods of teaching secondary school geography. The relation of human activities to environment will be emphasized. POSEY.
- *57. **PALEONTOLOGY.** A study of fossil forms with special reference to those of geological importance. STAUFFER.
- *58. **PALEONTOLOGY.** Faunas and their correlation. A continuation of Course 57. STAUFFER.
- *61. **PHYSICAL MINERALOGY.** The form, optical and physical properties of minerals; expansion and conductivity; pyro-electricity; hardness, percussion, and etch figures; cleavage and gliding planes. GROUT.
- *65. **MORPHOLOGY OF MINERALS.** Crystallography, embracing projection and the geometric relations of crystal planes; crystal nomenclature; the relation of special properties to morphology. A study of crystal models, crystal drawing, identification of minerals from crystal measurements, and mathematical calculation. GROUT.
- *105. **ELEMENTS OF ROCK STUDY.** The occurrence and genesis of igneous, sedimentary, and metamorphic rocks; their mineral and chemical composition, structure, texture, and alteration. Classification and methods of identification and description of rocks. GROUT.
- *106. **PETROLOGY.** The identification and study of minerals and rocks by optical methods; the study of igneous rocks, crystalline schists, and metamorphic rocks. The origin and classification of rocks. Laboratory work, lectures, and reference reading. GROUT.
- *108. **PALEONTOLOGIC PRACTICE.** The collection, preparation, and study of materials with a view to gaining a working knowledge of groups of fossils and the use of literature. Largely individual work. STAUFFER.
- *109. **ADVANCED PALEONTOLOGY.** A systematic study of fossil organisms accompanied by an analytical study of faunas. Lectures and laboratory work. STAUFFER.
- *110. **ADVANCED PALEONTOLOGY.** A continuation of Course 109. STAUFFER.
- *111. **ORE DEPOSITS.** The nature, distribution, and genesis of ore deposits of the United States; relations of ore deposits to geologic structure;

- the deformation and superficial alteration of ore deposits. EMMONS.
- *112. PROBLEMS IN ORE DEPOSITS. Field excursions, map work, lectures on field and laboratory methods. EMMONS.
- *116. GEOGRAPHY OF LATIN AMERICA. Regional geography of the Latin-American countries; their geology, topography, climate, natural resources, people. Trade relations between Latin-American countries and the United States given special attention. Alternates with Course 118. Not given in 1918-19. POSEY.
- *118. GEOGRAPHY OF EURASIA. Regional geography of Eurasia; the geology, topography, climate, natural resources, people, industries, and trade of these countries. The attitude of the major European countries to the "new" lands of Asia. Alternates with Course 116. POSEY.
- *124. STRUCTURAL AND METAMORPHIC GEOLOGY. The conditions, processes, and results of metamorphism; structural features resulting from deformation under varying conditions of load. JOHNSTON.
- *131-*132. ADVANCED PETROLOGY. Advanced optical methods. Criteria for rapid identification of minerals and rocks. The uses of schedules and tables. Standard rock types. Regional and genetic studies. Petrographic reports. GROUT.
- *137. TESTING ECONOMIC MINERALS. Methods of determining quality of mineral deposits, described and illustrated by laboratory tests of coals, oil, building stone, and metallic ores. GROUT.
- *140. APPLIED PETROLOGY. To follow or accompany Course 132. Determination of transparent and opaque ores and gangue minerals. Microscopic studies of paragenesis of ores and other mineral associations by means of reflecting light. Practical petrographic problems. GROUT.
- *144. CONSTRUCTION OF GEOLOGIC MAPS. Methods of geological examination; study and problems in construction and interpretation of geologic maps. QUIRKE.
- *150. FIELD GEOLOGY. (Black Hills.) EMMONS, JOHNSTON.
- *151. ADVANCED GENERAL GEOLOGY. Geologic processes and their results; development of the North American continent. STAUFFER.
- *152. ADVANCED GENERAL GEOLOGY. A continuation of Course 151. STAUFFER.
- *160. FIELD GEOLOGY. Two weeks in the field in the summer vacation period. Fields for 1919, the Mesabi and Vermilion ranges. Credits given only on completion of satisfactory report. JOHNSTON.
- *188. FIELD WORK IN GEOGRAPHY. A six weeks' course 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 made upon application to the department. LEHNERTS.

GERMAN

Professor CARL SCHLENKER; Assistant Professors OSCAR C. BURKHARD, JAMES DAVIES, ALFRED E. KOENIG, SAMUEL KROESCH, WALTER R. MYERS; Instructors ARTHUR R. GRAVES, EDWIN H. ZEYDEL.

REQUIREMENTS OF THE DEPARTMENT

For *B.A. with Honors*, the general requirements, and fifteen credits during the junior year in courses numbered between 51 and 100, of which Courses 53-54 and 55-56 are required; eight credits during the senior year, including at least one course numbered between 101 and 200, and one course numbered above 200; and the special thesis, to be completed under the direction of the instructor in charge of the latter course.

Teacher's Certificate in German. For a minor recommendation, a minimum of fourteen credits; required courses are German 29-30, 31-32 and 59-60. For a major recommendation, a minimum of twenty-eight credits; required courses are German 29-30, 31-32, 53-54, 55-56 and 59-60. German 57-58 is strongly recommended. German 1 and 3 shall not be counted toward either a minor or a major recommendation. To obtain either a minor or a major recommendation the student must obtain an average of one and one-half honor points for each credit hour for all German courses taken.

For courses in Germanic Philology see the statement of the Department of Comparative Philology.

COURSES

a. Only students who are taking or who have taken Course 5-6 or Course 16 may elect the supplementary courses 25-26 and 27-28, either one or both. But students electing Course 11-12 or Course 14 may elect Course 25-26. No credit will be granted for Course 25-26 or Course 27-28 if students elect them when taking or when they have taken courses numbered above 50.

b. Only students who are taking or who have taken Courses 7-8 or Course 9-10 or Course 11-12 or Course 14 or Course 21-22 or Course 23-24 may elect the supplementary courses 29-30 and 31-32, either one or both together. Students electing Course 11-12 or Course 14 or Course 21-22 should take Courses 29-30 and 31-32 only after consultation with the instructor in charge.

c. Credit for only one of the following courses will be granted: Courses 5-6, 16, 21-22.

d. Credit for only one of the following courses will be granted: Courses 7-8, 9-10, 11-12, 14, 21-22, 23-24.

e. Freshmen must complete intermediate course before credit is given for beginning course.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1a	6	Beginning	All	None
		8 MTWThFS	209F	¶
		9 MTWThFS	207F	¶
		10 MTWThFS	207F	¶
1b	6	Beginning	All	None
		8 MTWThFS	207F	¶
3a	6	Intermediate	All	1a or 1b
		9 MTWThFS	209½F	¶
3b	6	Intermediate	All	1a or 1b
		8 MTWThFS	209F	¶
		9 MTWThFS	207F	¶
		10 MTWThFS	207F	¶
5-6	6†	Prose and Poetry	Fr., soph.	2 yrs. prep. German
		9 MWF	212F	¶
		10 TThS	212F	¶
		2 MWF	207F	¶
7-8	6	Drama	All	5-6 or 4 yrs. prep. German
		9 TThS	213F	Burkhard
		11 MWF	212F	Davies
11-12	6†	Rapid Reading	Soph., jr., sr.	3a or 3b
		9 TThS	212F	Kroesch
		10 MWF	209½F	Graves
14	6	Rapid Reading	Soph., jr., sr.	3a or 3b
		9 MTWThFS	209½F	Zeydel
16	6	Prose and Poetry	All	2 yrs. prep. German
		10 MTWThFS	213F	¶
21-22	6†	Scientific Intermediate....	Soph., jr.	3a or 3b
		11 MWF	209F	Graves
23-24	6†	Scientific Advanced	Soph., jr.	5-6 or 16 or 21-22
		10 MWF	209F	Zeydel
25-26	2†	Elementary Composition..	Fr., soph., jr.	See note a
		9 F	213F	Davies
		10 S	209F	Zeydel
27-28	2†	Elementary Conversation..	Fr., soph., jr.	See note a
		9 MW	213F	Davies
		10 TTh	209F	Koenig
29-30	2†	Advanced Conversation...	Soph., jr., sr.	See note b
		10 TTh	209½F	Burkhard
31-32	2†	Intermediate Composition..	Soph., jr., sr.	See note b
		10 S	209½F	Schlenker
*51	2	Faust, Part I	Soph., jr., sr.	7-8 or 11-12 or 14 or 23-24
		11 WF	209½F	Schlenker
*53	3	Survey through Classic Period	Soph., jr., sr.	7-8 or 11-12 or 14 or 23-24
		9 MWF	209F	Burkhard
		9 TThS	209F	Myers
*54	3	Survey since Classic Period	Soph., jr., sr.	53
		9 MWF	209F	Burkhard
		9 TThS	209F	Myers
*55-56	2†	Advanced Composition....	Jr., sr.	31-32
		3 F	209F	Koenig

DEPARTMENTAL STATEMENTS

No.	Credits	Title	Offered to	Prerequisite courses
*59-60	2†	Teachers' Course	Jr., sr.	29-30 and 31-32 or 53-54
		4 F	209F	Schlenker
*61	2	Romantic School	Jr., sr.	7-8 or 11-12 or 14 or 23-24
		11 TS	209½F	Schlenker
*62	2	Drama since 1880.....	Jr., sr.	2 credits in starred courses
		11 TTh	209½F	Schlenker
*63	2	Schiller's Poems	Soph., jr., sr.	7-8 or 11-12 or 14 or 23-24
		10 WF	212F	Koenig
*64	2	Goethe's Poems	Soph., jr., sr.	2 credits in starred courses
		10 WF	212F	Koenig
*72	2	Lessing as Dramatist....	Soph., jr., sr.	7-8 or 11-12 or 14 or 23-24
		11 WF	209½F	Schlenker
*107-108	6†	Middle High German.....	Jr., sr., grad.	4 credits in starred courses
		3 MWF	207F	Kroesch
*127-128	6	Eighteenth and Nineteenth Century Lyric	Sr., grad.	4 credits in starred courses
		1-3 M		
		1 F	209½F	Davies
*135	3	The Drama of Kleist.....	Sr., grad.	4 credits in starred courses
		1-4 Th	209½F	Myers
*136	3	The Drama of Hebbel....	Sr., grad.	4 credits in starred courses
		1-4 Th	209½F	Myers
*137-138	6†	Aspects of 19th Century Literature	Sr., grad.	4 credits in starred courses
		1-3 W		
		2 F	209F	Burkhard
*145-146	6†	Grillparzer	Sr., grad.	4 credits in starred courses
		4 MWF	212F	Graves
*162	2	Phonetics	Sr., grad.	2 credits in starred courses
		4 MW	207F	Kroesch
*225-226	6†	Literary Problems	Honors and grad.	
		2-5 T	209½F	Schlenker

† Both semesters must be completed before credit is given for either semester.

1a,b. BEGINNING. Double course. Pronunciation, conversation, grammar, and composition; selected readings in easy prose and verse.

3a,b. INTERMEDIATE. Double course. Selected texts in modern German literature. ZEYDEL.

5-6. PROSE AND POETRY. Reading texts selected from modern prose writers; selected lyrics and ballads. Election of supplementary courses, 25-26 and 27-28, strongly recommended. See notes a and c above.

- 7-8. DRAMA. First semester: plays of modern dramatists. Second semester: plays of classic dramatists. Assigned readings and reports throughout the year. See notes b and d above. BURKHARD, DAVIES.
- 11-12. RAPID READING. First semester: modern narrative prose. Second semester: readings from eighteenth and nineteenth century dramas. See notes a, b, and c above. KROESCH, GRAVES.
14. RAPID READING. Same as Course 11-12. Double course in one semester, primarily for those entering in mid-year. See notes a, b, and c above. ZEYDEL.
16. PROSE AND POETRY. Same as Course 5-6. Double course in one semester, primarily for those entering in mid-year. See notes a, b, and c above.
- 21-22. SCIENTIFIC INTERMEDIATE. This course aims to give students a reading knowledge of German for scientific studies. See notes a and b above. GRAVES.
- 23-24. SCIENTIFIC ADVANCED. Reading of general works on physiology, anatomy, and bacteriology. See notes b and d above. ZEYDEL.
- 25-26. ELEMENTARY COMPOSITION. Translation of easy English selections: essays in German on assigned subjects. See note a above. DAVIES, ZEYDEL.
- 27-28. ELEMENTARY CONVERSATION. Conversation on topics of every-day life; idioms. Organized on the laboratory basis—one hour credit with two hours recitation and at least one hour of outside reading. See note a above. DAVIES, KOENIG.
- 29-30. ADVANCED CONVERSATION. Aims to develop ease and correctness of oral expression. Organized on the laboratory basis—one hour credit with two hours recitation and at least one hour of outside reading. See note b above. BURKHARD.
- 31-32. INTERMEDIATE COMPOSITION. Translation of English selections: the elements of German syntax: German essays on assigned subjects. See note b above. SCHLENKER.
- *51-52. GOETHE'S FAUST, PART I. Reading and interpretation of the text: genesis of the work; the Faust legends, Faust books, puppet plays, Marlow's *Faustus*. Second semester: the Faust theme in European literature and in the opera. SCHLENKER.
- *53. SURVEY OF GERMAN LITERATURE THROUGH THE CLASSIC PERIOD. Lectures, assigned readings, reports. BURKHARD, MYERS.
- *54. SURVEY OF GERMAN LITERATURE SINCE THE CLASSIC PERIOD. Lectures, assigned readings, reports. BURKHARD, MYERS.
- *55-56. ADVANCED COMPOSITION. A discussion of the principles of structure and style; criticism of essays on assigned subjects. KOENIG.

- *57-58. ORAL DICTION. Oral exercises based upon studies in German cultural life; critical analysis of various works of German literature, argumentation and debate. Prerequisites: Courses 29-30 and 31-32, and consultation with the instructor. Not given in 1918-19. KOENIG.
- *59-60. TEACHERS' COURSE. Lectures, readings, and reports; observation of classes. SCHLENKER.
- *61. THE ROMANTIC SCHOOL. Assigned readings, reports; occasional lectures. SCHLENKER.
- *62. DRAMA SINCE 1880. Assigned readings, reports, occasional lectures. SCHLENKER.
- *63. POETRY OF THE CLASSIC PERIOD. Schiller's poems. Study of metrics and form. KOENIG.
- *64. POETRY OF THE CLASSIC PERIOD. Goethe's poems. KOENIG.
- *72. LESSING AS DRAMATIST. His plays and his critical writings. SCHLENKER.
- *107-108. BEGINNING MIDDLE HIGH GERMAN. Phonology, morphology, and syntax. Translation into the modern German. *Der arme Heinrich*, *Nibelungenlied*, selected poems of Walther. KROESCH.
- *109-110. HISTORY OF THE GERMAN LANGUAGE. Lectures, discussions, assigned readings. This course is identical with Comparative Philology 109-110. Not given in 1918-19. KLAEBER.
- *119-120. THE DRAMA OF SCHILLER. A study of Schiller's development in theory and technique of the drama from the Storm and Stress to the Classic period. Not given in 1918-19. MYERS.
- *127-128. LYRIC POETRY OF THE EIGHTEENTH AND NINETEENTH CENTURIES. Historical review of the best lyric poetry and the chief writers. DAVIES.
- *131-132. DIE NOVELLE. A study of the technique and development. Assigned readings and reports. Not given in 1918-19. BURKHARD.
- *135. THE DRAMA OF KLEIST. In addition to the study of the technique especial attention is given to the subjective character of Kleist's work. MYERS.
- *136. THE DRAMA OF HEBBEL. Hebbel's development of the dramatic theory. MYERS.
- *137-138. ASPECTS OF GERMAN LITERATURE OF THE NINETEENTH CENTURY. The subject of the course will be announced from year to year. Subject 1918-19: The Development of Realism in the Nineteenth Century. BURKHARD.

- *145-146. GRILLPARZER AND THE AUSTRIAN SCHOOL. Assigned readings and reports. GRAVES.
- *161. HISTORICAL GERMAN GRAMMAR. Phonology, inflection, word-formation, syntax. Intended primarily for prospective teachers of German. Not given in 1918-19. KROESCH.
- *162. PHONETICS. A study of speech sounds and the nature of their production with special reference to English, French, and German. Open to students of the modern languages. KROESCH.
- *225-226. LITERARY PROBLEMS. SCHLENKER.

GREEK

Professors CHARLES ALBERT SAVAGE, GERTRUDE H. BEGGS

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1-2	10†	First Year Greek..... 9 TWTThFS 1 MTWTThF	Fr., soph., jr., sr. 114F 114F	None ¶
3-4	6†	History and Epic Poetry.. 10 MWF	Fr., soph., jr., sr. 114F	1-2 Savage
5-6	3 or 6	Scientific Greek..... 1 MWF	Fr., soph., jr., sr., grad. 114F	None Beggs
7	3	Dramatic Poetry..... 2 MWF	Soph., jr., sr. 113F	3-4 Savage
*51	3	Philosophy..... 10 TThS	Jr., sr. 114F	3-4 Savage
*52	3	Oratory..... 10 TThS	Jr., sr. 114F	3-4 Savage
*101	3	Lyric Poetry..... 11 MWF	Sr., grad. 114F	51-52 Savage
†*102	3	Tragedy..... 11 MWF	Sr., grad. 113F	7 or 101 Savage
†*104	3	New Testament..... 11 MWF	Sr., grad. 113F	51 Savage
<i>Courses open to all. No knowledge of Greek required.</i>				
59	1	Greek Architecture..... 2 M	Jr., sr. 114F	None Beggs
60	1	Sculpture..... 2 M	Jr., sr. 114F	None Beggs
61	2	Drama..... 2 TTh	Jr., sr. 114F	None Savage
62	2	Literature and Life..... 2 TTh	Jr., sr. 114F	None Savage
63a,b	1	Mythology..... 3 Th	Jr., sr. 114F	None Savage

† Both semesters must be completed before credit is given for the first semester.

‡ Students will choose between Courses 102 and 104.

1-2. FIRST YEAR GREEK. General principles, inflections, word-formation, syntax, elementary readings, composition. SAVAGE, BEGGS.

- 3-4. HISTORY AND EPIC POETRY. Selections from Xenophon's *Anabasis*, or from other historical prose, and from Homer's *Iliad* or *Odyssey*. SAVAGE.
- 5-6. BEGINNER'S COURSE IN SCIENTIFIC GREEK. The course is designed primarily to give students of sciences such a knowledge of Greek words as will be useful in their scientific studies. BEGGS.
7. DRAMATIC POETRY. One play of Euripides. Introductory course in the drama. SAVAGE.
- *51. PHILOSOPHY. Plato's *Apology*, and selections from other dialogues of Plato, or from Xenophon's *Memorabilia*. SAVAGE.
- *52. ORATORY. Selections from Lysias, Demosthenes, and Isocrates; lectures on Greek oratory. SAVAGE.
- *101. LYRIC POETRY. Selections from the elegiac, iambic, lyric, and bucolic poets. SAVAGE.
- *102. TRAGEDY. Aeschylus or Sophocles. Special attention given to the development of the drama, and to the literary form and dramatic representation of the plays read. SAVAGE.
- *104. THE NEW TESTAMENT. Especially intended for those who are preparing for the ministry, or for some other form of religious work. SAVAGE.

COURSES OPEN TO ALL. NO KNOWLEDGE OF GREEK REQUIRED

- 59-60. GREEK ARCHAEOLOGY. A study of the Greek spirit as manifested in architecture and sculpture. First semester, architecture; second semester, sculpture. BEGGS.
61. GREEK DRAMA. The reading and interpretation of representative Greek plays; lectures dealing with the origin, growth, character, and influence of the Greek drama; special stereopticon lectures. Students taking this course may not receive credit for Course 62. SAVAGE.
62. GREEK LITERATURE AND LIFE. Lectures, textbook work, illustrative and assigned readings; special lectures illustrated by stereopticon views. Recommended to those who intend to teach Greek, Latin, English, or ancient history. SAVAGE.
- 63-64. GREEK MYTHOLOGY. Lectures, textbook work, and assigned readings, supplemented by occasional stereopticon illustrations. Recommended to those specializing in languages or philosophy. SAVAGE.

HISTORY

Professors GUY STANTON FORD, WILLIAM STEARNS DAVIS, NORMAN SCOTT BRIEN GRAS, WALLACE NOTESTEIN, ALBERT BEEBE WHITE; Associate Professors SOLON JUSTUS BUCK, AUGUST CHARLES KREY; Assistant

Professors LESTER BURRELL SHIPPEE, MASON WHITING TYLER; Instructor GEORGE MALCOLM STEPHENSON; Teaching Fellows ALICE H. FELT, PAUL S. SMITH, GEORGINA TALBOT; Assistants MARY S. GOLD, FAITH THOMPSON.

REQUIREMENTS OF THE DEPARTMENT

For B.A. with Honors, see general statement.

For a Teacher's Certificate, eighteen credits in History, including at least three credits in intensive courses. In addition the student must take History 56-57.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1-2	6	Med. and Modern Europe	All	None
	(Lecture) 11	T	100C	Ford, Krey, Tyler
		9 ThS	Ar	†
		10 ThS	Ar	†
		11 WF	Ar	†
		3 WF	Ar	†
2a-1b	6	Med. and Modern Europe	All	None
		10 TThS	101F	†
3-4	6	English, 1066 to Present..	All	None
	(Lecture) 11	T	Law Lect.	White
	(Lecture) 11	T	301F	Notestein
		9 WF	112Lib	†
		9 TTh	112Lib	†
		10 WF	112Lib	†
		10 TTh	112Lib	†
		11 WF	112Lib	†
		2 WF	112Lib	†
		3 WF	112Lib	†
5-6	6	American History	Soph., jr., sr.	6 credits
	(Lecture) 10	MW	110P	Shippee
		10 Th	15F	†
		10 F	110P	†
		11 F	3F	†
7-8	6	English History, 1815-1918	Soph., jr., sr.	6 credits
		2 MWF	218bLib	Notestein
9	3	Intr. to Economic History	Soph., jr., sr.	6 credits
		10 TThS	218bLib	Gras
10	3	Economic History of the United States	Soph., jr., sr.	See statement
		10 TThS	218bLib	Gras
13	3	Medieval Civilization	Soph., jr., sr.	6 credits
		9 MWF	218bLib	Krey
14	3	Renaissance and Reformation	Soph., jr., sr.	6 credits
		9 MWF	218bLib	Krey
15	3	Military History	See note	
		10 TThS	111Lib	Davis
*21	3	Outlines of Greek History	Jr., sr.	9 credits
		10 MWF	218bLib	Davis
*22	3	Outlines of Roman History	Jr., sr.	9 credits
		10 MWF	218bLib	Davis
*56-57	3	Teachers' Course	Jr., sr.	See statement
		4 MW	111Lib	Krey

No.	Credits	Title	Offered to	Prerequisite courses
*61	3	Recent American History. 2 MWF	Jr., sr. 9F	9 credits (inc. 5-6) Shippee
*101	3	French Revolution 11 MWF	Jr., sr., grad. 111Lib	9 credits Ford
*104	3	The Near East..... 10 TThS	Jr., sr., grad. 111Lib	9 credits Davis, Tyler
*106	3	Europe and the Far East 4 MWF	Jr., sr., grad. 218bLib	9 credits Davis, Tyler
*107-108	6	Europe, 1815-1914 3 MWF	Jr., sr., grad. 111Lib	9 credits Tyler
*115-116	6	Economic History of Eu- rope, 1300-1750 9 TThS	Jr., sr., grad. 218bLib	9 credits Gras
*133-134	6	Ancient Civilization 11 MWF	Jr., sr., grad. 218bLib	See statement Davis
*137	3	English Constitutional History 4-5:30 TTh	Jr., sr., grad. 218bLib	9 credits White
*141	3	West in American History 3 MWF	Jr., sr., grad. 218bLib	9 credits (inc. 5-6) Buck
*144	3	History of Minnesota.... 3 MWF	Jr., sr., grad. 218bLib	9 credits (inc. 5-6) Buck
*156	3	Civil War and Reconstruc- tion 2-3:30 TTh	Sr., grad. 112Lib	12 credits (inc. 5-6) Shippee
*159-160	6	Diplomatic History of Eu- rope, 1850-1914 2-3:30 TTh	Sr., grad. 218bLib	See statement Tyler
*162	3	Beginnings of Parliamnt. 4-5:30 WF	Jr., sr., grad. 218aLib	See statement White
*174	3	Biographical Studies (To be arranged)	Sr., grad. 218aLib	See statement Ford
*183	3	Stuart Period 4-5:30 WF	Sr., grad. 218aLib	12 credits (inc. 3-4) Notestein
*191	3	Age of the Crusades..... 1.30-3 TTh	Sr., grad. 218aLib	See statement Krey

1-2. **MEDIEVAL AND MODERN HISTORY.** The development of Europe from the Middle Ages to 1914. Designed as a background for later work in the history, literature, and politics of continental Europe. FORD, KREY, TYLER.

1b. **MEDIEVAL HISTORY THROUGH THE REFORMATION.** Repetition of first semester of History 1-2.

2a. **HISTORY OF MODERN EUROPE.** Repetition of second semester of History 1-2.

3-4 **ENGLISH HISTORY, 1066 TO THE PRESENT.** General political history of England since the Norman Conquest, with special reference to development of governmental institutions. Serves as introduction to further work in English history, literature, and politics; and to American history. NOTESTEIN, WHITE.

GENERAL COURSES

- 5-6. AMERICAN HISTORY. A general survey of American history to the present time. Chief emphasis upon the national period. If possible, Political Science I should accompany or follow this course. SHIPPEE.
- 7-8. ENGLISH HISTORY, 1815-1918. Assigned readings and lectures. Emphasis placed upon party history, the colonies, foreign relations, the social-democratic movement, and especially British foreign policy preceding the Great War. NOTESTEIN.
9. INTRODUCTION TO ECONOMIC HISTORY. A general survey of the history of economic institutions, the chief stages in agriculture, commerce, industry, exchange, and economic policy, studied from European and somewhat from American experience. GRAS.
10. ECONOMIC HISTORY OF THE UNITED STATES. Chief emphasis on the national period. Open to those who have taken or are taking History 5-6; or to those who have taken History 9, and American History in the high school. GRAS.
13. MEDIEVAL CIVILIZATION. A study of the social and intellectual development of Europe from the period of the German migration to the end of the thirteenth century. KREY.
14. THE RENAISSANCE AND REFORMATION. The Renaissance and Reformation as general European movements with especial emphasis upon the work of individual men and upon ideas rather than upon politics and institutions; how the medieval world became the modern world. KREY.
15. MILITARY HISTORY. Organization, strategy, and tactics of ancient and medieval armies. Development of the art of war by examination of typical campaigns of Gustavus Adolphus, Frederick the Great, Napoleon, and von Moltke. Military operations of American Civil War. Open to juniors and seniors, members of R. O. T. C., or who have had one year of History. DAVIS.
- *21. OUTLINES OF GREEK HISTORY. Emphasis upon those phases of Greek history contributing most to development of later civilization and national life. Especial attention to Sparta, Athenian Constitution, Persian Wars, conquests of Alexander. DAVIS.
- *22. OUTLINES OF ROMAN HISTORY. Studying those Roman institutions which became permanent and affected later history. Conquest of Mediterranean world by Rome, founding of the Empire; the Early Empire also examined. Useful to prospective teachers in ancient history. DAVIS.
- *56-57. THE TEACHING OF HISTORY AND GOVERNMENT. Open only to those students who have eighteen credits in History, including a starred course. Practical problems of teaching history and government in

the secondary schools. To teach government must have nine credits in Political Science. KREY.

- *61. RECENT AMERICAN HISTORY. A study of American development from 1872 to the present. SHIPPEE.
- *101. THE FRENCH REVOLUTION AND THE NAPOLEONIC PERIOD. French conditions in the eighteenth century before 1774; events between 1774 and 1789 which precipitated revolution in France; reform work of the early revolution; Napoleonic régime in France and Europe. Reading knowledge of French desirable. FORD.
- *104. THE NEAR EAST. Turkey, the Balkan States, and European diplomacy in the East since 1453, with special reference to the causes of the war of 1914. DAVIS, TYLER.
- *106. EUROPE AND THE FAR EAST. Development of India, China, and Japan since the seventeenth century; their relations with Europe and results thereof on the Far East; international rivalries which the Far East has caused. DAVIS, TYLER.
- *107-108. EUROPE, 1815-1914. The development of Europe in its various phases—political, social, and economic—in the nineteenth century. Lectures and discussions. A reading knowledge of French or German will be helpful. TYLER.
- *115-116. ECONOMIC HISTORY OF EUROPE, 1300-1750. Much of the reading on England. GRAS.
- *117. ECONOMIC HISTORY OF EUROPE, 1750 TO PRESENT. Industrial revolution, commercial advance, tariff changes, agricultural development. Not given in 1918-19. GRAS.
- *121-122. HISTORY OF GREECE. Greek states to their incorporation into the Roman Empire. Greek civilization. Prerequisites: nine credits in History, or six credits in History and a major in Greek. Not open to those having taken History 21. Not given in 1918-19. DAVIS.
- *123-124. HISTORY OF ROME. Social and political development with considerable attention to cultural subjects. Prerequisites: nine credits in History, or six credits and a major in Latin. Not given in 1918-19. DAVIS.
- *125. HISTORY OF THE OLD ORIENT. Origin of Egyptians, Babylonians, Assyrians, and Persians, and main features of their political history and civilization. History of the Hebrews discussed so far as it bears upon general oriental problems. Not given in 1918-19. DAVIS.
- *133-134. ANCIENT CIVILIZATION. First semester, Greece; second semester, Rome. Social and intellectual life of antiquity. A working knowledge of the political history assumed. Prerequisites: twelve credits in History, or a major in Greek or Latin and six credits in History. DAVIS.

- *136. **OUTLINES OF PRUSSIAN HISTORY TO THE DEATH OF FREDERICK THE GREAT.** Not given in 1918-19. FORD.
- *137. **ENGLISH CONSTITUTIONAL HISTORY.** Origin and early development of the English government, with emphasis upon judicial institutions. WHITE.
- *141. **THE WEST IN AMERICAN HISTORY TO 1815.** The westward movement of population and civilization; its political, economic, and social aspects; results upon national development. BUCK.
- *144. **HISTORY OF MINNESOTA SINCE 1815.** The settlement and development—political, economic, and social—of a typical American commonwealth. BUCK.

ADVANCED OR INTENSIVE COURSES

- *152. **DEVELOPMENT OF ECONOMIC HISTORY AS A FIELD OF STUDY.** Influences giving rise to the study of economic history, such as legislation, the economic interpretation of history, and historical economics. Reading and discussion of leading economic histories in English, French, and German. Not given in 1918-19. GRAS.
- *156. **CIVIL WAR AND RECONSTRUCTION.** An intensive study of the period from 1860 to 1877, with especial reference to economic and social factors as the basis of political activity. SHIPPEE.
- *159-160. **DIPLOMATIC HISTORY OF EUROPE, 1850-1914.** A detailed study of the diplomatic questions which have arisen since the middle of the nineteenth century. Discussion of topics based on a wide range of reading. A reading knowledge of either French or German will be expected. Prerequisites: twelve credits, including Course 107-108 or its equivalent. TYLER.
- *162. **THE BEGINNINGS OF PARLIAMENT.** Parliamentary beginnings from the Norman Conquest to the reign of Edward I, based wholly on original sources. Prerequisites: twelve credits in History, including Course 3-4 or its equivalent; knowledge of at least high-school Latin. WHITE.
- *163. **ORIGIN OF THE ENGLISH JUDICIAL SYSTEM.** The origin and early development of the most distinctive features in England's present day courts and procedure. Prerequisites: same as Course 162. Not given in 1918-19. WHITE.
- *171-172. **GERMAN HISTORY.** A general survey with special reference to the rise of Brandenburg-Prussia since 1640. Prerequisites: the permission of the instructor; twelve credits in History, or History 1-2 and a major in German. Not given in 1918-19. FORD.
- *174. **BIOGRAPHICAL STUDIES IN NINETEENTH-CENTURY STATESMANSHIP.** Principles, methods, and works of such statesmen as Bismarck,

Cavour, Gambetta. Prerequisites: twelve credits in History and reading knowledge of either French or German. FORD.

- *181. ENGLISH BACKGROUNDS OF AMERICAN HISTORY. A survey of the political and social institutions of England in the reign of Charles I, with special emphasis upon the local institutions. Not given in 1918-19. NOTESTEIN.
- *182. ENGLISH COLONIZATION IN AMERICA. A study of institutions in New England and Virginia. Not given in 1918-19. NOTESTEIN.
- *183. THE STUART PERIOD. Emphasizes selected problems connected with the Long Parliament. NOTESTEIN.
- *191. SOCIAL AND ECONOMIC EUROPE IN THE AGE OF THE CRUSADES. A study of Europe and the Latin East during the twelfth and thirteenth centuries. Prerequisites: twelve credits in History, a reading knowledge of two of the following languages: French, German, Latin. KREY.

HOME ECONOMICS

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

Professor JOSEPHINE T. BERRY; Associate Professor MILDRED WEIGLEY; Assistant Professors SYLVIA CAMPIGLIA, HARRIET GOLDSTEIN, AMY P. MORSE, MARION WELLER, ELIZABETH VERMILYE, GRACE I. WILLIAMS; Instructors VETTA GOLDSTEIN, ETHEL PHELPS; Lecturer MARTHA B. MOORHEAD.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
3a or b	3	Textiles	All	None
		8:00-9:40 MWF	305, 211He	Phelps
		8:00-9:40 TThS	307, 211He	¶
11a or 11b	3	1:15-3:40 MF	307, 211He	Phelps
		Garment Making	All	None
		8:00-9:40 MWF	304He	Phelps
		8:00-9:40 TThS	304He	¶
		1:15-3:40 MF	304He	Phelps
13a or 31b	3	1:15-3:40 TTh	304He	Phelps
		Dressmaking	Soph., jr., sr.	1, 11
		9:50-11:30 MWF	304He	Campiglia
		8:00-9:40 TThS	305He	Phelps
22a	3	Food Economics	Soph., jr., sr.	21 or 233
		1:15-3:40 WF	309, 205, 207He	Weigley
22b	3	Food Economics	Soph., jr., sr.	21 or 233
		1:15-3:40 WF	203, 205, 207He	¶
23a or 23b	5	Foods and Cookery	Soph., jr., sr.	Biol. 9, 10 Chem. 3, or equiv. parallel
		1:15-3:40 MWF	107, 106He	Vermilye
		Home Care of the Sick...	Jr.	Chem. 3, 7, or 21, Bacteriol. 58
33	1	8:00-8:45 T	203He	Moorhead
		8:00-8:45	*NWWH	Fisher

No.	Credits	Title	Offered to	Prerequisite courses
34a,b	2	Home Management: Operation and Maintenance: Lectures	Jr., sr. 213He	Economics ¶
		8:55-9:40 TTh		
35a,b	3	Home Management: Operation and Maintenance: Laboratory	Jr., sr.	34 parallel Vermilye, Williams
51a or 51b	3	Drawing and Design.....	All	None
		8:00-9:40 MWF	313He	H. Goldstein
		8:00-9:40 TThS	313He	V. Goldstein
		1:15-3:40 MF	311He	V. Goldstein
53a or 53b	3	Advanced Design.....	Soph., jr., sr.	51
		9:50-11:30 MWF	313He	Morse
		1:15-3:40 MF	313He	H. Goldstein
		1:15-3:40 TTh	313He	H. Goldstein
32a,b	3	Home Equipment.....	Jr., sr.	53
		8:00-9:40 TThS	311He	¶
		1:15-3:40 TTh	311He	Morse
19b	1	Millinery	Jr., sr.	53, 11
		1:15-2:50 W	304He	¶
		1:15-2:50 M	303He	Carlotta Brown
17a,b	3	Clothing Economics.....	Ar	Ar
		9:50-11:30 MWF	305He	Weller
		1:15-3:40 TTh	305He	Campiglia

COURSES IN FOOD CONSERVATION

A	1	Food and the War.....	Jr., sr.	None
		11 T	102F	¶
B	3	Fundamentals of Nutrition	Jr., sr.	Course A
		3 MWF	102F	¶
C	2	Laboratory Course	Jr., sr.	Courses A, B
		2 TTh	He	

For additional sections in the above courses see the program of the College of Agriculture, Forestry, and Home Economics.

* New Wing, Women's Hall.

3a,b. **TEXTILES.** A study of textile fibers, their structure, properties, and chemical reactions; of fabrics, their structure and processes of manufacture; of art and economic considerations in selection and purchase of materials for clothing and household furnishing. PHELPS, WELLER.

11a,b. **GARMENT MAKING.** Instruction and laboratory practice in hand sewing; in the reading and adaptation of commercial patterns; in the construction and use of the sewing machine; in designing, cutting, and making simple outer garments from washable materials. PHELPS.

13a,b. **DRESSMAKING.** Consideration of quality, suitability, and cost of materials adapted to technique involved in construction of simple wool and silk dresses; adaptation of art principles in selection of designs; instruction and practice in methods of construction. CAMPGLIA, PHELPS.

17a,b. **CLOTHING ECONOMICS.** General consideration of economic function

- of woman; history of woman's place in home and industry with reference to clothing and textiles; study of clothing budgets, hygiene and standardization of dress. Laboratory problem in costume modeling. CAMPIGLIA, WELLER.
- 19a,b. MILLINERY. A study of the processes and materials used in millinery; designing, making, and trimming hats. CARLOTTA BROWN.
- 22a,b. FOOD ECONOMICS. The place of food in the family budget; cost and nutritive value of typical foods; the study of dietaries; preparation and serving of meals, the cost bearing a definite relation to the family budget. WARD.
- 23a,b. FOODS AND COOKERY. A course following the same general outline as 21a, but including a more detailed study of each topic. VERMILYE.
- 32a,b. HOME MANAGEMENT: HOUSE PLANNING AND EQUIPMENT. Problems in house planning, house furnishing, and equipment for various sums. Types of domestic architecture; choice of site; floor-plans; building materials; details of construction; heating; ventilating; lighting; plumbing; walls; rugs; furniture; color; hangings; pictures; gardens. MORSE.
33. HOME CARE OF THE SICK. (a) First aid; communicable diseases; their transmission and prevention; hygiene of infancy, maidenhood, maturity. (b) The care of the sick room; observation and care of the patient; elementary symptomatology. MOORHEAD, FISHER.
- 34a,b. HOME MANAGEMENT: OPERATION AND MAINTENANCE, LECTURES. The family budget for varying incomes, and for the "Home Management House"; household accounts. BERRY, WILLIAMS, VERMILYE.
- 35a,b. HOME MANAGEMENT: OPERATION AND MAINTENANCE, LABORATORY PRACTICE. (a) Nine weeks experience as manager and helper in a household of twenty members. (b) A dietary study covering a period of one month in the above household. WILLIAMS, VERMILYE.
- 51a,b. DRAWING AND DESIGN. Composition, perspective, color, theory, and color harmonies applied to costume design and interiors; harmony, balance, rhythm, in line and area design. GOLDSTEIN.
- 53a,b. HISTORIC ORNAMENT AND ADVANCED DESIGN. The historical development of art, architecture, ornament, and furniture, studied with reference to their influence upon modern styles. Problems in decorative design for articles of clothing and for house furnishing. GOLDSTEIN, MORSE.

COURSES IN FOOD CONSERVATION

(Given at the request of the United States Food Administration)

First Semester

- A. FOOD AND THE WAR. A general survey of the world's food problem in its geographic, economic, and nutritional aspects. This course in-

cludes a study of the effects of the war upon the food of Europe and America and the necessity of food control.

B. FUNDAMENTALS OF FOOD AND NUTRITION IN RELATION TO THE WAR. A development of the subject matter of Course A, with greater emphasis on its nutritional aspects and their relations to national and individual food conservation. Considerable collateral reading will be required.

C. LABORATORY COURSE IN USE AND CONSERVATION OF FOODS. The practical application of the principles presented in Course B, designed to give the information and to develop the skill which will prepare the student to act as assistant to official demonstrators.

HUMAN ANATOMY

THE MEDICAL SCHOOL

Professors CLARENCE M. JACKSON, JOHN B. JOHNSTON, THOMAS G. LEE, RICHARD E. SCAMMON; Associate Professor CHARLES A. ERDMANN; Assistant Professor ANDREW T. RASMUSSEN; Instructor JAY A. MYERS.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
3-4	10	Gross Human Anatomy... Lab. 8, 9, 10, 11 Ar Lect. 1 Ar	Soph., jr., sr. 304-308IA 304IA	An. Biol. 1-2 Jackson, et al. Jackson
*101	5	Human Histology..... Lab. 8, 9, 10 Ar Lect. 11 Ar	Jr., sr., grad. 106-108IA 102IA	An. Biol. 7-8 Scammon, et al. Scammon
*102	3	Human Embryology..... Lect. 11 Ar Quiz. 3 Ar Lab. 3, 4, 5 Ar	Jr., sr., grad. 102IA 106-108IA 106-108IA	An. Biol. 7-8 Scammon Lee, et al. Lee, et al.
*103	3	Human Neurology..... Lab. 8, 9, 10 Ar	Sr., grad. 108-214-215IA	Anat. 101 and 102, or An. Biol. 7-8 or 19-20 Johnston, Rasmussen, et al.
111a,b	3	Anatomical Technique.... 1, 2, 3 Ar	Soph., jr., sr. 113IA	Histology or Embryol. Lee
*114	3	Topographic Anatomy.... Lab. 1, 2, 3 Ar	Sr., grad. 313IA	3-4 Jackson
*115	3	Fetal Anatomy..... Lab. Ar Ar	Sr., grad. 20IA	3-4 and 102 or An. Biol. 137 Scammon

NOTE: Since the number of students in anatomy Courses Nos. 3-4, 101, and 102 is limited, students will not be permitted to register for these courses without written permission by the head of the department.

3-4. GROSS HUMAN ANATOMY. Dissection, including osteology. Laboratory work, with lectures and quizzes. JACKSON.

*101. HUMAN HISTOLOGY. Microscopic study of the various tissues and organs. Laboratory work, with lectures and quizzes. SCAMMON.

- *102. HUMAN EMBRYOLOGY. The development of the human body. Laboratory work, with lectures and quizzes. LEE, SCAMMON.
- *103. HUMAN NEUROLOGY. A study of the central nervous system and sense organs. Lectures, recitations, and laboratory work. JOHNSTON, RASMUSSEN, et al.
- 111a. ANATOMICAL TECHNIQUE. Microtechnique, reconstruction and museum methods, etc. Laboratory work and occasional lectures. Limited to sixteen students. LEE.
- *114. TOPOGRAPHIC ANATOMY. A study of the position and relations of the various organs, based upon serial cross-sections of the human body. Laboratory work, with lectures and quizzes. JACKSON.
- *115. FETAL ANATOMY. Dissection of the human fetus, with comparison of earlier embryonic and later postnatal structure. Laboratory work, largely individual in character, with conferences and written reports. SCAMMON.

HUMAN PHYSIOLOGY

THE MEDICAL SCHOOL

Professors ELIAS P. LYON, FREDERICK H. SCOTT; Associate Professor RICHARD OLDING BEARD; Assistant Professors JOHN F. MCCLENDON, CHAUNCEY J. V. PETTIBONE, M. RUSSEL WILCOX.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
3a,b	3†	Elem. Human Physiology. 2-4 MWF	Soph., jr., sr. 214, 304MH	Elem. Chem. & Biol. Beard, or Lyon, et al.
4	3†	Elementary Physiology .. 8-9 T 8-12 Th 9-10 S	Soph., jr., sr. 214, 301MH Soph., jr., sr.	Elem. Chem. and Biol. or Anat. Beard or Lyon, et al. Elem. Chem. and Biol. or Anat.
6	3	Elem. Physiol. Chemistry. 9-11 T 8-9 S 10-12 S	214, 301MH Soph., jr., sr.	Pettibone, et al. Organic Chem.
*102	5	Physiologic Chemistry ... 8-11 MW 8-12 F	Jr., sr., grad. 214, 310MH	Pettibone, et al.
*103	4	Physiol. Muscle, etc. 1-3 M 1-4:30 W 1-3:30 F	Jr., sr., grad. 214, 301MH	An. Biol. 1-2 and 7-8 or Anat. 101 Scott, et al.
*104	4	Physiol. Nerv. Sys., etc... 1-3 M 1-4:30 W 1-4 F	Jr., sr., grad. 214, 301MH	An. Biol. 1-2 and 7-8 and Anat. 101 Lyon, et al.
*111	3	Physical Chem. of Cells.. 2-5 TTh	Jr., sr., grad. 303MH	Organ. Chem. and An. Biol. 1-2 McCleendon

No.	Credits	Title	Offered to	Prerequisite courses
*112	3	Electro-Physiology	Jr., sr., grad.	Organ. Chem. and An. Biol. 1-2
		2-5 TTh	303MH	McClendon
*113-114	3‡	Problems in Physiology..	Jr., sr., grad.	Physiol. 103
		1-4 TTh or Ar	301MH	Lyon, Scott, or McClendon
*115-116	1	Conference	Jr., sr., grad.	Physiol. 103, 104 or with these
		3-4 M	315MH	Lyon or Scott
*131	1‡	Physiology of the Blood..	Jr., sr., grad.	Physiol. 102, 103, 104
		2-5 TTh	301MH	Scott
*132 ‡ or 1‡	1‡	Physiol. of Circulation...	Jr., sr., grad.	Physiol. 102, 103, 104
		2-5 TTh	301MH	Scott
*137	2	Foods and Pract. Dietetics	Jr., sr.	Physiol. 3 or equiv.
		2:30-5 Th	116MH&UH	Beard
*138	2	Physiol. of Development..	Jr., sr.	Physiol. 3 or equiv.
		2:30-3:30 TTh	116MH&UH	Beard
*151-152	6	Physiologic Chemistry ...	Jr., sr., grad.	Organic Chem.
		2-5 TTh	315, 310MH	Kingsbury, et al.
*153-154	6	Adv. Physiol. Chem.	Jr., sr., grad.	Physiol. 102
		Ar Ar	Ar	Pettibone or Kingsbury.
*161	1‡	Urinalysis	Jr., sr., grad.	Physiol. Chem.
		1-4 TTh	310MH	Pettibone, 1st qr.
*163	‡ or 1‡	Metabolism	Jr., sr., grad.	Physiol. Chem.
		1-4 TTh	310MH	Pettibone, 2nd qr.
*164	3	Quantitative Methods	Jr., sr., grad.	Physiol. Chem.
		Ar Ar	310MH	¶

† Students may not receive credit for both Courses 3 and 4.

‡ Or more.

For a full list of courses offered by the Department, see the bulletin of the Medical School.

INTRODUCTORY COURSES

- 3a,b. **ELEMENTARY HUMAN PHYSIOLOGY.** School for Nurses, Home Economics students, and others. LYON, SCOTT, BEARD, and Assistants.
4. **ELEMENTARY PHYSIOLOGY.** Sophomore dental students and others. LYON, SCOTT, BEARD, and Assistants.
6. **ELEMENTARY PHYSIOLOGIC CHEMISTRY.** Sophomore dental students and others. PETTIBONE and Assistants.

ADVANCED COURSES

- *102. **PHYSIOLOGIC CHEMISTRY.** The components of the animal body; foods, digestion, the excreta, and metabolism. McCLENDON, PETTIBONE, and Assistants.
- *103. **PHYSIOLOGY OF MUSCLE, NERVE, BLOOD, CIRCULATION, AND DIGESTION.** LYON, SCOTT, BEARD, McCLENDON, and Assistants.
- *104. **PHYSIOLOGY OF THE NERVOUS SYSTEM AND SPECIAL SENSES; RESPIRATION, METABOLISM, NUTRITION, AND EXCRETION.** LYON, SCOTT, BEARD, McCLENDON, and Assistant.
- *III. **PHYSICAL CHEMISTRY OF CELLS.** Osmotic pressure, surface tension, and electric conductivity of blood and urine; colloids; permeability

of cells, and tissues and changes in permeability produced by electrolytes. McCLENDON.

- *112. ELECTROPHYSIOLOGY. The bio-electric currents and the theory of stimulation and narcosis. Hydrogen-ion concentration and its relation to enzyme activity and irritability. McCLENDON.
- *113-114. ADVANCED PHYSIOLOGY. Course arranged by instructors with qualified students. Each student will be assigned a topic for special laboratory study, leading in some cases to original investigation. LYON, SCOTT, McCLENDON.
- *115-116. CONFERENCE COURSE IN PHYSIOLOGY; STUDENT SEMINAR. Informal lectures and library study. Topic: First quarter, internal secretion; second quarter, digestion; third quarter, respiration; fourth quarter, nervous system. LYON, SCOTT.
131. PHYSIOLOGY OF BLOOD. SCOTT.
132. PHYSIOLOGY OF CIRCULATION. SCOTT.
- *137a,b. FOODS AND PRACTICAL DIETETICS. A study of human foods and food values; of the principles of food selection; of caloric indices and balanced dietaries. Exercises in the practical preparation of foods. Second quarter; repeated fourth quarter. Limited to twelve students. BEARD.
- *138. PHYSIOLOGY OF DEVELOPMENT. The physiology of the ovum, the embryo, the fetus; the functions of menstruation, ovulation, pregnancy, parturition and lactation; the functional characteristics of birth, infancy, childhood, adolescence, maturity, and old age. BEARD.
- *151-152. PHYSIOLOGIC CHEMISTRY. The components of the body, foods, digestion, and metabolism.
- *153-154. ADVANCED PHYSIOLOGIC CHEMISTRY. Course arranged by instructors with qualified students for special work. PETTIBONE.
- *161. URINALYSIS. Advanced methods. First quarter. PETTIBONE.
- *163. METABOLISM. Special phases of metabolism. Lectures may be taken alone; number of students unlimited. Laboratory course limited to ten students. PETTIBONE.
- *164. QUANTITATIVE METHODS. The estimation of certain important substances in the urine, blood, and other body fluids.

LATIN

Professors JOSEPH B. PIKE, JOHN E. GRANRUD.

REQUIREMENTS OF THE DEPARTMENT

For a Teacher's Minor Recommendation, Courses 5, 6, 57, 58, and 101; for a Major Recommendation, these same courses with the addition

of Course 102, with an average of at least one and one-half honor points per credit hour.

For a B.A. with Honors, the general requirements and a fair reading knowledge of German or French or Greek. Six credits in Latin a semester during the junior and senior years are to be selected from Courses 57 to 204. (Students who do not desire a recommendation for teaching Latin may, by selecting courses that are given in alternate years, secure enough work for the honors course without being obliged to take Course 101 or 102.) Instead of taking all the work indicated above in Latin, the student may substitute six credits in Greek (third-year Greek or above), or six credits in Greek or Roman History, or six credits in ancient Philosophy.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1	6	Beginning Latin.....	All	None
		9 MTWThFS	107F	†
2	6	Selections from Caesar†...	All	1
		9 MTWThFS	107F	†
3	3	Select. from Latin Authors	All	1-2 or 2 or 3 yrs. prep. Latin
		10 MWF	109F	†
4	3	Select. from Latin Author†	All	1-2 or 2 or 3 yrs. prep. Latin
		10 MWF	109F	†
5	3	Livy	All	3-4 or 4 yrs. prep. Latin
		10 TThS	109F	†
6	3	Plautus and Terence††...	All	3-4 or 4 yrs. prep. Latin
		10 TThS	109F	†
*57	3	Horace	Soph., jr., sr.	6
		9 MWF	109F	Pike
*58	3	Pliny	Soph., jr., sr.	57
		9 MWF	109F	Pike
*101	3	Advanced Caesar.....	Jr., sr.	58
		9 TThS	109F	Pike
*102	3	Advanced Virgil.....	Jr., sr.	101
		9 TThS	109F	Pike
*103	2	Roman Novel.....	Jr., sr., grad.	58
		11 TS	109F	Pike
*107	3	Cicero's <i>de Officiis</i>	Jr., sr., grad.	58
		11 MWF	107F	Granrud
*110	3	Roman Satire.....	Jr., sr., grad.	58
		11 MWF	107F	Granrud
*112	2	Low and Medieval Latin..	Soph., jr., sr.	6
		11 TS	109F	Pike
9	1	Roman Private Life.....	Jr., sr.	None
		2 TTh	107F	Granrud
	1	Roman Art.....	Jr., sr.	None
		2 TTh	107F	Granrud

† Students entering at midyear with one year of Latin may take Course 2.

‡ Students entering at midyear with two or three years of Latin may take Course 4.

†† Students entering at midyear with four years of Latin may take Course 6.

1. BEGINNING LATIN. Eight weeks are spent in mastering inflections, the remainder of the semester is devoted to reading easy Latin prose and the study of elementary syntax. GRANRUD.
2. SELECTIONS FROM CAESAR. A special effort is made to secure an idiomatic translation and to explain the historical environment. GRANRUD.
3. SELECTIONS FROM LATIN AUTHORS. An effort will be made to give a general view of Roman life and literature. (Students entering at mid-year with two or three years' preparation in Latin may take Course 2.) PIKE.
4. SELECTIONS FROM LATIN AUTHORS. A continuation of Course 3. PIKE.
5. LIVY. SELECTIONS. Review of principles of Latin syntax. PIKE.
6. PLAUTUS AND TERENCE. Translation of selected plays, with study of the beginnings of the Roman drama. (Students entering at mid-year with four years of Latin may enter Course 6.) PIKE, GRANRUD.
9. ROMAN PRIVATE LIFE. Roman houses and furniture, education, marriage, daily life, and amusements. The Roman fora and their activities. GRANRUD.
10. ROMAN AND ITALIAN ART. Roman portrait sculpture and historical reliefs, pictorial technique and painting. Italian scenery, typical cathedrals, and select masterpieces of Renaissance art. GRANRUD.
- *57. HORACE. Selections from the odes, epodes, satires, and epistles, with a study of the life and literary art of Horace. PIKE.
- *58. PLINY. Selected letters of Pliny the Younger. PIKE.
- *101. ADVANCED COURSE IN CAESAR. (Teachers' course.) Selections from books five to seven of the Gallic war; the principles of indirect discourse; intermediate Latin composition; class drill and discussion of various problems connected with secondary school work in Latin. PIKE.
- *102. ADVANCED COURSE IN VERGIL. An interpretation of selections from books seven to twelve of the Aeneid; review of portions of books one to six; the quantitative method of pronouncing Latin verse; metrical rendering of selected passages. PIKE.
- *103. THE ROMAN NOVEL. The short stories of Apuleius and *Trimalchio's Dinner* of Petronius. A study of the ancient novel. PIKE.
- *105. ROMAN ELEGY. Selections from Catullus, Tibullus, Propertius, and Ovid. The origin, development, and technique of Roman elegy. Not given in 1918-19. GRANRUD.
- *107. CICERO. Selections from *De Officiis*. A study of his life and times, his literary art and methods. Alternates with Course 105. GRANRUD.

- *108. TACITUS. Selections from his works. A study of the development of Roman historical literature, and of the sources, methods, and literary characteristics of Tacitus. Not offered in 1918-19. GRANRUD.
- *110. ROMAN SATIRE. Selections from Juvenal. The beginnings, evolution, and distinctive qualities of Roman satire; Juvenal as a literary artist and a moralist. Alternates with Course 108. GRANRUD.
- *111. VULGAR LATIN. Selections from Petronius. The *Peregrinatio Sanctae Silviae*. The relation of Vulgar Latin to Classical Latin and to the Romance Languages will be discussed. Not offered in 1918-19. PIKE.
- *112. LOW AND MEDIEVAL LATIN. Selected documents illustrating the history of the church and state in the Middle Ages. Selections from the history of the Franks by Gregory of Tours. The aim of the course is to accustom students to handle Medieval Latin easily for historical and literary purposes. Alternates with Course III. PIKE.
- *201-202. LUCRETIUS. (Graduate seminar but open to students who register for honors in Latin.) Interpretation of the text of Lucretius, with a study of his philosophy and its sources. Not given in 1918-19. PIKE.
- *203-204. SENECA. (Graduate seminar but open to students who register for honors in Latin.) Selections from the letters and essays of Seneca the philosopher. A study of Roman Stoicism. Alternates with Course 201-202. PIKE.

MATHEMATICS

Professors GEORGE N. BAUER, FRANCIS P. LEAVENWORTH; Associate Professors WILLIAM H. BUSSEY, ROYAL R. SHUMWAY; Assistant Professors HERMON L. SLOBIN, ANTHONY L. UNDERHILL;¹ Instructors RALPH M. BARTON, RAYMOND W. BRINK, WILLIAM D. REEVE; Assistant ELLA THORP.

REQUIREMENTS OF THE DEPARTMENT

For *B.A. with Honors*, the general requirements. In junior and senior years courses above 50 may be presented, (except Course 54). Astronomy 101-102, and with the consent of the Department of Mathematics, other courses in Astronomy and Physics open only to juniors and seniors may be presented.

For Teacher's Certificate

- a. Mathematics as the minor subject of teaching: Mathematics 1-2 or 3-4 or 5; 6 if not offered for entrance; 9; 11; 54.
- b. Mathematics as the major subject of teaching: Mathematics 1-2 or 3-4 or 5; 6 if not offered for entrance; 9; 11; 54; and six other credits in the department.

¹ Absent on leave.

In order to be recommended, a student must secure an average of one and one-half honor points per credit hour in the work required and an average of one honor point per credit hour in all other work taken in the department.

COURSES

Year courses for freshmen and sophomores. Course 1-2 is a year course open to students who presented for entrance one unit of Elementary Algebra. Course 3a-4b and Course 5-9b are two alternative year courses open to those who presented for entrance one unit of Elementary Algebra and one-half unit of Higher Algebra. Students who intend to specialize in Mathematics are advised to take Course 5-9b. Course 9a-11b is a year course for sophomores who had Course 1-2 or Course 3a-4b in the freshman year. Course 11a-51b is a year-course for sophomores who had Course 5-9b in the freshman year.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1-2	10	Algebra I, II, & Pl. Trig.	Fr., soph.	Elem. Algebra
		8 TWThFS	104F	¶
		9 TWThFS	104F	¶
		1 MTWThF	104F	¶
		2 MTWThF	104F	¶
1b	5	Algebra I	Fr., soph.	Elem. Algebra
		1 MTWThF	104F	¶
3a	3	Algebra II	Fr., soph.	Prep. Higher Algebra
		10 MWF	104F	¶
		10 TThS	104F	¶
		2 MWF	102F	¶
		3 MWF	125F	¶
3b	3	Algebra II	Fr., soph.	Prep. Higher Algebra
		8 MWF	105F	¶
4a	3	Trigonometry	Fr., soph.	3
		8 MWF	102F	¶
4b	3	Trigonometry	Fr., soph.	3
		10 MWF	104F	¶
		10 TThS	104F	¶
		2 MWF	102F	¶
		3 MWF	105F	¶
5	5	Algebra II and Pl. Trig...	Fr., soph.	Prep. Higher Algebra
		9 TWThFS	105F	¶
		10 TWThFS	105F	¶
6	3	Solid Geometry	Soph., jr., sr.	1-2 or 3-4 or 5-9
			who have not had Solid Geom.	
		11 MWF	102F	Bussey
9a	5	Pl. & Sol. Anal. Geom....	Soph., jr., sr.	2 or 4 or 5
		10 TWThFS	125F	Brink
		2 MTWThF	125F	Barton
9b	5	Pl. & Sol. Anal. Geom...	Fr., soph., jr., sr.	2 or 4 or 5
		9 TWThFS	105F	Slobin
		10 TWThFS	125F	Barton

No.	Credits	Title	Offered to	Prerequisite courses
11a	3	Differential Calculus	Soph., jr., sr.	7 or 9
		9 TThS	102F	Bauer
		11 MWF	102F	Brink
11b	3	Differential Calculus	Soph., jr., sr.	7 or 9
		10 TThS	102F	Brink
		2 MWF	125F	Barton
51a	3	Integral Calculus	Soph., jr., sr.	11
		11 MWF	101F	Bussey
51b	3	Integral Calculus	Soph., jr., sr.	11
		9 TThS	102F	Bauer
		11 MWF	101F	Brink
*54a	2	Teachers' Course	Jr., sr.	11
		4 TTh	115Ed	Reeve
*54b	2	Teachers' Course	Jr., sr.	11
		4 TTh	115Ed	Reeve
*62	3	Theory of Equations.....	Jr., sr.	11
		2 MWF	102F	Bussey
*71	3	Solid Anal. Geom.	Jr., sr.	11
		9 MWF	102F	Shumway
*104	3	Mod. Synthetic Geometry.	Jr., sr., grad.	11
		9 MWF	102F	Shumway
*107	3	Adv. Differential Calculus.	Jr., sr., grad.	51
		11 MWF	125F	Slobin
*108	3	Adv. Integral Calculus...	Jr., sr., grad.	107-51
		11 MWF	125F	Slobin

Any of the following courses for which a sufficient number of students apply will be given in 1918-19.

No.	Credits	Title	Offered to	Prerequisite courses
*106a or 106b	3	Differential Equations.	Sr., grad.	51
*119a or 119b	3	Mod. Higher Algebra	Sr., grad.	51, 62
*127a or 127b	3	Infinite Series	Sr., grad.	17 cr. besides Alg. and Trig.
*140	2	Meth. of Least Squares	Sr., grad.	51

1a,b. HIGHER ALGEBRA, PART I. Review of factoring, fractions, simple quadratics, determinants, and solution of simultaneous linear equations, the quadratic equation in one and two variables, ratio and proportion, variation, the progressions, binomial theorem, indeterminate equations. BAUER, BUSSEY, SLOBIN, BARTON, BRINK, THORP.

2. ALGEBRA CONTINUED THROUGH LOGARITHMS AND PLANE TRIGONOMETRY. Mathematical induction, proof of the binomial theorem for a positive integer, application of the binomial theorem for negative and fractional, theory of equations, determinants, logarithms, plane trigonometry. Permutations and combinations, indeterminate equations, undetermined coefficients, etc. BAUER, BUSSEY, SLOBIN, BARTON, BRINK, THORP.

3a,b. HIGHER ALGEBRA, PART II. Rapid review of the quadratic in one variable, simultaneous quadratics, mathematical induction, binomial theorem, progressions, theory of equations, determinants. Selected topics from permutations and combinations, undetermined coefficients, etc. BAUER, BUSSEY, SHUMWAY, BARTON, THORP.

- 4a,b. LOGARITHMS AND TRIGONOMETRY. Text, tables and numerous problems. BAUER, BUSSEY, SHUMWAY, BARTON, THORP.
5. COLLEGE ALGEBRA AND TRIGONOMETRY. Review of quadratics in one variable, simultaneous quadratics, mathematical induction, binomial theorem, progressions, theory of equations, determinants. Permutations and combinations, undetermined coefficients, indeterminate equations, etc. Those who intend to specialize in mathematics should take this course. SLOBIN, BARTON.
6. SOLID AND SPHERICAL GEOMETRY. This course is intended primarily for those who are preparing for high-school teaching and who did not present solid geometry for entrance. BUSSEY.
- 9a,b. PLANE AND SOLID ANALYTICAL GEOMETRY. Rectilinear and polar coordinates, loci and their equations, transformation of coordinates, the straight line, conic sections, higher plane curves, introduction to solid analytic geometry. SLOBIN, BARTON, BRINK.
- 11a,b. DIFFERENTIAL CALCULUS. Differentiation of algebraic and transcendental functions, development of functions, indeterminate forms, maxima and minima, tangents, subtangents, normals, subnormals, and asymptotes, curvature, evolutes, envelopes, singular points. BAUER, BARTON, BRINK.
- 51a,b. INTEGRAL CALCULUS. Integration of the various forms, integration as summation, rectification of curves, quadrature of plane and curved surfaces, cubature of volumes, equations of loci, successive integration with applications to moment of inertia, areas and volumes. BAUER, BUSSEY, BRINK.
- *54a,b. TEACHERS' COURSE. For students preparing to become teachers of secondary school mathematics. Lectures, readings, discussion. Methods of presentation, assignment, lesson plans, examinations, plans for beginning courses in elementary algebra and plane geometry. Aims and outcomes of education. REEVE.
- *62. THEORY OF EQUATIONS. Algebraic solution of cubic and quartic equations, properties of roots of an equation, symmetric functions, isolation of real roots, solution of numerical equations, complex numbers, fundamental theorem of algebra, determinants, discriminants, resultants. Text and lectures. BUSSEY.
- *71. SOLID ANALYTICAL GEOMETRY. Elementary theorems of projection, coordinates, the plane, the line in space, quadric surfaces, transformation of coordinates, tangents, poles and polars, the general equation of the second degree. Numerous examples assigned to illustrate the theory. SHUMWAY.
- *102. ADVANCED COURSE IN PLANE ANALYTICAL GEOMETRY. Supplements Courses 7 and 9, treating more fully of the subjects of those courses, and taking up additional topics. Not given in 1918-19. BUSSEY.

- *104. MODERN SYNTHETIC GEOMETRY. Based upon the method of central projection without the use of coördinates. SHUMWAY.
- *106a,b. DIFFERENTIAL EQUATIONS. Text and lectures. Not given in 1918-19. SLOBIN.
- *107. ADVANCED DIFFERENTIAL CALCULUS. Infinitesimals of different orders, partial and total derivatives, introduction to infinite series, Taylor's and Maclaurin's expansions with applications of the calculus to plane curves. SLOBIN.
- *108. ADVANCED INTEGRAL CALCULUS. Deals with the definite integral as the limit of a sum, improper integrals, the Beta and Gamma functions, elliptic integrals, differentiation and integration under the sign of integration; numerous applications to geometry and mechanics. SLOBIN.
- *119a,b. MODERN HIGHER ALGEBRA. Not given in 1918-19. SHUMWAY.
- *125-126. DIFFERENTIAL GEOMETRY. Not given in 1918-19. UNDERHILL.
- *127a,b. INFINITE SERIES. Not given in 1918-19. BAUER.
- *140. METHOD OF LEAST SQUARES. The combination and adjustment of observations and the discussion of their precision as applied especially to engineering, physics, and astronomy. LEAVENWORTH.

MILITARY SCIENCE AND TACTICS

Captain STARKEY Y. BRITT, United States Army, Retired, Professor of Military Science and Tactics, and Commandant; RAY CUNNINGHAM, Assistant Commandant and Adjutant; Sergeant JOSEPH HAVLICEK, United States Infantry, Retired, Detailed Instructor.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1-2	None	Military Drill	Fr.	None
		2, 3, 4 Th	A	Captain Britt
3-4	None	Military Drill	Soph.	1 year's drill
		2, 3, 4 T	A	Captain Britt
5-6	6	Military Drill and Science	Jr.	2 years' drill
		2, 3, 4 Th or F	A	Captain Britt
7-8	6	Adv. Military Drill and Science	Sr.	2 years' drill
		10 TTh	A	Captain Britt

1-6. MILITARY DRILL. Required of all men in the freshman and sophomore classes. Students are cautioned to report for the first drill and inform themselves of the requirements of the department.

1-2. Freshman: Practical instruction in schools of the soldier, company, and battalion; signals, ceremonies; first aid.

3-4. 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.

5-6. May be taken voluntarily by others outside of the freshman and sophomore classes. No credit will be allowed for such drill for less than one year.

7-8. MILITARY SCIENCE. Instruction in advance and rear guards, outposts, reconnaissance, camping, duties of company commander, articles of war, records.

MUSIC

Professor CARLYLE SCOTT; Assistant Professor DONALD FERGUSON; Instructors THADDEUS GIDDINGS, GERTRUDE HULL, ABE PEPINSKY, GERTRUDE REEVES.

For the curriculum of the four-year course in Arts and Music, see page 24. All courses listed below are also open to juniors and seniors, who have fulfilled the required prerequisites.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1-2	6	Harmony	Fresh., Music	None
		11 MWF	Mu Scott	
3-4	4	Counterpoint	Soph., Music	1-2
		10 TTh	Mu Ferguson	
5-6	4	Composition	Jr., sr.	.....
		Ar Ar	Mu Ferguson	
*7-8	2	Analysis	Jr., sr.	Harmony
		12 W	Mu Scott	
9-10	6	History of Music.....	Soph., jr., sr., Music	None
		9 MWF	Mu Ferguson	
11-12	2	Appreciation of Music....	Jr., sr.	None
		1 M	Mu Reeves	
*13-14	4	Bach-Beethoven	Jr., sr.	None
		1, 2 T	Mu Ferguson	
15-16	4 or 8	First-year Pianoforte	Jr., sr.	.....
		Ar Ar	Mu Scott, Ferguson, Reeves	
19-20	4 or 8	First-year Violin	Fresh., Music	.....
		Ar Ar	Mu Pepinsky	
21-22	4	First-year Vocal Training.	Fresh., Music	.....
		Ar Ar	Mu Hull	
27-28	6	Public School Music.....	Jr., sr.	.....
		4, 5 WF	Ed Giddings	
29-30	6	Normal Piano	Jr., sr.	.....
		3 TF	Mu Reeves	
31-32	4	Ensemble	Jr., sr.	.....
		12 F	Mu Pepinsky	
33-34	2	Ear Training	Jr., sr.	15-16
		2 Th	Mu Reeves	
35-36	2	Orchestra	Soph., jr., sr.	.....
		7:30 M	Mu Ferguson	

No.	Credits	Title	Offered to	Prerequisite courses
*37-38	6	Advanced Normal Piano..	Sr., grad.	29-30
		4 TF	Mu	Reeves
*39-40	6	Adv. Pub. School Music..	Sr., grad.	27-28
		Ar Ar	Mu	¶
41-42	4 or 8	Other Orchestral Instru- ments	Jr., sr.	.....
		Ar Ar	Mu	¶
47-48	2	University Choir	Jr., sr.	.....
		Ar Ar	Mu	Scott
51-52	4 or 8	Second-year Pianoforte ..	Soph., Music	15-16
		Ar Ar	Mu	Scott, Ferguson, Reeves
53-54	4 or 8	Third-year Pianoforte ...	Jr	47-48
		Ar Ar	Mu	Scott, Ferguson, Reeves
55-56	4 or 8	Fourth-year Pianoforte ..	Sr.	53-54
		Ar Ar	Mu	Scott, Ferguson, Reeves
59-60	4 or 8	Second-year Violin	Soph., Music	19-20
		Ar Ar	Mu	Pepinsky
61-62	4 or 8	Third-year Violin	Jr.	59-60
		Ar Ar	Mu	Pepinsky
63-64	4 or 8	Fourth-year Violin	Sr.	61-62
		Ar Ar	Mu	Pepinsky
67-68	4	Second-year Vocal Train..	Soph., Music	21-22
		Ar Ar	Mu	Hull
69-70	4	Third-year Vocal Train...	Jr.	67-68
		Ar Ar	Mu	Hull
71-72	4	Fourth-year Vocal Train..	Sr.	69-70
		Ar Ar	Mu	Hull

1-2. HARMONY. The study of chords, their construction, relations, and progressions. Written exercises on basses, the harmonization of given melodies. SCOTT.

*3-4. COUNTERPOINT. First semester: strict counterpoint up to eight parts. Second semester: free contrapuntal harmonization of chorales and composition of smaller contrapuntal forms such as inventions. FERGUSON.

5-6. MUSICAL FORM AND FREE COMPOSITION. 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 compositions will be given. FERGUSON.

*7-8. ANALYSIS. The analysis of musical works as regards their formal construction: subdivisions of themes into phrases, sections, and motives. Symphonies to be presented by the local orchestra are among the compositions used in this course. SCOTT.

9-10. HISTORY OF MUSIC. Some account of primitive systems and of the early Christian modal and harmonic developments, leading to a general survey of musical literature from Bach to the present time. FERGUSON.

11-12. APPRECIATION OF MUSIC. A non-technical course. REEVES.

*13-14. BACH AND BEETHOVEN. Second semester: Wagner and Brahms.

Critical study of selection from master works of the four greatest composers. Biographical readings, topics, and analyses, giving historical and literary background to culminative periods in composition. FERGUSON.

- 15-16. FIRST-YEAR PIANOFORTE. Open to juniors who have mastered technical difficulties of the degree of Czerny's *School of Velocity* and the easier Haydn and Mozart sonatas. The fee is thirty-two or sixty-four dollars a semester. SCOTT, FERGUSON, REEVES.
- 19-20. FIRST-YEAR VIOLIN. Candidate must be able to play the first ten of Kreutzer's forty etudes, and the easier Handel and Mozart sonatas. PEPINSKY.
- 21-22. VOICE. Thoro training in relaxation and breath control, foundations of tone production. Great advantages offered to the advanced singer, in the study of the best in vocal literature, songs, oratorio, opera. Fee, forty dollars per semester. HULL.
- 27-28. PUBLIC SCHOOL MUSIC. Preparation for teachers and supervisors of music in the grades. Piano playing, singing, and ready reading prerequisite. Four hours in class and one half day weekly in public school visiting. Practice teaching demanded. GIDDINGS.
- 29-30. NORMAL PIANO. Special course offered to students desiring to teach pianoforte as a profession. REEVES.
- 31-32. ENSEMBLE. Students sufficiently advanced will be given opportunity for ensemble practice, viz., piano, four and eight hands; string and piano and vocal trios, quartets, etc. PEPINSKY.
- 33-34. EAR TRAINING. A non-technical course. Required of all music students. REEVES.
- 35-36. ORCHESTRA. Practical study of orchestral literature: standard symphonies, overtures, concertos, etc., with public performances as frequently as practicable. May be taken a second year with credit. FERGUSON.
- *37-38. ADVANCED NORMAL PIANO. Practice teaching. REEVES.
- *39-40. ADVANCED PUBLIC SCHOOL MUSIC. Preparation for teachers and supervisors of music in high and normal schools. Four hours in class and one half day weekly in public school visiting. Practice teaching required. GIDDINGS.
- 41-42. OTHER ORCHESTRAL INSTRUMENTS.
- 47-48. UNIVERSITY CHOIR. SCOTT.
- 51-52. SECOND-YEAR PIANOFORTE. SCOTT, FERGUSON, REEVES.
- 53-54. THIRD-YEAR PIANOFORTE. SCOTT, FERGUSON, REEVES.

55-56. FOURTH-YEAR PIANOFORTE. SCOTT, FERGUSON, REEVES.

59-60. SECOND-YEAR VIOLIN. PEPINSKY.

61-62. THIRD-YEAR VIOLIN. PEPINSKY.

63-64. FOURTH-YEAR VIOLIN. PEPINSKY.

67-68. SECOND-YEAR VOCAL TRAINING. HULL.

69-70. THIRD-YEAR VOCAL TRAINING. HULL.

71-72. FOURTH-YEAR VOCAL TRAINING. HULL.

PHILOSOPHY

Professors NORMAN WILDE, DAVID F. SWENSON; Assistant Professor RUPERT C. LODGE.

REQUIREMENTS OF THE DEPARTMENT

For *B.A. with Honors*, besides the general requirements, twenty-four credits in starred courses, including one of the following: 124, 125, 136, 138, 141-142.

Six credits in Psychology 1-2 will be accepted as prerequisites in Philosophy, except where otherwise stated.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1	3†	Problems of Philosophy...	Soph., jr., sr.	None
		9 TThS	322F	Swenson
		11 MWF	302F	Lodge
2	3†	Logic	Soph., jr., sr.	None
		9 TThS	322F	Swenson
		11 MWF	322F	Lodge
3a	3†	Ethics	Soph., jr., sr.	None
		10 TThS	322F	Wilde
3b	3†	Ethics	Soph., jr., sr.	None
		9 MWF	304F	Wilde
9	3	Philosophy and the War..	Soph., jr., sr.	None
		10 MWF	322F	Wilde, Swenson, Lodge
10	1	Science and Religion....	Soph., jr., sr.	6 credits in Phil. or Psychology or Biology
		11 T	322F	Swenson
*20	3	Present Day Philosophy..	Jr., sr.	6 credits
		10 TThS	322F	Wilde
*55	3	Aesthetics	Jr., sr.	6 credits
		8 TThS	322F	Swenson
*63	3	Development of Religion..	Jr., sr.	6 credits
		9 MWF	322F	Swenson
*64	3	Philosophy of Religion....	Jr., sr.	6 credits
		9 MWF	322F	Swenson
*100	3	Critical Idealism.....	Jr., sr., grad.	6 credits in Phil.
		2 MWF	322F	Lodge
*121-122	6	General History of Philos.	Jr., sr., grad.	6 credits
		11 MWF	322F	Wilde

No.	Credits	Title	Offered to	Prerequisite courses
*124	3	19th Century Philosophy..	Jr., sr., grad.	9 credits incl. 6 in Phil.
		Ar Ar	316F	Lodge
*125	3	Plato	Jr., sr., grad.	9 credits incl. 6 in Phil.
		Ar Ar	316F	Lodge
*136	3	Scandinavian Philosophy..	Jr., sr., grad.	9 credits
		4-5:30 WF	322F	Swenson
*138	3	Advanced Logic.....	Jr., sr., grad.	9 credits incl. 2
		10 MWF	316F	Swenson
*141-142	6	Seminar in Philosophy...	Sr., grad.	12 credits in Phil.
		Ar Ar	323F	Wilde

† 1 and 2 or 3 may be combined as a year course.

1. PROBLEMS OF PHILOSOPHY. A survey course in philosophy, in which the main fields of investigation are mapped out, the permanent problems indicated, and the chief methods employed in their solution are discussed. SWENSON, LODGE.
2. LOGIC. The nature of knowledge, the laws of reasoning, the principles and methods of scientific proof. SWENSON, LODGE.
- 3a or 3b. ETHICS. The principles of morals; sketch of the historical development of morality followed by an analysis of its meaning, and of its basis in human nature. Three credits. WILDE.
9. PHILOSOPHY AND THE WAR. German philosophy and the war; the philosophy of democracy; the individual and the state; the morality of nations. WILDE, SWENSON, LODGE.
10. SCIENCE AND RELIGION. Religious problems as affected by the results of modern science. SWENSON.
- *20. PRESENT DAY PHILOSOPHY. An untechnical discussion of the most important types of contemporary philosophy. Among the men and movements included are: Royce, James, Eucken, Bergson, Haeckel, Neo-Realism, Nietzsche. WILDE.
- *55. ESTHETICS. An introduction to the history and theory of esthetics, psychological analysis of beauty, and a discussion of the arts. SWENSON.
- *63. DEVELOPMENT OF RELIGION. The development of religious ideas and practices; a summary of the typical historical religions; the chief methods of modern psychological investigation. SWENSON.
- *64. PHILOSOPHY OF RELIGION. Religion as an interpretation and evaluation of life; speculative idealism, the mysticism of Emerson, the estheticism of Nietzsche, the ethics of Carlyle; Christianity as a transcendent ethical religion. SWENSON.
- *100. CRITICAL IDEALISM. A systematical introduction to present-day philosophical construction. LODGE.

- *117. **ADVANCED ETHICS.** A study of the main types of ethical theory. Not given in 1918-19. WILDE.
- *121-122. **HISTORY OF PHILOSOPHY.** Outline of the history of thought from the Greeks to Kant. Intended as a cultural course, as well as a preparation for the study of special periods. First semester, ancient philosophy; second semester, modern. WILDE.
- *124. **THE PHILOSOPHY OF THE NINETEENTH CENTURY.** Continues Course 122. Modern currents of thought from the Idealism of Fichte and Hegel, to the philosophy of evolution, pragmatism, and the new realism. LODGE.
- *125. **THE PHILOSOPHY OF PLATO.** 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. LODGE.
- *133. **ANCIENT PHILOSOPHICAL THEORIES OF THE STATE.** Introduction to the philosophical theory of the state in Greek and medieval thought. Special attention is paid to the theories of Plato and Aristotle. Not given in 1918-19. LODGE.
- *136. **SCANDINAVIAN PHILOSOPHY.** The philosophical thought of the nineteenth century in Scandinavian countries, including a comparative study of Boström and Kierkegaard. Reading knowledge of Scandinavian required. SWENSON.
- *138. **ADVANCED LOGIC.** Different topics from year to year, including the organization of the sciences, the presuppositions of knowledge, recent mathematical and symbolic logic, and the pragmatic theory of logic. SWENSON.
- *141-142. **SEMINAR IN PHILOSOPHY.** Individual investigation in philosophy. Studies in either ancient or modern philosophy and ethics; critical and constructive studies of logic, metaphysics, or ethics. Character of work and general topic for year ascertained by consultation with department. WILDE.

PHYSICAL EDUCATION

FOR WOMEN

Associate Professor J. ANNA NORRIS; Instructors MAY S. KISSOCK, VALERIA G. LADD, GERTRUDE B. SCHILL, ALICE H. TOLG.

INTRODUCTORY STATEMENT

This department aims primarily to promote the health of the women students. It gives physical examination and advice to all on entrance; plans systematically to keep in close touch with them during their first year in college; conducts yearly consultations with, and examines when

necessary, all upper-class students; gives courses in hygiene; organizes physical work to meet the varying needs and physical tastes of students; cooperates closely with the Woman's Athletic Association in encouraging and organizing athletic sports; holds regular office hours for the purpose of consultation with all students who desire its advice; and investigates cases of illness which come to its attention.

Work in this department is required of all newly entering students (See Courses 1-2 and 11), of sophomores who can not pass the swimming examination (See Course 43, 44), and of all students permitted, for reasons connected with their physical condition, to carry less than the minimum number of credit hours. Physical examinations or consultations required annually of all students.

Elective classes arranged in gymnastics, dancing, swimming, field hockey, basket-ball, baseball, and other organized games.

For a teacher's certificate, minor recommendation, the following courses must be taken: 1-2, 3-4, 5-6, 13, 15-16, 21-22, 31-32, 33-34, 43, 44. Course 5-6 must be taken in senior year.

Six credits the maximum number that can be gained by taking courses in exercise (Courses 3-4, 5-6); only one of these courses may be taken for credit in a semester.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1-2	None	Elementary Phys. Training..	Required of all new students	None
		11 MWF	3, 151, 153WGm	¶
		2 MWF	3, 151, 153WGm	¶
		3 MWF	3, 151, 153WGm	¶
3-4	3	Intermediate Phys. Training.	Soph., jr., sr.	Equivalent of 1-2
		3 TTh	153WGm	Kissock
		One other hour to be arranged		
5-6	3	Advanced Phys. Training...	Jr., sr.	3-4, permission of Director
		11 TS	153WGm	Ladd
		One other hour to be arranged		
11	None	Preliminary Hygiene	Required of all new students	None
		11 M	201WGm	¶
		1 M	201WGm	¶
		2 T	201WGm	¶
		4 W	201WGm	¶
13	3	Personal Hygiene	Soph., jr., sr.	An. Biol. 1-2
		9 MWF	201WGm	Norris
14	3	Hygiene of the Family.....	Jr., sr.	An. Biol. 1-2
		9 TThS	201WGm	Norris
15-16	6	Principles of Phys. Ed.	Sr.	1-2, 3-4, 31-32, 33-34
		Lect. 9 TThS	201WGm	Kissock, Schill, Tolg
		Lab. 1 MWF	3, 151, 153WGm	Kissock, Schill, Tolg
21-22	None	Rhythmic Expression	All	None
		4 MW	153WGm	Ladd
		4 TTh	153WGm	Ladd
31-32	None	Folk Dancing & Org. Games.	All	None
		2 TTh	151WGm	Schill

No.	Credits	Title	Offered to	Prerequisite courses
33-34	None	Hockey, Basket & Baseball..	All	Permission of Director
	4	MW	151WGm	Kissock
	4	TTh	151WGm	Kissock
43a,b	None	Elementary Swimming	Required of soph. who need instr. in swimming; open to fr.	None
	10	TS	51WGm	Ladd
	11	TS	51WGm	Kissock
	2	TTh	51WGm	Ladd
	3	TTh	51WGm	Ladd
	4	MF	51WGm	Schill

Diving and advanced strokes in swimming taught at 12 T and at 4 W.
General swimming without instruction, 12 WF and 5 WTh.

- 1-2. **ELEMENTARY PHYSICAL TRAINING.** Lighter forms of gymnastics; gymnastic dances; indoor and outdoor games. Study of daily habits of living. Shower bath fee, \$1.50 per semester. KISSOCK, LADD, SCHILL, TOLG.
- 3-4. **INTERMEDIATE PHYSICAL TRAINING.** Gymnastics, and an election of dancing or a sport. Daily habits of living and written abstracts. If taken for no credit, no reading or written work will be required. Shower bath fee, \$1.50 per semester. KISSOCK.
- 5-6. **ADVANCED PHYSICAL TRAINING.** Gymnastics and an election of dancing, fencing, or a sport. Written abstracts of prescribed reading. If taken without credit, no written work or reading will be required. Shower bath fee, \$1.50 per semester. LADD.
11. **PRELIMINARY HYGIENE.** One lecture a week. The most essential aspects of the care of the body. NORRIS.
13. **PERSONAL HYGIENE.** Care of the personal health; elements of anatomy and physiology; prevention of contagious diseases. NORRIS.
14. **HYGIENE OF THE FAMILY.** Eugenics, prenatal care, maternity and infancy; brief consideration of the essentials of home nursing. NORRIS.
- 15-16. **PRINCIPLES OF PHYSICAL EDUCATION.** A study of the character, purpose, arrangement, and progression of developmental and corrective gymnastics, games, and dancing; physical examinations and first aid. Includes practice teaching within the class group. KISSOCK, SCHILL, TOLG.
- 21-22. **ELEMENTARY DANCING.** Two hours a week. LADD.
- 31-32. **FOLK DANCING AND ORGANIZED GAMES.** Graded games for the school and playground. Two hours a week. SCHILL.
- 33-34. **HOCKEY, BASKET-BALL AND BASEBALL.** Hockey in the autumn, basket-ball in winter, baseball in spring. Two hours a week. KISSOCK.
- 43a,b. **ELEMENTARY SWIMMING.** Two hours a week. Shower bath fee, \$1.00 per semester. KISSOCK, LADD, SCHILL.

PHYSICAL EDUCATION

FOR MEN

Associate Professor LOUIS J. COOKE; Assistant Professor WILLIAM K. FOSTER; Instructor JOHN C. WEST.

The purpose of the department is to provide all men of the University opportunity for exercise in order to maintain and build up their general health. It also provides special training for the correction of physical defects and functional derangements.

A physical examination is required of all new matriculants, and of all others using the department privileges, at the beginning of the year, and as often during their college course as their physical condition may indicate. Students taking the required work in Physical Education are examined also at the close of the year. A study of these records shows a marked improvement in the standard of health of the average student during his college course.

The gymnasium, swimming pool, and baths are open to all students of the University, who are free to use the apparatus and to pursue a course in physical training under the supervision of the director and his assistants.

Those students, taking the required course in physical education, who can not swim, must make a reasonable effort, as determined by the department, to pass the swimming and life-saving requirements, and will be assigned special hours for instruction.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1	None	Personal Hygiene	Fr.	None
		4 MW	100C	Cooke
		1 TTh	100C	Cooke
3-4	None	Gymnasium	Fr.	None
		2 MF	100A	Foster, West
		3 MF	100A	Foster, West
		11 TS	100A	Foster, West
		11 WF	100A	Foster, West
5-6	None	Intermediate Gymnastics..	Fr.	None
		2 MF	100A	Foster, West
		3 MF	100A	Foster, West
		11 TS	100A	Foster, West
		11 WF	100A	Foster, West
7-8	2†	Advanced Leaders	Soph., jr., sr.	1, 3-4, 5-6
		2 MF	100A	Foster, West
		3 MF	100A	Foster, West
		11 TS	100A	Foster, West
		11 WF	100A	Foster, West
9-10	None	Corrective Gymnastics ...	All	None
		Ar Ar	100A	Foster
11-12	None	Wrestling	Soph., jr., sr.	None
		5 MWF	106A	Foster
13-14	None	Advanced Gymnastics	Soph., jr., sr.	None
		Ar Ar		West, Foster

† Both semesters must be completed before credit is given for the first semester.

No.	Credits	Title	Offered to	Prerequisite courses
15-16	None	Intermediate Swimming...	All	None
		Ar Ar		Foster
17-18	None	Advanced Swimming.....	All	15-16
		Ar Ar		Foster

† Both semesters must be completed before credit is given for the first semester.

1. **PERSONAL HYGIENE.** Two hours per week; first six weeks of first semester. Examination at close of course. COOKE.

A special lecture on sex hygiene is given some time during the first ten days of the autumn semester, with required attendance on the part of all freshmen.

- 3-4. **GYMNASTICS.** Two hours a week, from November 1 to end of second semester. Required qualifications in swimming, life saving, bar vaulting, jumping, sprinting, running, and on heavy apparatus. FOSTER, WEST.
- 5-6. **INTERMEDIATE GYMNASTICS.** Elective for freshmen showing exceptional ability in elementary apparatus work. FOSTER, WEST.
- 7-8. **CLASS LEADERS (ADVANCED).** Three hours a week. (No student may receive more than a total of six credits for elective work in both Physical Education and Military Drill.) FOSTER, WEST.
- 9-10. **CORRECTIVE GYMNASTICS.** Three hours a week. Special individual courses for students physically defective. FOSTER.
- 11-12. **WRESTLING.** Course in competitive wrestling. Most promising candidates chosen to represent Minnesota at the Western Intercollegiate Gymnastic and Wrestling Meet. (Optional.) FOSTER.
- 13-14. **ADVANCED GYMNASTICS.** Same as Course 11 and 12 except that it is in gymnastics instead of wrestling. Includes course in ground tumbling, horizontal bar, parallel bars, side horse, and flying rings. FOSTER, WEST.
- 15-16, 17-18. **SWIMMING, INTERMEDIATE AND ADVANCED.** Life saving, efficiency swimming, and fancy diving. Instruction is given in rescuing and restoring the apparently drowned and other useful swimming accomplishments. FOSTER.

PHYSICS

Professors HENRY A. ERICKSON, W. F. G. SWANN, ANTHONY ZELENY; Associate Professors LOUIS W. MCKEEHAN,¹ JOHN T. TATE,¹ Assistant Professor PAUL E. KLOPSTEG;² Professorial Lecturer LOUALLEN F. MILLER.

¹ Absent on leave.

DEPARTMENTAL STATEMENTS

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REQUIREMENTS OF THE DEPARTMENT

For B.A. with Honors, the general requirements; work chosen from any courses above 40, except 90; and any course in Mathematics open only to juniors and seniors if approved by the department. Mathematics 106, 107, 108, 140 have already been thus approved. Thesis in connection with any course in Physics above 150.

For a Teacher's Certificate, fourteen credits, including Course 90.

Course 21, 22, 31, 41, 43, 162, 52, 54, with prerequisites in mathematics comprise a three-year course in Physics beginning with the freshman year. It is designed to meet the needs of those who intend to take up the teaching of Physics or who are planning to enter the field of industrial research. It is recommended to those students desiring honors in Physics. Students who have completed Courses 1, 2, 3, 4, or Courses 7, 8, 9, 10, may continue with the second year of this course after conference with the department.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1	3	General Physics	Soph., jr., sr.	Math. 2 or 4 or reg. in Math. 2 or 4
	Lect. 4	M	30Ph	Zeleny
	Rec. 8	TThS	17Ph	Zeleny
	Rec. 9	TThS	17Ph	Zeleny
	Rec. 10	TThS	17Ph	Zeleny
2	3	General Physics	Soph., jr., sr.	1 or 7
	Lect. 4	M	30Ph	Zeleny
	Rec. 8	TThS	17Ph	Zeleny
	Rec. 9	TThS	17Ph	Zeleny
	Rec. 10	TThS	17Ph	Zeleny
3	1	General Lab. Practice....	Soph., jr., sr.	Registration in 1
	Ar	Ar	23Ph	¶
4	1	General Lab. Practice....	Soph., jr., sr.	See statement
	Ar	Ar	23Ph	¶
21	3	Elements of Mechanics...	Fr., soph.	High School Physics Math. 2 or 4 or reg. in Math. 2 or 4
	Lect. 10	MF	16Ph	Miller
	Lab. 8-10	Th	16Ph	Miller
22	3	Elements of Mechanics...	Fr., soph.	21, Math. 9 or reg. in Math. 9b
	Lect. 10	MF	16Ph	Miller
	Lab. 8-10	W	16Ph	Miller
31	3	Acoustics	Soph., jr., sr.	See statement
	9	TThS	30Ph	Erikson
41	3	Heat	Soph., jr., sr.	2, 8, or 22, Math. 2 or 4
	8	TThS	2Ph	Miller
43	1	Experiments in Heat....	Soph., jr., sr.	Registration in 41
	10-12	S	2Ph	Miller
52	3	Light	Soph., jr., sr.	2, 8, or 22, Math. 2 or 4
	Ar	Ar	Ar	Erikson
54	1	Experiments in Light....	Soph., jr., sr.	Reg. in 52
	Ar	Ar	Ar	Erikson

No.	Credits	Title	Offered to	Prerequisite courses
*121-122	6	Dynamics	Jr., sr., grad.	2 or 8 or (22) and Math. 51
		Ar Ar	Ar	¶
*155	3	Spectrometry	Jr., sr., grad.	52 and 82
		Ar Ar	4Ph	Erikson
*162	4	Electricity and Magnetism	Jr., sr., grad.	2 & 4, 8 & 10, or 22
		Ar Ar	ArPh	Zeleny
*163	2	Electrical Measurements..	Jr., sr., grad.	162, 2 & 4, or 8 & 10
		2, 3 WF	31Ph	Zeleny
*166	3	Elec. Meas. of Precision..	Jr., sr., grad.	163
		3, 4, 5 TF	31Ph	Zeleny
*174	3	Radioactivity and Roentgen Rays	Sr., grad.	2 and 4
		Ar Ar	Ar	¶
*177	3	Radioactivity	Sr., grad.	8 cred. in Physics and Math. 11
		Ar Ar	Ar	¶
*178	3	Radioact. Measurements..	Sr., grad.	177
		Ar Ar	Ar	¶
*181	3	Adv. Phys. Measurements	Sr., grad.	82 or 155 or 166 or 178
		2, 3, 4 MW	Ar	¶
*182	3	Adv. Phys. Measurements	Sr., grad.	181
		2, 3, 4 MW	Ar	¶
*191a	3	Elem. Phys. Investigation	Sr., grad.	82 or 155 or 166 or 178
		2, 3, 4 MW	Ar	¶
*192a	3	Elem. Phys. Investigation	Sr., grad.	82 or 155 or 166 or 178
		2, 3 MWF	Ar	¶
191b	3	Elem. Phys. Investigation	Sr., grad.	191
		2, 3 MWF	Ar	¶
*192b	3	Elem. Phys. Investigation	Sr., grad.	191
		2, 3, 4 MW	Ar	¶

1. GENERAL PHYSICS. Mechanics of solids, fluids, sound, heat. Treatment experimental rather than mathematical; fundamental principles. First part of a general Course 1-2. Preferably taken with Course 3, may be taken separately. One lecture, three recitations per week. ZELENY, KLOPSTEG.
 2. GENERAL PHYSICS. Electricity, magnetism, and light. Treatment experimental; fundamental principles, including those of radio-activity, ionization, X-radiation. Second part of general Course 1-2. Preferably taken with Course 4, may be taken separately. One lecture, three recitations per week. ZELENY.
 3. GENERAL LABORATORY PRACTICE. Physical measurements in the mechanics of solids and fluids, sound, and heat, giving the student a knowledge of experimental methods, and an acquaintance with the fundamental facts of the subject. MCKEEHAN, MILLER.
 4. GENERAL LABORATORY PRACTICE. Physical measurements in electricity, magnetism, and light. Open to all who have completed or are taking Course 2, and have attended Courses 3 or 9. MCKEEHAN, MILLER.
21. ELEMENTS OF MECHANICS. The mechanics of solids treated from an

historical and experimental standpoint. Two recitations and one two-hour session in the laboratory per week. TATE, MILLER.

22. ELEMENTS OF MECHANICS. The mechanics of liquids and gases, and wave motion, treated from an experimental standpoint. Two recitations and one two-hour session in the laboratory per week. TATE, MILLER.
31. ACOUSTICS. Study of fundamental principles of sound. A course designed primarily for the students in the Department of Music. Open also to other academic students. ERIKSON.
41. HEAT. A study of the fundamental principles of heat. One lecture, two recitations per week. KLOPSTEG.
43. HEAT MEASUREMENTS. A laboratory course in heat supplementary to Course 41. KLOPSTEG.
52. LIGHT. A study of the fundamental principles of light. One lecture, two recitations per week. ERIKSON.
54. LIGHT MEASUREMENTS. A laboratory course in light supplementary to Course 52. ERIKSON.
81. PHYSICAL MANIPULATION AND LABORATORY TECHNIQUE. A practical study of the processes essential in the up-keep of a physical laboratory. Selection, preparation, and purification or cleansing of materials; glass blowing; construction and repair of simple apparatus. Not given in 1918-19. MCKEEHAN.
82. PHYSICAL INSTRUMENTS OF PRECISION. A practical study of instruments of precision. The physical principles and mechanical devices employed in their construction. Methods of adjustment and standardization. Not given in 1918-19. MCKEEHAN.
- *121-122. DYNAMICS. Some problems essential in advanced physics. TATE.
- *155. SPECTROMETRY. Measurements involving the use of prism spectrometers, plane transmission, and reflection gratings, concave grating, and the interferometers. ERIKSON.
- *162. ELECTRICITY AND MAGNETISM. The phenomena accompanying the passage of electricity through solids, liquids, and gases. One lecture, one recitation, and one two-hour laboratory period a week. ZELENY.
- *163. ELECTRICAL MEASUREMENTS. Devoted mainly to the study of potentiometer methods, capacity, inductance, and magnetic induction. One recitation and two two-hour laboratory periods a week. ZELENY.
- *166. ELECTRICAL MEASUREMENTS OF PRECISION. Precision measurements of electromotive force, current, resistance, capacity, inductance, and magnetic flux. Use of apparatus of highest precision. Special problems. Three two-hour laboratory periods a week. ZELENY.

- *174. RADIOACTIVITY AND ROENTGEN RAYS.
- *177. RADIOACTIVITY. Lectures, experimental and descriptive; the various theories and methods of investigation. Detailed study of the radioactive elements. MCKEEHAN.
- *178. RADIOACTIVITY MEASUREMENTS. Laboratory technique in radioactivity. MCKEEHAN.
- *181. ADVANCED PHYSICAL MEASUREMENTS. Individual work in the laboratory on topics specially chosen to serve best the needs and capacity of each student; intended to introduce him to some of the more intricate physical measurements. ERIKSON, ZELENY, MCKEEHAN, KLOPSTEG, TATE.
- *182. ADVANCED PHYSICAL MEASUREMENTS. Continuation of Course 181.
- *191a,b. ELEMENTARY PHYSICAL INVESTIGATION. The experimental or theoretical study of physical phenomena, the nature or laws of which are not yet understood. ERIKSON, SWANN, ZELENY, MCKEEHAN, TATE.
- *192a,b. ELEMENTARY PHYSICAL INVESTIGATION. Continuation of Course 191.

POLITICAL SCIENCE

Professors CEPHAS D. ALLIN, JEREMIAH S. YOUNG; Assistant Professor WILLIAM ANDERSON; Lecturer ALBERT J. LOBB; Instructor PERCIVAL W. VIESSELMAN.

REQUIREMENTS OF THE DEPARTMENT

For B.A. with Honors, see general requirements.

For a Teacher's Certificate in Government, Courses 1, 3, and 5 in Political Science, and eighteen credits in History.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
<i>Introductory Course</i>				
1a	3	American Government ...	Soph., jr., sr.	None
		8 MWF	102MA	Vieselman
		9 TThS	102MA	Allin
		10 MWF	202MA	Young
		11 MWF	102MA	Lobb
		2 MWF	102MA	Anderson
1b	3	American Government ...	Soph., jr., sr.	None
		9 TThS	102MA	Lobb
		10 MWF	102MA	Lobb
		2 MWF	109MA	Anderson
		<i>General Courses</i>		
3a	3	State and Local Govern- ment	Soph., jr., sr.	1
		10 TThS	5F	Lobb
		2 MWF	109MA	Lobb

DEPARTMENTAL STATEMENTS

No.	Credits	Title	Offered to	Prerequisite courses
3b	3	State and Local Govern- ment	Soph., jr., sr. 202MA	1 Young
		10 MWF	5F	Anderson
		10 TThS	109MA	Lobb
		11 MWF		
5	3	Municipal Government ..	Soph., jr., sr. 109MA	1 Anderson
		11 MWF		
8	2	Principles of Political Science ...4.....	Soph., jr., sr. 202MA	1 Anderson
		9 TTh		
9	3	Philosophy and the War...	Soph., jr., sr. 322F	None Wilde, Swenson, Lodge
		10 MWF		
*51	3	Business Law, I.....	Jr., sr.	6 cr. in Pol. Sci., or 6 in Econ., or 3 in each
		9 MWF	202MA	Young
*52	3	Business Law, II.....	Jr., sr. 202MA	51 Young
		9 MWF		
*58	2	Elementary Law	Jr., sr. 109MA	6 cr., or 3 cr. in Pol. Sci. and 3 in So- ciology Lobb
		11 TS		
<i>Advanced Courses</i>				
*101	3	Constitutional Law	Jr., sr., grad. 213MA	6 credits Lobb
		9 TThS		
*106	2	Legislative Power and Methods	Jr., sr., grad. 102MA	6 credits Young
		11 TS		
*107	2	Contemporary Political Problems	Jr., sr., grad. 102MA	6 credits Young
		11 TS		
*108	3	Police Power	Jr., sr., grad. 102MA	6 credits Young
		10 TThS		
*109	3	Diplomacy	Jr., sr., grad. 213MA	6 credits Allin
		2 MWF		
*110	3	International Law	Jr., sr., grad. 102MA	1 and 109 or 111 Allin
		2 MWF		
*111	3	Comparative European Government	Jr., sr., grad. 213MA	6 credits Anderson
		10 MWF		
*112	3	Comparative Federal Government	Jr., sr., grad. 109MA	6 credits Allin
		10 TThS		
*115	3	Gov't of the British Em- pire	Jr., sr., grad. 213MA	6 cr., or Pol. Sci. 1 and Hist. 7 Allin
		10 TThS		
*117	2	American Diplomatic Problems	Jr., sr., grad. 109MA	6 credits Anderson
		10 TTh		
*118	2	World Politics	Jr., sr., grad. 213MA	6 credits Allin
		10 MW		
*120	3	Municipal Problems	Jr., sr., grad. 102MA	5, or its equivalent Anderson
		11 MWF		
<i>Primarily for Graduates</i>				
*201-202	6	Research	Sr., grad. Ar	12 credits Allin
		Ar		

No.	Credits	Title	Offered to	Prerequisite courses
*203-204	6	Research	Sr., grad.	12 credits
		Ar Ar	Ar	Young
*205-206	6	Research	Sr., grad.	12 credits
		Ar Ar	Ar	Anderson

1a,b. AMERICAN GOVERNMENT. Nature and origin of the American governmental system; organization and actual workings of the national government. If possible, History 5-6 should accompany this course; Political Science 3a or 3b should follow it directly. All instructors.

3a,b. STATE AND LOCAL GOVERNMENT. Typical American State governments, special attention to Minnesota; relation of states to the United States and to local units; recent experiments such as the initiative and referendum, the recall, and primaries; social and economic legislation. YOUNG, ANDERSON, LOBB.

5. MUNICIPAL GOVERNMENT. Comparative study of American and European systems of municipal government, with emphasis upon American experience. Forms of city government, popular control, relation of the city to the state. Prerequisite for Political Science 120. ANDERSON.

8. PRINCIPLES OF POLITICAL SCIENCE. Introductory course. The origin, nature, justification, and functions of the state; the principles of politics; anarchists, individualists, and socialists. The best political thought from Aristotle to our own time. ANDERSON.

9. PHILOSOPHY AND THE WAR. German philosophy and the war; the philosophy of democracy; the individual and the state; the morality of nations. This course will receive credit either as Philosophy or as Political Science. WILDE, SWENSON, LODGE.

26. BUSINESS LAW. (Engineers.) VIESSELMAN.

27. AMERICAN GOVERNMENT. (Agricultural.) VIESSELMAN.

28. BUSINESS LAW. (Agricultural.) VIESSELMAN.

*51. BUSINESS LAW, PART I. Principles governing ordinary business transactions. As much law taught as an educated man ought to know for guidance in every-day business affairs. General principles of contracts—formation, operation, interpretation, breach, and discharge; agency and service. (Credit will not be given for both 51 and 58.) YOUNG.

*52. BUSINESS LAW, PART II. A continuation of Course 51. Negotiable instruments; business associations—partnerships and private corporations; property—personal and real. (Credit will not be given for both 52 and 58.) YOUNG.

*56-57. TEACHERS' COURSE. Methods of teaching government in the secondary schools. Course of study, textbooks, and illustrative materials. Given in cooperation with the History Department. LOBB.

- *58. **ELEMENTARY LAW.** A study of the private legal rights and obligations of citizens, and of methods of enforcement. (Credit will not be given for both this course and Course 51-52.) **LOBB.**
- *101. **CONSTITUTIONAL LAW.** Constitutional law, its origin and nature; American constitutions, how made and amended; the courts and the development of the Constitution; federal and state relations; the territories, their acquisition and government; citizenship. **LOBB.**
- *106. **LEGISLATIVE POWER AND METHODS.** Source and scope of the legislative power; methods used by legislative bodies; current public questions; formulation and defense of legislative bills. **YOUNG.**
- *107. **CONTEMPORARY POLITICAL PROBLEMS.** The World War and democracy; parliamentary government; reorganization of our state governments; centralization and home rule; government by commission; electoral, ballot, budgetary, and civil service reforms; proportional representation; initiative, referendum, and recall; responsibilities of citizenship. **YOUNG.**
- *108. **THE POLICE POWER.** Nature of the police power; constitutional aspects of social and economic legislation, including safety, order, morals, and protection against business fraud and oppression; the fundamental rights under the police power. **YOUNG.**
- *109. **DIPLOMACY.** The growth of international relations; the mode of conducting foreign affairs; diplomatic and consular service; protection of national interests abroad; extradition; the framing, interpretation, and termination of treaties and compacts. **ALLIN.**
- *110. **INTERNATIONAL LAW.** Nature, source, and sanction of international law; laws of war; neutrality; prize courts and prize proceedings. **ALLIN.**
- *111. **COMPARATIVE EUROPEAN GOVERNMENT.** The politics and government of the great European powers of to-day. **ANDERSON.**
- *112. **COMPARATIVE FEDERAL GOVERNMENT.** Ancient and modern federal unions, especially the constitutions of the United States, Switzerland, Canada, and Australia, the South African Union, and the proposals for imperial federation. **ALLIN.**
- *115. **THE GOVERNMENT AND POLITICS OF THE BRITISH EMPIRE.** The origin, nature, and operation of the British constitution; political parties and principles in Great Britain and the Colonies. **ALLIN.**
- *117. **AMERICAN DIPLOMATIC PROBLEMS.** Our foreign policy and problems; isolation and the Monroe Doctrine; territorial expansion; the doctrine of neutrality; freedom of the seas; arbitration; present problems. **ANDERSON.**
- *118. **WORLD POLITICS.** A study of the foreign policies and international

relations of the leading European powers and the United States, with special reference to the World War, Asiatic complications, and the problems of African colonization. ALLIN.

- *120. MUNICIPAL PROBLEMS. A specialized course in modern legal, administrative, and functional problems of cities. The content of the course will change from year to year, keeping abreast of municipal progress. ANDERSON.

PRIMARILY FOR GRADUATE STUDENTS

Graduate students and members of the department will meet from time to time as a group for the discussion of mutual problems.

- *201-202. RESEARCH IN INTERNATIONAL RELATIONS AND COMPARATIVE GOVERNMENT. ALLIN.
 *203-204. RESEARCH IN AMERICAN GOVERNMENT, LEGISLATION, AND POLICE POWER. YOUNG.
 *205-206. RESEARCH IN MUNICIPAL GOVERNMENT. ANDERSON.

PSYCHOLOGY

Professors ROBERT M. YERKES,¹ MELVIN E. HAGGERTY;¹ Associate Professor HERBERT WOODROW;¹ Assistant Professors JOSEPH PETERSON, HENRY T. MOORE;¹ Instructors KARL S. LASHLEY,¹ JOHN D. DODSON, FRANCES LOWELL; Assistant ALICE H. SULLIVAN.

REQUIREMENTS OF THE DEPARTMENT

For *B.A. with Honors*, besides the general requirements, twenty-four credits in starred courses. Starred courses in Educational Psychology and, to the extent of six hours, in Philosophy, may be counted in partial fulfillment of this requirement.

Students who desire to do research work should consult with the chairman of the department.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1-2	6	General Psychology.....	Soph., jr., sr.	None
	Rec. 8	MWF	321F	Peterson
	9	MWF	321F	Peterson
	9	TThS	321F	Lashley
	9	TThS	304F	Lowell
	10	MWF	321F	Dodson
	10	MWF	304F	Lashley
	10	TThS	321F	Lowell
	11	MWF	321F	Dodson
	1	TThS	321F	Lashley
	2	MWF	321F	Lowell
	2	MWF	322F	Lodge
	3	MWF	321F	Dodson

¹ Absent on leave.

DEPARTMENTAL STATEMENTS

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No.	Credits	Title	Offered to	Prerequisite courses
1a	3	General Psychology.....	Soph., jr., sr.	None
		Ar TThS	Ar	Dodson
1b	3	General Psychology.....	Soph., jr., sr.	None
		Ar TThS	Ar	Dodson
		Music TThS 9:00	311F	†
101	3	Experimental Psychology..	Jr., sr., grad.	1-2
		4 T	316F	Peterson
		2, 3 TTh	318F	Peterson
*106	3	Mental Retardation.....	Jr., sr., grad.	1-2
		3 MWF	322F	Lowell
*107	3	Social Psychology.....	Jr., sr., grad.	1-2
		3 MWF	322F	Peterson
*110	3	Abnormal Psychology.....	Jr., sr., grad.	1-2
		8 TThS	321F	Peterson

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

1-2. GENERAL PSYCHOLOGY. The aims and methods of psychology; the facts, laws, and functions of mental life; development and learning in relation to training and instinct. Required for a Teacher's Certificate. PETERSON, LODGE, DODSON, LOWELL.

1a or 1b. ELEMENTS OF PSYCHOLOGY. A brief outline for those who do not intend to take further work in Psychology. DODSON.

*101. EXPERIMENTAL PSYCHOLOGY. Training course in mental measurements. Prerequisite: Psychology 1-2. PETERSON.

*103-104. COMPARATIVE AND GENETIC PSYCHOLOGY. Mental evolution and development. The application of the comparative method to conscious behavior. Prerequisite: Psychology 1-2. Six credits. Not given in 1918-19.

*106. MENTAL RETARDATION. A study of retarded mental development, its causes and treatment. LOWELL.

*107. SOCIAL PSYCHOLOGY. A study of the mental interactions of individuals in society with especial reference to the instinctive emotional basis of human association. PETERSON.

*108. APPLIED PSYCHOLOGY. A survey of the applications of psychology to law, medicine, salesmanship, advertising, and vocational guidance. Lectures, recitations, group tests. Prerequisite: Psychology 1-2. Three credits. Not given in 1918-19.

*110. ABNORMAL PSYCHOLOGY. Unusual and pathological phenomena; the subconscious, dreams, suggestibility, mental disorders, secondary personalities.

*111. HISTORY OF PSYCHOLOGY. An historical and critical examination of leading psychological conceptions. Nine credits prerequisite. Three credits. Not given in 1918-19.

*115-116. SEMINAR IN EXPERIMENTAL AND PHYSIOLOGICAL PSYCHOLOGY. Twelve credits prerequisite. Six credits. Not given in 1918-19.

*117-118. SEMINAR IN COMPARATIVE AND GENETIC PSYCHOLOGY. Twelve credits prerequisite. Six credits. Not given in 1918-19.

RHETORIC AND PUBLIC SPEAKING

See English, Rhetoric, and Public Speaking

ROMANCE LANGUAGES

Professors EVERETT W. OLMSTED, IRVILLE C. Lecompte, COLBERT SEARLES; Associate Professor RALPH E. HOUSE; Assistant Professors FRANCIS B. BARTON, JULES FRELIN, RUTH S. PHELPS, EDWARD H. SIRICH;¹ Professorial Lecturer PEDRO HENRÍQUEZ UREÑA; Instructors HERBERT E. CLEFTON, SOLOMON M. DELSON, MARGUERITE GUINOTTE, GUSTAAF VAN ROOSBROECK; Assistants CLEMENT J. DE BÈRE, JOSEPHINE DEBOER; Teaching Fellows ETHEL ELLIOTT, MINA GILDERSLEEVE, VALBORG OLSON, LUCY TOMLINSON, RUTH UNDERWOOD.

REQUIREMENTS OF THE DEPARTMENT

For *B.A. with Honors*, general requirements; a reading knowledge of Latin or German with two years' work in Spanish or Italian.

In the junior year, Course 61-62, 63-64, 75-76, 101-102; in the senior year Courses 103-104, 107-108, 109-110, 115-116 (or 117-118). Substitutions for these courses may be granted by the department in special cases. Alternation of courses required in the junior and senior years is allowable.

For *Major Recommendation for Teacher's Certificate*, in addition to Courses 1a and 3a (or Spanish equivalent), twenty-six credits.

For *Minor Recommendation for Teacher's Certificate*, in addition to Courses 1a and 3a (or Spanish equivalent), twelve credits in one Romance Language.

Prerequisites for Teachers' Course, in addition to Course 5-6 (or Spanish equivalent), one conversation-composition course and one literary course.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1a	6	Beginning French	All	None
	8	MTWThFS	201F	¶
	9	MTWThFS	201F	¶
	10	MTWThFS	227F	¶
	1	MTWThFS	226F	¶
1b	6	Beginning French	All	None
	9	MTWThFS	227F	¶
	1	MTWThFS	227F	Elliott

¹ Absent on leave.

DEPARTMENTAL STATEMENTS

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No.	Credits	Title	Offered to	Prerequisite courses
3a	6	Intermed. French	All	1a or equivalent
		9 MTWThFS	205F	Guinotte
		10 MTWThFS	226F	Delson
		1 MTWThFS	204F	†
3b	6	Intermed. French	All	1a or equivalent
		8 MTWThFS	201F	†
		9 MTWThFS	226F	†
		10 MTWThFS	227F	†
		1 MTWThFS	226F	†
4	6	Survey French Lit.	All	3a or equivalent
		9 MTWThFS	114F	Guinotte
		10 MTWThFS	226F	Delson
		1 MTWThFS	204F	Cleifton
5-6	6	Survey Fr. Lit. (year course)	All	3a or equivalent
		9 TThS	202F	LeCompte
		10 TThS	202F	Phelps
		11 MWF	5F	van Roosbroeck
		2 MWF	201F	Barton
7-8	2	Element. French Convers.	All	3a or equivalent
		9 TTh	15F	van Roosbroeck
		9 MW	5F	de Bère
		3 MW	227F	Guinotte
9-10	2	Element. French Compos.	All	3a or equivalent
		9 S	15F	van Roosbroeck
		9 F	5F	de Bère
		3 F	227F	Guinotte
31a	6	Beginning Spanish	All	None
		8 MTWThFS	202F	Underwood
		9 MTWThFS	301F	Henriquez
		10 MTWThFS	25F	House
31b	6	Beginning Spanish	All	None
		10 MTWThFS	113F	Delson
33-34	6	Beginning Spanish (year course)	All	None
		8 TThS	226F	Cleifton
		9 MWF	206F	Gildersleeve
		10 MWF	201F	Frelin
		11 MWF	201F	Olmsted
35b	6	Intermed. Spanish (year course)	All	31a or equiv.
		8 MTWThFS	202F	Underwood
		9 MTWThFS	301F	Henriquez
		10 MTWThFS	25F	†
37-38	6	Intermed. Spanish (year course)	All	31a or equiv.
		10 TThS	201F	Barton
		9 MWF	202F	Barton
39-40	6	Survey of Span. Lit. ...	All	35b or equivalent
		9 MWF	15F	House
41-42	2	Elemen. Spanish Convers.	All	35b or equivalent
		11 MW	204F	Jiménez
43-44	2	Elemen. Spanish Compos.	All	35b or equivalent
		11 F	204F	Jiménez
51-52	6	Beginning Italian	All	None
		9 MWF	110F	Phelps

No.	Credits	Title	Offered to	Prerequisite courses
53-54	6	Intermed. Italian	All	51 and 52 or equiv.
		11 MWF	227F	Phelps
61-62	2	Advanced French Convers.	Jr., sr.	7-8 or equiv.
		3 MW	202F	Frelin
63-64	2	Advanced Fr. Comp.	Jr., sr.	9-10 or equiv.
		3 F	202F	Frelin
*75-76	6	French Lit.; 19th Century	Soph., jr., sr.	5-6 or equiv.
		11 MWF	226F	Barton
		2 MWF	202F	Delson
*101-102	6	French Lit.; 18th Century	Jr., sr., grad.	5-6 or equiv.
		11 MWF	202F	Searles
*103-104	6	French Lit.; 17th Century	Jr., sr., grad.	5-6 or equiv.
		10 MWF	202F	Olmsted
*105-106	6	French Lit.; 16th Century	Jr., sr., grad.	101 or 103
		10 MWF	221F	van Roosbroeck
*107-108	4	French Oral Diction.	Jr., sr., grad.	61-62 or equiv.
		11 TS	202F	Frelin
*109-110	2	French Syntax	Jr., sr., grad.	63-64 or equiv.
		9 Th	Seminar	Barton
*115-116	4	Fr. Lyric Poetry	Sr., grad.	103-104 or equiv.
		11 TS	Seminar	Searles
*117-118	4	French Dramatic Lit.	Sr., grad.	103-104 or equiv.
		10 TTh	Seminar	Olmsted
*131-132	2	Advanced Span. Convers..	†Jr., sr., grad.	41-42 or equiv.
		11 TS	227F	Henriquez
*133-134	2	Adv. Spanish Compos.	Jr., sr., grad.	43-44 or equiv.
		1 Th	201F	House
*145-146	4	Spanish Drama	Jr., sr., grad.	39-40 or equiv.
		11 TS	226F	House
*147-148	4	Spanish Lectures	†Jr., sr., grad.	41-42, 43-44, or equiv.
		4 TTh	201F	Henriquez
*149-150	4	Cervantes	Jr., sr., grad.	39-40 or equiv.
		10 TS	Ar	Henriquez
*151-152	4	Dante, Petrarch, Boccaccio	Jr., sr., grad.	51-52 or equiv., and either 53-54, 5-6, or English 1
		2 MW	227F	Phelps
*153-154	2	Dante (In English)	Jr., sr., grad.	Hist. 1-2 and either English 1 or Fr. 5-6
		11 T	201F	Phelps
*161-162	2	Teachers' Course	Jr., sr., grad.	See above
		2 Th	201F	de Boer

† Who have had the five years' preparation required.

Note.—Course 7-8 may be taken only with 9-10; 9-10 may be taken separately. Course 41-42 may be taken only with 43-44; 43-44 may be taken separately. Course 61-62 may be taken only with 63-64; 63-64 may be taken separately. Course 131-132 may be taken only with 133-134; 133-134 may be taken separately. Course 151-152 may be taken only with 153-154; 153-154 may be taken separately. Courses 1, 3, 31, 35, 4, are double courses. Students are advised to take Course 75-76 as a natural preparation for Courses 101-102 and 103-104. Permission to register for courses from 75-76 to 161-162 inclusive may be granted by the Department in special cases. Both semesters of any year course must be completed before credit is allowed for the first semester. The preceding statement applies also to Courses 1a and 3b for freshmen and Courses 31a and 35b for freshmen.

INTRODUCTORY COURSES

French

- 1a,b. BEGINNING FRENCH. Double course. This course will complete in one semester the work heretofore done in two. Pronunciation, grammar, oral exercises, and translation. LECOMPTE, SEARLES, FRELIN, CLEFTON, GUINOTTE, VAN ROOSBROECK.
- 2a,b. BEGINNING FRENCH. Second half of Course 1a. Open to students who have had one year of high-school French or beginning French in Summer Session. Not offered in 1918-19.
- 3a,b. INTERMEDIATE FRENCH. Double course. This course will complete in one semester the work heretofore done in two. Review of grammar, composition, conversation, and reading of representative authors. CLEFTON, DELSON, GUINOTTE.
4. SURVEY OF FRENCH LITERATURE. Same as 5-6, except that it is a second-semester, six-hour course. CLEFTON, DELSON, GUINOTTE.
- 5-6. SURVEY OF FRENCH LITERATURE. This course will outline the history of French Literature from 1700 to present day, and is prerequisite for the courses devoted to special periods. Representative texts will be read. LECOMPTE, BARTON, PHELPS, VAN ROOSBROECK.
- 7-8. ELEMENTARY FRENCH CONVERSATION. A small amount of outside preparation will be required. GUINOTTE, VAN ROOSBROECK, DE BÈRE.
- 9-10. ELEMENTARY FRENCH COMPOSITION. GUINOTTE, VAN ROOSBROECK, DE BÈRE.
- 61-62. ADVANCED FRENCH CONVERSATION. The life and custom of modern France accompanied by illustrative material. FRELIN.
- 63-64. ADVANCED FRENCH COMPOSITION. FRELIN.
- 75-76. FRENCH LITERATURE: NINETEENTH CENTURY. Discussions based on texts and collateral reading. BARTON, DELSON.

Spanish

- 31a,b. BEGINNING SPANISH. Double course. This course will complete in one semester the work heretofore done in two. Pronunciation, grammar, oral exercises, and translation. HENRÍQUEZ, DELSON, UNDERWOOD.
- 33-34. BEGINNING SPANISH. This course is the same as Course 31a except that it is a year-course meeting three times a week. OLMSTED, FRELIN, PHELPS, CLEFTON, GILDERSLEEVE.
- 35a,b. INTERMEDIATE SPANISH. Double course. This course will complete in one semester the work heretofore done in two. Review of grammar, composition, conversation, and reading. HENRÍQUEZ, DELSON.

- 37-38. INTERMEDIATE SPANISH. This course is the same as Course 35a except that it is a year-course meeting three times a week. BARTON.
- 39-40. SPANISH LITERATURE FROM 1500 TO THE PRESENT TIME. Discussions based upon texts and collateral reading. HENRÍQUEZ.
- 41-42. ELEMENTARY SPANISH COMPOSITION. A small amount of outside preparation will be required. HENRÍQUEZ.
- 43-44. ELEMENTARY SPANISH COMPOSITION. Special attention given to social and commercial correspondence. HENRÍQUEZ.

Italian

- 51-52. BEGINNING ITALIAN. Pronunciation, grammar, oral exercises, and translation. PHELPS.
- 53-54. REPRESENTATIVE ITALIAN AUTHORS. Ariosto, Tasso, Goldoni, Manzoni, Leopardi, Carducci. PHELPS.

ADVANCED COURSES

French

- *101-102. FRENCH LITERATURE: EIGHTEENTH CENTURY. First semester, Philosophic movement: Bayle, Fontenelle, Montesquieu, Voltaire, l'Encyclopédie, Rousseau. Second semester, literature, poetry, tragedy, comedy, novel. Reading, discussions and reports based on collateral reading. SEARLES.
- *103-104. FRENCH LITERATURE: SEVENTEENTH CENTURY. Influence of the literary salons. Development of French prose. Perfection of French dramatic art by Corneille, Racine, and Molière. Assigned texts, collateral reading. Prerequisite: Romance. OLMSTED.
- *105-106. FRENCH LITERATURE: SIXTEENTH CENTURY. Forerunners of the Renaissance: Marot and L'École Lyonnaise. The Renaissance Movement and the Reformation, Rabelais, Calvin, and the Pléiade and its successors; Montaigne; the situation at the close of the century. Prerequisites: 101-102, 103-104, or equivalent. VAN ROOSBROECK.
- *107-108. FRENCH ORAL DICTION. Dissertations orales sur des sujets variés.
- *109-110. FRENCH SYNTAX. Special studies in characteristic problems of French syntax. BARTON.
- *111-112. LECTURES IN FRENCH. Prerequisite: Courses 5-6, 61-62 or equivalent. Four credits. Not given in 1918-19.
- *113-114. FRENCH CLASSICISM. The development of French classic ideals and doctrines. The Humanistic element, the reform of Malherbe, the adoption of the Aristotelian doctrines. French classic writers. Prerequisite: Course 103-104 or equivalent. Alternates with Course 115-116. Not given in 1918-19. SEARLES.

- *115-116. FRENCH LYRIC POETRY. Principles of French prosody. A study of the evolution of French lyric poetry. Given in 1918-19. SEARLES.
- *117-118. FRENCH DRAMATIC LITERATURE. A study of the development of dramatic literature in France from the classical period to the present time. Reading of important French plays, critical reports. OLMSTED.

Spanish

- *131-132. ADVANCED SPANISH CONVERSATION. HENRÍQUEZ.
- *133-134. ADVANCED SPANISH COMPOSITION. HENRÍQUEZ.
- *135-136. SPANISH NOVEL. A study of the development of Spanish fiction from the picaresque novel to that of the present day. Prerequisite: Course 39-40 or equivalent. Four credits. Not given in 1918-19.
- *145-146. SPANISH DRAMA. A general survey of Spanish dramatic literature, with special attention to the Golden Age.
- *147-148. LECTURES IN SPANISH. These constitute a course on a given subject which is changed annually. This year, the subject is history and present development of Spanish American Literature. HENRÍQUEZ.
- *149-150. CERVANTES. A study of his life and works. Attention will be centered upon *Don Quixote* and the *Novelas Ejemplares*. HENRÍQUEZ.

Italian

- *151-152. DANTE, PETRARCH, AND BOCCACCIO. An introduction to their works. The three cantiche of the *Divina Commedia* are read, one each year in rotation, together with a number of the canzoni, and sonnets of Petrarch, and portions of the *Decameron*. PHELPS.
- *153-154. DANTE IN ENGLISH. Lectures; reading and discussion of the *New Life*, and the two cantiches of the *Divine Comedy* not read in 151-152. Private reading of one other work. PHELPS.

SCANDINAVIAN

Professors GISLE BOTHNE, ANDREW A. STOMBERG.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1-2	12	Beginning and Int. Norwegian	All	None
	8	MTWThFS	206F	¶
3-4	6	Advanced Norwegian.....	Soph., jr., sr.	2
	9	TThS	206F	¶
5-6	12	Beginning and Int. Swedish	All	None
	9	MWTThFS	25F	¶
7-8	6	Advanced Swedish.....	Soph., jr., sr.	6
	8	MWF	205F	¶

SCIENCE, LITERATURE, AND THE ARTS

No.	Credits	Title	Offered to	Prerequisite courses
13-14	6	Hist. of North. Europe... 11 MWF	Soph., jr., sr. 206F	Consult Dept.
101-102	6	Modern Norwegian Lit.... 10 TThS	Jr., sr., grad. 206F	3-4
104	2	Henrik Ibsen..... Ar Ar	Sr., grad. 206F	101-102
107-108	6	Swedish Literature..... 2 MWF	Jr., sr., grad. 206F	7-8
109	2	Strindberg..... Ar Ar	Sr., grad. 206F	107-108
110	2	Teachers' Course in Nor- wegian..... Ar 4, 5 Th	Sr., grad. 206F	3-4
113-114	4	Old Norse (Icelandic).... Ar Ar	Sr., grad. 206F	See statement
116	2	Teachers' Course in Swed- ish..... Ar Ar	Sr., grad. 206F	7-8

1. BEGINNING NORWEGIAN. Grammar, composition, select readings in easy prose and poetry. BOTHNE.
 2. INTERMEDIATE NORWEGIAN. Grammar, composition, conversation, elementary history of literature, and select works of modern authors. BOTHNE.
 - 3-4. ADVANCED NORWEGIAN. Prose and poetry. BOTHNE.
 5. BEGINNING SWEDISH. Grammar and composition; select readings in easy prose and verse. STOMBERG.
 6. INTERMEDIATE SWEDISH. Grammar, composition, and conversation; prose texts. An elementary study of the literature of Sweden and reading of Tegner's *Fritiofs Saga*. STOMBERG.
 - 7-8. ADVANCED SWEDISH. Prose and poetry. STOMBERG.
 9. BEGINNING NORWEGIAN. Grammar, composition, select readings in easy prose and poetry. Not offered in 1918-19.
 10. ADVANCED NORWEGIAN. Grammar, composition, conversation, elementary history of literature, and select works of modern authors. Two credits. Not given in 1918-19.
 - 11-12. NORWEGIAN LITERATURE. A survey. This course is open to teachers and mature students. Four credits. Not given in 1918-19. BOTHNE.
 - 13-14. HISTORY OF NORTHERN EUROPE. History of the Scandinavian countries from the earliest period to recent times. Prerequisites: Knowledge of Scandinavian languages not required. STOMBERG.
- *101-102. MODERN NORWEGIAN LITERATURE. Norwegian literature from 1814 to the present day. BOTHNE.

- *103. EARLIER NORWEGIAN LITERATURE. History of literature. Saga period. Norwegian and Danish folk-songs, Holberg, Oplysningstiden. BOTHNE.
- *104. IBSEN. Lectures, reading, and interpretation. BOTHNE.
- *107-108. SWEDISH LITERATURE. History of Swedish literature from 1710 to the present time. History of the literature and study of modern authors, including Selma Lagerlöf, Geijerstam, Strindberg. STOMBERG.
- *109. STRINDBERG. Lectures, reading, and interpretation. STOMBERG.
- *110. TEACHERS' COURSE IN NORWEGIAN. For students who expect to teach Norwegian in the high schools. BOTHNE.
- *113-114. OLD NORSE (ICELANDIC). Grammar and reading. Gunnlaugs Saga Ormstungu. BOTHNE.
- *116. TEACHERS' COURSE IN SWEDISH. For students who expect to teach Swedish in the high schools. STOMBERG.

SOCIAL AND CIVIC WORK

(For full details see separate bulletin)

Professors ARTHUR J. TODD, LOTUS D. COFFMAN; Associate Professor LUTHER L. BERNARD; Lecturers CAROL ARONOVICI, FRANK J. BRUNO, OTTO W. DAVIS, ARTHUR H. TAYLOR, MABEL C. ULRICH, EDWARD F. WAITE; Supervisors of Practice Field Work, CAROLINE BEDFORD, MARION E. TEBBETS.

Sociology and Anthropology 1 or 6 is prerequisite to all courses in this department.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
45-46	1	Elements of Social Hygiene and Community Protective Work	Jr., sr. 25F	None Todd, Coffman, Ulrich
		4 W		
51	3	Treatment of Dependents and Defectives	Jr., sr. 9F	Soc. & An. 1 or 6 Bruno
		8 TThS		
*52	3	Child Welfare	Jr., sr. 9F	Social Work 51 Taylor
		TS 11 and 3rd hr. Ar.		
*53	3	Treatment of Delinquents	Jr., sr., grad. 9F	Soc. & An. 1 or 6, and Psychol. 1-2 Todd
		9 MWF		
*55	2	Housing Problems	Jr., sr. 124F	Soc. & An. 1 and 6 Davis
		8 MW		
*104	2	State Care of Dependents, Defectives, and Delinquents	Jr., sr., grad. 12F	Social Work 51 and 52 or 53 Todd and Supts.
		3.4 F		

No.	Credits	Title	Offered to	Prerequisite courses
*110	2	Methods of Community Organization and Social Work in Small Towns and Country (formerly numbered 108)	Sr., grad. 12F	2 courses in this Dept. Todd and Bernard
		4, 5 Th		
*122	2	Social Statistics and Social Surveys	Sr., grad. 12F	2 courses in this Dept. Aronovici
		4, 5 W		
*125	2	Settlement and Community Center Work	Sr., grad. 12F	2 courses in this Dept. Aronovici
		4, 5 W		
*126	2	Settlement and Community Center Work (Practice work)	Sr., grad.	Consent of Director and Course 125
		Ar Ar		
*128	2	Charitable Admin., Finance and Publicity	Sr., grad. 15F	2 courses in this Dept. Davis
		4, 5 F		
*130	2	Technique of Family Treatment	Sr., grad. 12F	Social Work 51 & 52 Bruno
		4, 5 T		
*132	2	Juvenile Courts and Probation	Sr., grad.	Social Work 51 or 52, 53 Todd, Waite
		8 MW & Appt.	9F	
*133-134	2	Field Work in Hospital Social Service	Sr., grad.	Consent of Director Tebbetts
		By appointment		

- 45-46. **ELEMENTS OF SOCIAL HYGIENE AND COMMUNITY PROTECTIVE WORK.** A course to meet war needs from the standpoint of organizing community forces for social hygiene, recreation, and constructive policing. TODD, COFFMAN, ULRICH.
51. **TREATMENT OF DEPENDENTS AND DEFECTIVES.** The extent and nature of poverty and mental defectiveness; efforts made for their amelioration and prevention. (Soc. 9.) BRUNO.
52. **CHILD WELFARE.** Study of social obligations to the child; development of the child-saving movement in the United States; infant and child mortality, recreation, education; courts, institutions, societies, and other public efforts for the child. (Soc. 10.) TAYLOR.
53. **TREATMENT OF DELINQUENTS.** The causes of crime; nature of the criminal; criminal procedure; methods of treatment (prisons, reformatories, parole, probation); the juvenile offender; juvenile courts; preventive methods. (Soc. 106a.) TODD.
55. **HOUSING PROBLEMS.** An examination of housing evils and their causes; the various movements for the prevention or improvement of bad housing; town planning; garden cities. Lectures, readings, field work, and essay. (Soc. 11.) DAVIS.

104. STATE CARE OF DEPENDENTS, DEFECTIVES, AND DELINQUENTS IN MINNESOTA. Organization, machinery, and function of such institutions as the state hospitals, asylums, training schools, prison, schools for the feeble-minded, the blind, and the deaf. Lectures and readings. TODD and Experts from the Institutions.
110. METHODS OF COMMUNITY ORGANIZATION AND SOCIAL WORK IN SMALL TOWNS AND COUNTRY. TODD, BERNARD.
122. SOCIAL STATISTICS AND SOCIAL SURVEYS. Methods of gathering and presenting community facts. Lectures, problems, and field work. ARONOVICI.
- 125-126. SETTLEMENT AND COMMUNITY CENTER WORK. Leisure time problems, organization of community centers, public forums and Americanization work. Lectures and practice work. (Only selected students with consent of the director may register for the second semester course.) ARONOVICI.
128. CHARITABLE ADMINISTRATION, FINANCE, AND PUBLICITY. A technical study of methods of organizing charitable agencies, of financing them, and of making the public aware of their work. Lectures and practice work. DAVIS.
130. TECHNIQUE OF FAMILY TREATMENT. An intensive study of case work as the basis of practical dealing with problems of dependency and delinquency. Lectures and conferences. BRUNO.
132. JUVENILE COURTS AND PROBATION. Primarily a course in probation practice work, but prefaced by lectures on the social and legal aspects of the juvenile court. TODD, WAITE.
- 113-114. FIELD WORK IN HOSPITAL SOCIAL SERVICE. A course open only to students who are properly grounded in case work and who wish to specialize in this field. TEBBETS.

For guidance of students the following courses required or advised for social service training, but offered by other closely allied departments are noted:

Required

Psychology 1-2
Economics 3-4; 161
Political Science 1a or 1b; 6; 108.

Advised

Political Science 48 (Elementary Law). This course strongly urged.
Sociology and Anthropology 104, 112, 113-114.
Economics 101, 191.
Psychology 105, 110.

SOCIOLOGY AND ANTHROPOLOGY

Professors ALBERT ERNEST JENKS, ARTHUR J. TODD; Associate Professor LUTHER L. BERNARD; Assistant Professor JOSEPH PETERSON; Lecturers FRANK J. BRUNO, OTTO W. DAVIS, ARTHUR H. TAYLOR; Superintendents of State Board of Control institutions; Teaching Fellow BRUCE L. MELVIN.

REQUIREMENTS OF THE DEPARTMENT

For *B.A. with Honors*, see general requirements.

For *Recommendation for Teacher's Certificate*, credits in the following courses: 1, 4, 6, and two advanced courses.

Modern university education is incomplete unless the graduate has obtained the humanistic point of view. People are what they are not by accident, but because of two incessant, powerful factors or forces—namely, heredity and environment. Each of these is a varied complex under the changing conditions of our modern world. To bring the student this humanistic point of view the Department of Sociology and Anthropology offers elementary courses dealing with peoples, with social forces, institutions, and movements. Its more advanced courses are designed especially for students majoring in the social sciences; namely, Sociology and Anthropology, Economics, History, Political Science; and Social and Civic Work.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
<i>Introductory Courses</i>				
1a	3	General Introduction	Soph., jr., sr.	None
		8 MWF	203He	Bernard
		10 MWF	9F	Jenks
		10 TThS	9F	Todd
		2 MWF	301F	Bernard
1b	3	2 MWF	301F	Bernard
4	3	Cultural Anthropology	Soph., jr., sr.	1
		10 MWF	9F	Jenks
6	3	Social Reform Movements	Soph., jr., sr.	1
		10 TThS	301F	Todd
<i>General Courses</i>				
14	3	Rural Sociology	Jr., sr.	1
		8 MWF	Col. Agr.	Bernard
51	3	Treatment of Dependents and Defectives	Jr., sr.	1, or 6
		8 TThS	9F	Bruno
*52	3	Child Welfare	Jr., sr.	51
		TS 11 and 3rd hr. Ar	9F	Taylor
*53	3	Treatment of Delinquents	Jr., sr., grad.	1 or 6 & Psychol. 1-2
		9 MWF	9F	Todd
*55	2	Housing Problems	Jr., sr.	1 and 6
		8 MW	124F	Davis
<i>Advanced Courses</i>				
*101	3	Social Theory	Jr., sr., grad.	1, and 1 other
		9 TThS	9F	Bernard

No.	Credits	Title	Offered to	Prerequisite courses
*104	2	State Care of Dep., Def., and Delinquents	Jr., sr., grad. 9F	51, and 52 or 53 Todd and Supts.
		3, 4 F		
*108	3	Philippine People	Jr., sr., grad. 9F	1, and 1 other Jenks
		10 MWF		
*109	3	Physical Anthropology	Jr., sr., grad. 9F	See bulletin statement Jenks
		2 MWF		
*113	3	American People	Jr., sr., grad. 9F	1, and two others Jenks
		11 MWF		
*114	3	American People (cont.).	Jr., sr., grad. 9F	1, 113, and one other Jenks
		11 MWF		
*117	3	Social Psychology	Jr., sr., grad. 322F	See statement Peterson
		3 MWF		
*119	3	The Family	Jr., sr., grad. 5F	9 credits Todd
		9 TThS		
*120	3	Social Progress	Sr., grad. 9F	See bulletin Todd
		9 TThS		
*123-124	3	Problems in Anthropology	Sr., grad.	For sr. four corre- lated courses
(each)		2, 3 Th	205Lib	Jenks
*140	3	History of Social Theory.	Jr., sr., grad. 12F	1, 4 or 6 and one other Bernard
		12 TThS		

INTRODUCTORY COURSES

- 1a,b. GENERAL INTRODUCTION. Elemental activities, institutions, laws, and theories. Especial emphasis placed on descriptive data. Textbook and lectures. JENKS,† BERNARD, TODD.†
4. CULTURAL ANTHROPOLOGY. Origin and development of the most important activities and institutions which have had their beginnings in primitive society. Textbook, lectures, readings, and essay. JENKS.
6. MODERN SOCIAL REFORM MOVEMENTS. A survey of attempts to overcome certain social maladjustments: child labor, the city, the tenement, poverty, degeneracy; movements for public health, old age pensions, social insurance, the protection of infancy and youth, public recreation, etc. TODD.
12. ETHNOLOGY. The different so-called races of men; their historical classifications; causes of origin and distribution; important ethnic problems. Textbook, lectures, assigned readings, and essay. Not given in 1918-19. JENKS.
14. RURAL SOCIOLOGY. A survey of the field of rural sociology; description of rural social interests; analysis of fundamental problems of rural life; nature and influence of rural environment; characteristics of rural mind. BERNARD.

GENERAL COURSES

51. TREATMENT OF DEPENDENTS AND DEFECTIVES. The extent and nature

† First semester only.

- of poverty and mental defectiveness; efforts made for their amelioration and prevention. BRUNO.
- *52. CHILD WELFARE. Study of social obligations to the child; development of the child-saving movement in the United States; infant and child mortality, recreation; education; courts, institutions, societies, and other public efforts for the child. BRUNO.
- *53. TREATMENT OF DELINQUENTS. The causes of crime; nature of the criminal; criminal procedure; methods of treatment (prisons, reformatories, parole, probation); the juvenile offender; juvenile courts; preventive methods. TODD.
- *55. HOUSING PROBLEMS. An examination of housing evils and their causes; the various movements for the prevention or improvement of bad housing; town planning; garden cities. Lectures, readings, field work, and essay. DAVIS.
- *101. SOCIAL THEORY. The foundations of sociology; the leading American, English, French, and German writers and their methods of approach to the science and the leading results they have secured. Textbook, readings, lectures, essay. BERNARD.
- *104. STATE CARE OF DEPENDENTS, DEFECTIVES, AND DELINQUENTS IN MINNESOTA. Organization, machinery, and function of such institutions as the state hospitals, asylums, training schools, prison, schools for the feeble-minded, the blind, and the deaf. Lectures and readings. TODD and Specialists from the Board of Control and institutions studied.
- *108. THE PHILIPPINE PEOPLE. Comparative study of the four large ethnic and cultural groups of people in the Philippine Islands; policy of the insular civil government as it affects American home interests in the Orient. Lectures, readings, and essay. JENKS.
- *109. PHYSICAL ANTHROPOLOGY. Theory of evolution as applied to natural and cultural man; theory of eugenics and its application. Prerequisites: Course I, and Animal Biology 1-2, and one other course in Sociology and Anthropology. JENKS.
- *112. THE AMERICAN NEGRO. The negro in Africa; development of the American negro; present characteristics, conditions, developing tendencies, and probable future of the American negro. Lectures, readings, and essays. Not given in 1918-19. JENKS.
- *113. THE AMERICAN PEOPLE. Dominant characteristics of the diverse foreign peoples now in the United States; their modification in America; the importance of these peoples to the American nation. Lectures, readings and essay. JENKS.
- *114. THE AMERICAN PEOPLE (Continued). Essential and unique historical Americanisms, and their value and virility for the future;

facts and forces of amalgamation and assimilation in America; America's ethnic problems. Lectures, readings, and essay. JENKS.

- *117. SOCIAL PSYCHOLOGY. An introduction to the study of the reciprocal influence of minds in society upon one another. Prerequisites: Course 3 and one other course, and Course 1-2 or 5 in the Department of Psychology. PETERSON.
- *119. THE FAMILY. The evolution of the family; its various forms and their relation to other social institutions; the service of the family in social evolution; contemporary problems of the family (standards of living, birth rate, feminism, etc.) TODD.
- *120. SOCIAL PROGRESS. An analysis of fundamental social institutions in their relation to human progress. TODD.
- *123-124. PROBLEMS IN ANTHROPOLOGY. An advanced course of method and independent research. JENKS.
- *140. HISTORY OF SOCIAL THEORY. A review of social theory from the time of the Greeks, with special reference to the development of sociology in the nineteenth century. BERNARD.

COURSES IN OTHER DEPARTMENTS OF THE UNIVERSITY OPEN TO JUNIORS OR SENIORS OF THIS COLLEGE

For description of courses see bulletins of the colleges offering the courses.

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

First Semester

Agricultural Biochemistry	Horticulture
Course 3a (3) 9:50 to 10:35 TThS	Course 71 (3) 8:55-9:40 MWF
Courses given under Economics Department	Course 90a (3) 8:00-9:40 MWF
Given under Education	Plant Pathology and Botany
Agronomy (3)	Course 1 (3) 8:00-9:40 TThS
Course 1 2:00-4:30 TTh	Course 105 (3) 1:15-4:30 TTh
Animal Husbandry	Course 107 (3) { 3:40-5:00 W
Course 1a (3) 8:00-9:40 MWF	{ 1:15-5:00 F
Poultry Husbandry	
Course 1 (3) 8:00-8:45 MWF	
Dairy Husbandry	
Course 7a (3) 8:00-9:40 TThS	

Second Semester

Agricultural Chemistry	Agricultural Economics
Course 3b (3) 8:55-9:40 TThS	Course 18b (3) 9:50-10:35 MWF

Agricultural Education
 Course 151b (3) 10:45-11:30 MWF
 Agronomy
 Course 1b (3) 2:00-4:30 TTh
 Animal Husbandry
 Course 1b (3) 8:00-9:40 MWF
 Dairy Husbandry
 Course 26b (3) 8:00-9:40 TThS
 Poultry Husbandry
 Course 30 (2) Ar

Horticulture
 Course 50 (3) 9:50-10:35 TTh; Lab.
 2:00-4:30 F
 Course 56 (1) 9:50-10:35 MWF
 Course 90b (3) 8:00-9:40 MWF
 Plant Pathology and Botany
 Course 104 (3) Ar

LAW SCHOOL

First Semester

Contracts (3) 9:00 MWF
 Personal Property (3) 10:00 MWF
 Domestic Relations (2) TTh

Second Semester

*Contracts (3) 9:00 MWF
 Carriers (2) 10:00 TTh

SCHOOL OF MINES

First Semester

Metallurgy
 Course 3 8:00 WThF
 Course 105 9:00 WThFS
 Course 153 Ar

Second Semester

Metallurgy
 Course 4 8:00 WThF
 Course 2 8:00-4:00 M; 11:00 TWThF
 Course 106 9:00 WThFS
 Course 154 Ar

* Open only to students who have taken Contracts in the first semester.

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4.

The Bulletin *of the University of* **Minnesota**

Announcement of Courses
in Business Education for the Year
1918 - 1919



Vol. XXI No. 28 October 1 1918

Entered at the post-office in Minneapolis as second-class matter
Minneapolis, Minnesota

Acceptance for mailing at special rate of postage provided for in section 1103,
Act of October 3, 1917, authorized July 12, 1918

UNIVERSITY CALENDAR

			1918-1919
1918			
September	11	Wednesday	Registration closes except for new students
September 11-18		Week	Fees payable except for new students
September 17-24		Week	Examinations for removal of conditions and entrance examinations
September 23-24			Registration and payment of fees for new students
September	25	Wednesday	First semester begins
September	30	Monday	First semester evening extension classes begin
October	17	Thursday	Senate meeting, 4:00 p. m.
November	5	Tuesday	General Election Day; a holiday
November	27	Wednesday	Thanksgiving recess begins 9:00 p.-m.
December	2	Monday	Thanksgiving recess ends 8:00 a. m.
1919			
January	27	Monday	Payment of second semester fees closes except for new students
January	31		Registration and payment of fees for new students
February	1		
February	3	Monday	Second semester begins
February	3	Monday	Second semester evening extension classes begin
February	12	Wednesday	Lincoln's Birthday; a holiday
February	20	Thursday	Senate meeting, 4:00 p. m.
February	22	Saturday	Washington's Birthday; a holiday
April	17	Thursday	Easter recess begins 9:00 p. m.
April	22	Tuesday	Easter recess ends 8:00 a. m.
April	22-28	Week	Condition examinations in certain colleges
May	15	Thursday	Senate meeting, 4:00 p. m.
May	23	Friday	Final examinations begin 2:00 p. m.
May	23	Friday	Second semester evening extension classes close
May	30	Friday	Memorial Day; a holiday
May	31	Saturday	Second semester closes
June	1	Sunday	Baccalaureate service.
June	2	Monday	Senior Class Day exercises
June	4	Wednesday	Alumni Day
June	5	Thursday	Forty-seventh Annual Commencement
June	6	Friday	Summer vacation begins
June	16	Monday	Summer Session begins

The University year for 1919-20 will begin Tuesday, September 16.
Classes will begin September 24.

BUSINESS EDUCATION

OFFICERS OF ADMINISTRATION

MARION LEROY BURTON, Ph.D., D.D., LL.D., President of the University.

JOHN B. JOHNSTON, Ph.D., Dean of the College of Science, Literature, and the Arts.

WILLARD E. HOTCHKISS, Ph.D., Director of Business Education and Professor of Economics.

INSTRUCTION

The University through the courses in Business Education aims to make all its resources available to students who desire an education for business. The several branches of business organization and management are, for the most part, covered by a staff of teachers who hold membership in the Department of Economics. Each member of that department is dealing with some phase of business. Instruction in the business courses, however, is not limited to any one department, nor is it limited to the Faculty of the College of Science, Literature, and the Arts. Outside of the group of specialized teachers of business the parts of the University most heavily drawn upon in making up the curriculum of the business courses are the departments of Psychology, Sociology, and Political Science in the College, and the Schools of Education, Engineering, Agriculture, Law, and the General Extension Division. The names of the individual instructors are listed with the descriptions of their respective courses.

PURPOSE AND PLAN OF THE COURSE

Mastery of scientific method, as applied to business data, and ability to deal intelligently with problems of human relationship in business are foundations of business effectiveness. The course in business education is a recognition of the growing professional status of the business executive. It aims to combine with a thoro university education the kind of training that will enable students to analyze business situations accurately and synthesize the results into practical working plans.

The object is education rather than information, and this object determines the sequence of studies. In the freshman and sophomore years effort is made to give a broad training in those foundation subjects underlying the study of business processes. The student is also acquainted with the relation of business processes to the organization of society as a whole, and as far as possible he is provided with the common intellectual tools needed for his later study and business dealings.

Students proceed in the junior and senior years to more specialized study in such branches of business organization and management as accounting, finance, merchandising, selling, production management, em-

ployment management, and other subjects which have to do with the principal business vocations. Elective courses offer opportunity for further work in subjects like economics, political science, and law which constitute a part of the executive's general equipment. There is also opportunity for limited specialization in particular business lines.

By continuing for a fifth year a student may carry specialization farther with the thought of mastering in principle and in detail some particular business problem in a restricted field. Students who do this will be expected to set forth the results of their study in a carefully prepared document worthy of publication. Plans are under way for the more complete organization of the fifth year of the business course and for its recognition by provision for an appropriate degree.

ADMISSION

For Students in the College of Science, Literature, and the Arts

The admission requirements are the same as for other courses of study in the Arts College. Candidates must have completed the equivalent of a four-year high-school course and must present:

1. Four units of English; or three units of English and four units of a foreign language; or three units of English and two units in each of two foreign languages.
2. One unit of algebra and one unit of plane geometry.
3. Enough additional work to make in all fifteen units, of which not more than four may be in vocational subjects.

A detailed statement of admission requirements may be found in the Bulletin of General Information.

For Students in Other Colleges

Regularly enrolled students in other colleges of the University who have satisfied the entrance requirements of their colleges are admitted to any business courses for which they have the prerequisites. Such students are urged to select their business subjects in accord with a definite plan and as far as possible to complete a systematic course of business study.

DEGREE

The course in Business Education leads to the degree of Bachelor of Arts. Candidates for the degree must meet the following requirements:

1. During his entire course the student must earn one hundred and twenty hours of credit and one hundred and twenty honor points.
2. No student may receive credit for more than two beginning modern language courses except upon the recommendation of a department in which the student requires such additional languages for his advanced work.
3. At least thirty credits must be earned in residence at this College. If the term of residence is only one year, that year must be the senior

year; and, in any case, at least half of the work of the senior year must be done in residence.

4. Students, except those in the third and fourth years of the Honors Course, must elect at least fourteen hours a week. Permission to take less than this number must be secured from the Administrative Board.

5. Students may ordinarily elect not more than seventeen credit hours. After the freshman year a student who has, during the preceding semester or two semesters, earned an average of one and one-half honor points for each credit hour taken and who has had no condition or failure the preceding semester, may elect eighteen hours.

6. No student may elect work during any semester in more than five departments.

7. Military Drill is required of all freshman and sophomore men, and Physical Education of all freshman men and women.

COURSE OF STUDY

(For Students Registered in Science, Literature, and the Arts)

Freshman Year

	Credits
Rhetoric 1-2.....	6
Modern language	12 or 6
Laboratory science or Mathematics	0 or 6
History 3-4 (English History)	6
Physical Geography (Geology 37)	3
Industries and Commerce (Economics 2).....	3
	30

Sophomore Year

	Credits
Psychology	6
Principles of Economics (Economics 3-4).....	6
Principles of Accounting (Economics 35-36).....	6
The following, if not completed in the freshman year:	
Laboratory science or Mathematics.....	6
Modern language (see requirement below).....	6
	30

If the above have been completed in the freshman year, the student will take an equal number of hours in Political Science or History.

Junior and Senior Years

In the third and fourth years there is some variation in the course according to the branch of business that the student expects to enter. The Faculty advisers will direct students in the choice of subjects appropriate for the fields chosen.

Before the beginning of the senior year students must give evidence by examination of ability to read business and economic literature in some modern language other than English.

SCHOLASTIC STANDARD

Scholarship in advance of the regular passing grade in the University will be required for advancement and graduation. A student whose work does not give promise of effectiveness in the business field will be discouraged from continuing the course.

EVENING COURSES IN EXTENSION

The General Extension Division of the University offers courses in the Twin Cities, Duluth, and elsewhere. The curriculum covers work in economic principles, banking, finance, transportation, management, advertising, and salesmanship.

These courses are designed to meet the needs of mature persons already employed in business. Applicants must be at least eighteen years of age and must present evidence of sufficient experience and training to pursue the work with profit.

The courses of the Extension Division are open to day students only on petition, and then only in case the subject matter is not covered by courses in the regular work.

The schedule of courses varies from year to year and may be found in the bulletin of the General Extension Division.

REGISTRATION

Registration will be handled in the office of the Registrar, but the registration of no student taking business subjects will be complete until approved by authorized members of the business staff. This approval will be necessary for entering the course, for registration during the course, and for any change in schedule.

EXPENSES

For fees and expenses see Bulletin of General Information.

DESCRIPTION OF COURSES

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

ECONOMICS

Professors WILLARD E. HOTCHKISS, GEORGE W. DOWRIE, E. DANA DURAND,* JOHN H. GRAY;* Associate Professors ROY G. BLAKEY,* WILLIAM W. CUMBERLAND;* Assistant Professors JOHN D. BLACK, J. HUGH JACKSON, EDWIN CLYDE ROBBINS, THOMAS H. SANDERS; Professorial Lecturer J. FRANKLIN EBERSOLE; Instructors ALBERT C. JAMES, J. WARREN STEHMAN; in the General Extension Division, Associate Professors CHARLES H. PRESTON, CLARE L. ROTZEL.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
12	3	Industrial and Commercial Society of the United States	Fr., soph.	None
		Sec. 1 8 MWF	102MA	Robbins
		Sec. 2 9 MWF	102MA	Robbins
		Sec. 3 2 MWF	209MA	Robbins
3-4	6†	General Economics	Soph., jr., sr.	None
		Sec. 1 8 TThS	209MA	Stehman
		Sec. 2 9 TThS	209MA	Dowrie
		Sec. 3 9 TThS	109MA	Stehman
		Sec. 4 10 MWF	209MA	Blakey
		Sec. 5 3 MWF	202MA	James
		Sec. 6 3 MWF	209MA	Stehman
18	3	Problems in Agr. Econ.....	Soph., jr., sr.	3
		11:40 MWF	Farm	Black
19	3	Marketing of Farm Prod.....	Jr., sr.	3
		11:40 MWF	Farm	Cumberland
35-36	6†	Accounting Principles.....	Soph., jr., sr.	None
		Sec. 1 Lect. & Quiz.		
		10 WF	301MA	Jackson
		Sec. 2, Lect. & Quiz.		
		11 TS	301MA	Jackson
		Sec. 1 Lab.		
		1, 2 T	301MA	
		Sec. 2 Lab.		
		1, 2 Th	301MA	
		Sec. 3 Lect. & Quiz.		
		2 MF	301MA	Sanders
41	3	Financial History	Soph., jr., sr.	3
		11 MWF	209MA	Blakey
43-44	6†	Mechanism of Exchange.....	Soph., jr., sr.	3
		10 TThS	202MA	Dowrie

* Absent on leave, 1918-19.

† Both semesters must be completed before credit is given for the first semester.

‡ Course 2 can not be taken concurrently with 3-4.

§ Admission conditioned also on approval of instructor.

*52	3	Corporation Finance	Jr., sr.	6 cr. incl. 3
		9 TThS	3F	Ar
*59	3	Insurance	Jr., sr.	3-4
		10 TThS	102MA	James
*76	3	Commercial Policies	Jr., sr.	6 cr. incl. 3
		11 MWF	209MA	Blakey
*85	3	Marketing of Products	Jr., sr.	3-4
		9 TThS	202MA	James
*86	3	Advertising and Selling	Jr., sr.	85
		10 TThS	209MA	James
*88	3	Retail Marketing	Jr., sr.	6 cr. incl. 85
		9 TThS	213MA	James
*101	3	Statistics	Jr., sr., grad.	6 cr. incl. 3
		Lect. & Quiz. 1 W	303MA	Black
		Lab. 1, 2 MF	303MA	Black
*107	3	Land Tenure	Jr., sr., grad.	18 or 4
		8:55 TThS	Farm	Black
*108	3	Agricultural Statistics	Jr., sr., grad.	101
		8:55 TThS	Farm	Black
*123	3	Business Organization and Management	Jr., sr., grad.	3-4
		10 MWF	109MA	Hotchkiss
*124	3	Business and Government	Jr., sr., grad.	3-4
		10 MWF	109MA	Hotchkiss
*131	3	Cost Accounting	Jr., sr., grad.	35-36
		9 MWF	301MA	Jackson
*133-134	6†	Auditing	Jr., sr., grad.	135-136
		8 MWF	213MA	Rotzel
*135-136	6†	Accounting Problems	Jr., sr., grad.	35-36
		11 MWF	301MA	Sanders
*139	3	Bank Administration	Jr., sr., grad.	§43
		3 MWF	213MA	Ebersole
*142a	3	Investments	Jr., sr., grad.	6 cr. incl. 3
		2 MWF	202MA	Ebersole
*142b	3	Investments	Jr., sr., grad.	6 cr. incl. 3
		3 MWF	213MA	Ebersole
*144	3	Business Cycles	Jr., sr., grad.	43
		2 MWF	202MA	Ebersole
*151-152	6†	Seminar in Business Policy	Sr., grad.	§123 and 3 credits in starred courses
		Ar Ar Ar		Hotchkiss
*161	3	Labor Problems	Jr., sr., grad.	6 cr. incl. 3
		10 TThS	209MA	Robbins
*173	3	Railway Problems	Jr., sr., grad.	6 cr. incl. 3
		9 TThS	3P	Ar
*191	3	Public Finance	Jr., sr., grad.	6 cr. incl. 3
		9 MWF	209MA	Blakey
*192	3	State and Local Taxation	Jr., sr., grad.	191
		9 MWF	209MA	Blakey
*195-196	6†	Seminar in Finance	Sr., grad.	§12 cr. incl. 43-44
		Ar Ar Ar		Dowrie, Ebersole
*261-262	Ar	Seminar	Grad.	§12 cr. in starred courses
		Ar Ar Ar		Hotchkiss, et al.

† Both semesters must be completed before credit is given for the first semester.

‡ Course 2 can not be taken concurrently with 3-4.

§ Admission conditioned also on approval of instructor.

2. INDUSTRIAL AND COMMERCIAL SOCIETY OF THE UNITED STATES. An introductory study of modern industry as a foundation for the further study of economics. Land, labor, capital, enterprise as divisions of the productive process. Exchange. Ways in which society influences production. ROBBINS.
- †2a,b. See Course 2. ROBBINS.
- 3-4. GENERAL ECONOMICS. Principles that underlie the present industrial order. Application of principles to economic problems such as labor, insurance, finance, transportation, industrial combination, government control. DOWRIE, BLAKEY, JAMES, STEHMAN.
- †3a,b. See Course 3-4. CUMBERLAND, BLACK, ROBBINS.
9. INDUSTRIAL HISTORY SINCE 1750. Economic effects of inventions, wars, political changes, increased supply of precious metals, improved transportation, and modification of business organization; chief emphasis on Great Britain. Not given in 1918-19. GRAY.
- †18. PROBLEMS IN AGRICULTURAL ECONOMICS. The economic facts and principles underlying the practical problems confronting the farmer as producer, consumer, and citizen, such as what to produce, intensity of cultivation, farm labor, tenancy, land settlement, farm credit, marketing, and taxation. BLACK.
- †19. MARKETING OF FARM PRODUCTS. The organization and methods of marketing; the functions of middlemen; the costs of marketing various products; cooperative marketing. CUMBERLAND.
- 35-36. PRINCIPLES OF ACCOUNTING. The purpose and principles of account classification; capital and revenue; accruals; valuation; depreciation; preparation and interpretation of balance sheets, income accounts, and other statements; corporation accounts. A laboratory course with supplementary lectures. JACKSON, SANDERS.
41. FINANCIAL HISTORY OF THE UNITED STATES. American monetary and fiscal legislation from colonial times with especial emphasis upon the distinction between maintaining a standard of value and the providing of a revenue for the needs of government. BLAKEY.
- 43-44 THE MECHANISM OF EXCHANGE. Relation to industrial system. Monetary principles with special reference to United States. American banking and bank organization, principles of commercial banking, non-commercial banking, relation of government to banking, comparative study of leading foreign systems. DOWRIE.
- *52. CORPORATION FINANCE. The organizing, financing, and managing of corporations. The relation of the government to the corporation. The operations of the stock exchange and a study of corporate securities for purposes of investment and speculation.

† Given at University Farm.

- *59. **INSURANCE.** Principles of insurance with special reference to fire, life, and accident insurance. Critical examination of policy contracts, the premium, reserve, and rights and obligations of policy holders. Public regulation of insurance companies. JAMES.
- *76. **COMMERCIAL POLICIES.** Theory of international commerce; free trade, reciprocity, and protection, with special emphasis on the tariff history and policy of the United States; commercial treaties and foreign politics. Lectures, assigned readings, and reports. BLAKEY.
- *85. **MARKETING OF PRODUCTS.** Domestic merchandising methods of manufacturers. Problems of wholesalers and commission men; distributing system and market organization; price policies. JAMES.
- *86. **ADVERTISING AND SELLING.** Functions and principles of advertising; advertising media; planning and executing an advertising campaign. Copy. Sales management and personal salesmanship. JAMES.
- *88. **RETAIL MARKETING.** Problems and methods of the so-called regular retailer, department stores, and chain stores. Development of retail trade centers. Coöperation between the retailer and the local board of trade. The retailer and the consumer. JAMES.
- *101. **STATISTICS.** Principles of collection, tabulation, and interpretation of statistical material, illustrated by present-day statistical data. Lectures, assigned readings, and special investigations by individual members of the class. BLACK.
- *102. **ADVANCED STATISTICS.** A continuation of Course 101, dealing with more advanced problems connected with assembling, tabulating, interpreting, and using statistical information. As far as practicable the data used will be drawn from business. Not given in 1918-19.
- *103. **DISTRIBUTION OF WEALTH.** An advanced course in economic theory devoted chiefly to a study of recent theories of distribution. Assigned readings, reports, and discussions. Not given in 1918-19.
- *104. **HISTORY OF ECONOMIC IDEAS.** History of economic thought; scope and logical methods, relation to other social sciences; methods of investigation and instruction. Assigned readings, reports, and class discussions. Not given in 1918-19.
- †*107. **LAND TENURE.** A study of several problems arising out of the land basis of civilization, such as property in land, land utilization, land classification, land settlement, status of the agricultural classes, farm labor, farm ownership and tenancy. BLACK.
- †*108. **AGRICULTURAL STATISTICS.** Study and practice of the special methods of statistical investigation, analysis, and presentation which have been developed for agriculture, together with descriptive statistics of agriculture. BLACK.

† Given at University Farm.

- †*118. **ADVANCED PROBLEMS IN AGRICULTURAL ECONOMICS.** A close study of the fundamental principles of consumption, production, and value and distribution as pertaining to agriculture. CUMBERLAND.
- †*119-120. **SEMINAR.** An advanced research course in which certain topics in agricultural economics will be taken up for intensive individual study. CUMBERLAND, BLACK.
- *123. **BUSINESS ORGANIZATION AND MANAGEMENT.** Organization; principles applying to business in general and to particular concerns; evolution, objects, adjustments, limits, functional division; specialization—functional and other forms; standardization. Management; coordination of functions, handling of men, employment, external versus internal factors. HOTCHKISS.
- *124. **BUSINESS AND GOVERNMENT.** Business expansion, diversification, and conflicting interests. Laissez faire versus regulation. Enforcement of minimum standards. Administration of business legislation. Cooperation between government and business. Public coordination of business forces. Reaction of emergency measures on permanent policy. HOTCHKISS.
- *131. **COST ACCOUNTING.** Analysis of production cost; methods of recording materials, labor, and machine costs; apportioning indirect expenses; relation of cost to general accounts; use of cost data to enforce operating efficiency. Laboratory with lectures. JACKSON.
- *133-134. **AUDITING.** Preparation for, and conduct of, an audit; the auditor's report and certification, and legal responsibilities. Textbook, assigned readings, class discussions and lectures. ROTZEL.
- *135-136. **ACCOUNTING PROBLEMS.** A study of the preparation of business and financial statements, chiefly from the standpoint of administrative statistics; based on problems from C. P. A. examinations and other sources. SANDERS.
- *139. **BANK ADMINISTRATION.** The modern commercial bank from the manager's point of view. Legal problems, department functions, profit making methods, credits. Adjustment of bank policy to prospective business conditions. Lectures, and laboratory work in local banks. EBERSOLE.
- *142a,b. **INVESTMENTS.** The social process of saving and investment; government, municipal, corporation, and real estate loans; stock exchange operations and money market influences as they affect the prices and net yield of prime securities. EBERSOLE.
- *144. **BUSINESS CYCLES.** American business conditions since 1890 with regard to the great cycles of alternate prosperity and depression and financial panics. Critical examination of all the available business barometers designed to forecast similar conditions. EBERSOLE.

† Given at University Farm.

- *145. THE MODERN BUSINESS CORPORATION. The organizing, financing, and managing of corporations; the corporation before the law; methods of accounting; the relation of the government to the corporation; the question of trusts in its various phases. Not given in 1918-19. GRAY.
- *146. PUBLIC UTILITIES. Economic and legal bases of classification. Relative advantages of public ownership and regulation. Central and municipal regulation compared. The basis of rates; relative rates; rates and service. Different theories of valuation. Not given in 1918-19. GRAY.
- *151-152. SEMINAR IN BUSINESS POLICY. Individual investigations and reports upon the fundamental questions of business policy. The investigations will have to do with the public relations of particular concerns and with their relations to customers, creditors, competitors, and employees. HOTCHKISS.
- *161. LABOR PROBLEMS. Modern labor problems; woman and child labor, industrial education, unemployment, poverty, industrial hygiene, welfare work, profit-sharing, coöperation, labor unions, strikes, boycotts, conciliation, and arbitration; economic causes and effects of immigration. ROBBINS.
- *173. RAILWAY PROBLEMS. The theory and practice of railway rate making. Railway organization and finance viewed historically and scientifically. Government regulation, the conflict between state and federal authorities and suggested improvements in railway control.
- *191. PUBLIC FINANCE. Public expenditures; public debt; budgetary legislation; tax systems. BLAKEY.
- *192. STATE AND LOCAL TAXATION. Problems of state and local taxation. Historic survey of various taxes and examination of present procedure in taxing different kinds of property; tax reforms. Particular attention given to conditions in Minnesota. BLAKEY.
- *195-196. SEMINAR IN FINANCE. The various unsettled monetary and banking problems of the United States will furnish topics for individual investigation. DOWRIE, EBERSOLE.
- *251-252. SEMINAR IN STATISTICS. Individual research in statistical problems and methods. Not given in 1918-19. DURAND.
- *259-260. SEMINAR IN CORPORATION AND TRUST PROBLEMS. Practical and independent investigation by each student, under the guidance of the instructor, of some specific problem pertaining to corporations, trusts, and other monopolies. Not given in 1918-19. DURAND.
- *261-262. SEMINAR FOR GRADUATES EXCLUSIVELY. Research to be arranged with individual instructors in the various fields of economics. Prerequisites: twelve credits in starred courses and the approval of the department. HOTCHKISS and other members of the department.

† Given at University Farm.

EDUCATION

Professors LOTUS D. COFFMAN, ALBERT W. RANKIN, FLETCHER H. SWIFT;
Assistant Professors MARVIN J. VAN WAGENEN; Instructors JEAN H.
ALEXANDER, REWEY BELLE INGLIS, WILLIAM D. REEVE; Special Lec-
turers THADDEUS P. GIDDINGS, GEORGINA LOMMEN.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
*105	3	Educational Psychology.....	Sr., grad.	Psychol. 1-2
		11 MWF	202Ed	Van Wageningen
*106	3	Educational Psychology.....	Sr., grad.	Psychol. 1-2
		11 MWF	202Ed	Van Wageningen
*109	2	Educational Diagnosis	Sr., grad.	1 or 101-102 and 3
		10-11:40 S	204Ed	Van Wageningen
*134	2	Mental Diagnosis	Sr., grad.	Psychol. 1-2
		10-11:40 S	206Ed	¶
*135	2	Mental Tests	Jr., sr., grad.	Psychol. 1-2
		2-4 WF	202Ed	¶
*137-138	1 to 6	Psycho-educational Clinic	Sr., grad.	Psychol. 1-2; Ed. 109, 134, or 135
*142	3	Industrial Education	Sr., grad.	1 or 101-102 and 3
		4 MWF	205Ed	Rankin

- *105. EDUCATIONAL PSYCHOLOGY. Advanced work in genetic psychology, origin and nature of the human organism; origin, development, and control of instincts; their relations to group activities; relation of instincts to formation of habits; introductory to psychology of learning. VAN WAGENEN.
- *106. EDUCATIONAL PSYCHOLOGY. The psychology of learning. Methods of measuring the rate of learning; study of typical learning experiments; examination of the conditions of the most economic learning; study of individual differences; and the psychology of school subjects. VAN WAGENEN.
- *109. EDUCATIONAL DIAGNOSIS. Typical educational problems involving the use of educational scales and standard tests. Nature of the tests, methods of their use, analysis of results obtained, and programs of remedial educational procedure based on results of the test. VAN WAGENEN.
- *134. MENTAL DIAGNOSIS OF SCHOOL CHILDREN. Study of mental variation in children, its nature, degree, causes, and effects. (Introductory to course), Series of lectures on the anatomy, physiology, and pathology of childhood. Methods of treating superior and sub-normal children in school.
- *135. MENTAL TESTS. A study of individual differences by means of mental tests. Laboratory work in giving and taking tests introductory to the use of group tests for the measurement of age-level, etc.
- *137-138. PSYCHO-EDUCATIONAL CLINIC. Close coöperation with Medical School clinics in pediatrics, nervous and mental diseases. Mental ex-

amination and diagnosis. Practical experience in use of standardized tests, family history, school records. Study and treatment of several individual cases.

- *142. INDUSTRIAL EDUCATION. Existing types of industrial and vocational schools and systems of training. Comparison of conditions in America and foreign countries. Organization of course of study. RANKIN.

GEOLOGY AND MINERALOGY

Professors WILLIAM H. EMMONS, CLINTON R. STAUFFER;* Associate Professor FRANK F. GROUT; Assistant Professors A. WALFRED JOHNSTON,* CHESLEY J. POSEY, TERENCE T. QUIRKE; Instructor THOMAS M. BRODERICK; in the General Extension Division, Assistant Professor EDWARD M. LEHNERTS.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
*36	3	Geog. of North America	Jr., sr., grad.	1 or 29 and 3 creds. from 5, 6, 30, 34, 39
		10 TThS	105P	Posey
37	3	Physical and Com. Geog.	Fr.	None
		9 MWF	204P	Posey
*39	3	Geographic Influences	Jr., sr., grad.	3 cred. from 1, 29, 30, and History 5 or its equivalent
		10 MWF	105P	Posey
*118	3	Geog. of Eurasia	Jr., sr., grad.	6 cred. from 1, 6, 29, 30, 34, 36, 39
		9 MWF	105P	Posey

- *36. GEOGRAPHY OF NORTH AMERICA. The regional geography of the United States and Canada; their physiography, climate, natural resources, and people. The utilization and conservation of natural resources emphasized. POSEY.
37. PHYSICAL AND COMMERCIAL GEOGRAPHY. A study of the origin of the earth's physical features, of the distribution of natural resources, and of the geographic factors influencing the production and exchange of commodities. POSEY.
- *39. GEOGRAPHICAL INFLUENCES IN THE DISCOVERY AND DEVELOPMENT OF AMERICA. A study of the influence of geographic factors of location, topography, climate, and natural resources upon the economic, social, and political development of America. Given in alternate years. POSEY.
- *116. GEOGRAPHY OF LATIN AMERICA. Regional geography of the Latin-American countries; their geology, topography, climate, natural resources, people. Trade relations between Latin-American countries

* Absent on leave, 1918-19.

and the United States given special attention. Alternates with Course 118. Not given in 1918-19. POSEY.

*118. GEOGRAPHY OF EURASIA. Regional geography of Eurasia; the geology, topography, climate, natural resources, people, industries, and trade of these countries. The attitude of the major European countries to the "new" lands of Asia. Alternates with Course 116. POSEY.

HISTORY

Professors GUY STANTON FORD, WILLIAM STEARNS DAVIS, NORMAN SCOTT BRIEN GRAS, WALLACE NOTESTEIN, ALBERT BEEBE WHITE; Associate Professors SOLON JUSTUS BUCK, AUGUST CHARLES KREY; Assistant Professors LESTER BURRELL SHIPPEE, MASON WHITING TYLER; Instructor GEORGE MALCOLM STEPHENSON; Teaching Fellows ALICE H. FELT, PAUL S. SMITH, GEORGINA TALBOT; Assistants MARY S. GOLD, FAITH THOMPSON.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
9	3	Intr. to Economic History	Soph., jr., sr.	6 credits
		10 TThS	218bLib	Gras
10	3	Economic History of the United States	Soph., jr., sr.	See statement
		10 TThS	218bLib	Gras
*115-116	6	Economic History of Europe, 1300-1750	Jr., sr., grad.	9 credits
		9 TThS	218bLib	Gras

9. INTRODUCTION TO ECONOMIC HISTORY. A general survey of the history of economic institutions, the chief stages in agriculture, commerce, industry, exchange, and economic policy, studied from European and somewhat from American experience. GRAS.
10. ECONOMIC HISTORY OF THE UNITED STATES. Chief emphasis on the national period. Open to those who have taken or are taking History 5-6; or to those who have taken History 9, and American History in the high school. GRAS.
- *115-116. ECONOMIC HISTORY OF EUROPE, 1300-1750. Much of the reading on England. GRAS.
- *117. ECONOMIC HISTORY OF EUROPE, 1750 TO PRESENT. Industrial revolution, commercial advance, tariff changes, agricultural development. Not given in 1918-19. GRAS.

POLITICAL SCIENCE

Professors CEPHAS D. ALLIN, JEREMIAH S. YOUNG; Assistant Professor WILLIAM ANDERSON; Lecturer ALBERT J. LOBB; Instructor PERCIVAL W. VIESSELMAN.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1a	3	American Government	Soph., jr., sr.	None
		8 MWF	102MA	Viesselman
		9 TThS	102MA	Young
		10 MWF	202MA	Young
		11 MWF	102MA	Lobb
		2 MWF	102MA	Anderson
1b	3	American Government	Soph., jr., sr.	None
		9 TThS	102MA	Lobb
		10 MWF	102MA	Lobb
		2 MWF	109MA	Anderson
<i>General Courses</i>				
3a	3	State and Local Govern- ment	Soph., jr., sr.	1
		10 TThS	5F	Lobb
		2 MWF	109MA	Lobb
3b	3	State and Local Govern- ment	Soph., jr., sr.	1
		10 MWF	202MA	Young
		10 TThS	5F	Anderson
		11 MWF	109MA	Lobb
5	3	Municipal Government	Soph., jr., sr.	1
		11 MWF	109MA	Anderson
*51	3	Business Law, I	Jr., sr.	6 cr. in Pol. Sci., or 6 in Econ., or 3 in each
		9 MWF	202MA	Young
*52	3	Business Law, II	Jr., sr.	51
		9 MWF	202MA	Young
<i>Advanced Courses</i>				
*101	3	Constitutional Law	Jr., sr., grad.	6 credits
		9 TThS	213MA	Lobb
*106	2	Legislative Power and Methods	Jr., sr., grad.	6 credits
		11 TS	102MA	Young
*108	3	Police Power	Jr., sr., grad.	6 credits
		10 TThS	102MA	Young
*109	3	Diplomacy	Jr., sr., grad.	6 credits
		2 MWF	213MA	Allin
*110	3	International Law	Jr., sr., grad.	1 and 109 or 111
		2 MWF	102MA	Allin
*120	3	Municipal Problems	Jr., sr., grad.	5, or its equivalent
		11 MWF	102MA	Anderson

1a,b. AMERICAN GOVERNMENT. Nature and origin of the American governmental system; organization and actual workings of the national government. If possible, History 5-6 should accompany this course; Political Science 3a or 3b should follow it directly. All instructors.

3a,b. STATE AND LOCAL GOVERNMENT. Typical American State governments, special attention to Minnesota; relation of states to the United States and to local units; recent experiments such as the initiative and referendum, the recall, and primaries; social and economic legislation. YOUNG, ANDERSON, LOBB.

5. MUNICIPAL GOVERNMENT. Comparative study of American and European systems of municipal government, with emphasis upon American experience. Forms of city government, popular control, relation of the city to the state. Prerequisite for Political Science 120. ANDERSON.
- *51. BUSINESS LAW, PART I. Principles governing ordinary business transactions. As much law taught as an educated man ought to know for guidance in every-day business affairs. General principles of contracts—formation, operation, interpretation, breach, and discharge; agency and service. (Credit will not be given for both 51 and 58.) YOUNG.
- *52. BUSINESS LAW, PART II. A continuation of Course 51. Negotiable instruments; business associations—partnerships and private corporations; property—personal and real. (Credit will not be given for both 52 and 58.) YOUNG.
- *101. CONSTITUTIONAL LAW. Constitutional law, its origin and nature; American constitutions, how made and amended; the courts and the development of the Constitution; federal and state relations; the territories, their acquisition and government; citizenship. LOBB.
- *106. LEGISLATIVE POWER AND METHODS. Source and scope of the legislative power; methods used by legislative bodies; current public questions; formulation and defense of legislative bills. YOUNG.
- *108. THE POLICE POWER. Nature of the police power; constitutional aspects of social and economic legislation, including safety, order, morals, and protection against business fraud and oppression; the fundamental rights under the police power. YOUNG.
- *109. DIPLOMACY. The growth of international relations; the mode of conducting foreign affairs; diplomatic and consular service; protection of national interests abroad; extradition; the framing, interpretation, and termination of treaties and compacts. ALLIN.
- *110. INTERNATIONAL LAW. Nature, source, and sanction of international law; laws of war; neutrality; prize courts and prize proceedings. ALLIN.
- *120. MUNICIPAL PROBLEMS. A specialized course in modern legal, administrative, and functional problems of cities. The content of the course will change from year to year, keeping abreast of municipal progress. ANDERSON.

PSYCHOLOGY

Professors ROBERT M. YERKE; MELVIN E. HAGGERTY;* Associate Professor HERBERT WOODROW;* Assistant Professors JOSEPH PETERSON, HENRY T. MOORE;* Instructors KARL S. LASHLEY, JOHN D. DODSON, FRANCES LOWELL; Assistant ALICE H. SULLIVAN.

* Absent on leave, 1918-19.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses	
1-2	6	General Psychology	.....Soph., jr., sr.	None	
		Rec. 8	MWF	321F	Peterson
		9	MWF	321F	Peterson
		9	TThS	321F	Lashley
		9	TThS	304F	Lowell
		10	MWF	321F	Dodson
		10	MWF	304F	Lashley
		10	TThS	321F	Lowell
		11	MWF	321F	Dodson
		1	TThS	321F	Lashley
		2	MWF	321F	Lowell
		2	MWF	322F	Lodge
		3	MWF	321F	Dodson
1a	3	General Psychology	.....Soph., jr., sr.	None	
		Ar	TThS	Ar	Dodson
1b	3	General Psychology	.....Soph., jr., sr.	None	
		Ar	TThS	Ar	Dodson
		Music	TThS 9:00	311F	Peterson
101	3	Experimental Psychology	Jr., sr., grad.	1-2	
		4	T	316F	Peterson
		2, 3	TTh	318F	¶
*107	3	Social Psychology	.....Jr., sr., grad.	1-2	
		3	MWF	322F	Peterson

1-2. GENERAL PSYCHOLOGY. The aims and methods of psychology; the facts, laws, and functions of mental life; development and learning in relation to training and instinct. Required for a Teacher's Certificate. PETERSON, LODGE, DODSON, LOWELL.

1a or 1b. ELEMENTS OF PSYCHOLOGY. A brief outline for those who do not intend to take further work in Psychology. DODSON.

***101. EXPERIMENTAL PSYCHOLOGY.** Training course in mental measurements. Prerequisite: Psychology 1-2. PETERSON.

***107. SOCIAL PSYCHOLOGY.** A study of the mental interactions of individuals in society with especial reference to the instinctive emotional basis of human association. PETERSON.

***108. APPLIED PSYCHOLOGY.** A survey of the applications of psychology to law, medicine, salesmanship, advertising, and vocational guidance. Lectures, recitations, group tests. Prerequisite: Psychology 1-2. Three credits. Not given in 1918-19.

SOCIOLOGY AND ANTHROPOLOGY

Professors ALBERT ERNEST JENKS, ARTHUR J. TODD; Associate Professor LUTHER L. BERNARD; Assistant Professor HENRY T. MOORE; Lecturers FRANK J. BRUNO, OTTO W. DAVIS, ARTHUR H. TAYLOR; Superintendents of State Board of Control institutions.

COURSES

No.	Credits	Title	Offered to	Prerequisite courses
1a	3	General Introduction	Soph., jr., sr.	None
		8 MWF	203He	Bernard
		10 MWF	9F	Jenks
		10 TThS	9F	Todd
		2 MWF	301F	Bernard
1b	3	2 MWF	301F	Bernard
6	3	Social Reform Movements	Soph., jr., sr.	1
		10 TThS	9F	Todd
*55	2	Housing Problems	Jr., sr.	1 and 6
		8 MW	124F	Davis
*119	3	The Family	Jr., sr., grad.	9 credits
		9 TThS	5F	

1a,b. GENERAL INTRODUCTION. Elemental activities, institutions, laws, and theories. Especial emphasis placed on descriptive data. Textbook and lectures. JENKS,† BERNARD, TODD.†

6. MODERN SOCIAL REFORM MOVEMENTS. A survey of attempts to overcome certain social maladjustments: child labor, the city, the tenement, poverty, degeneracy; movements for public health, old age pensions, social insurance, the protection of infancy and youth, public recreation, etc. TODD.

*55. HOUSING PROBLEMS. An examination of housing evils and their causes; the various movements for the prevention or improvement of bad housing; town planning; garden cities. Lectures, readings, field work, and essays. DAVIS.

*119. THE FAMILY. The evolution of the family; its various forms and their relation to other social institutions; the service of the family in social evolution; contemporary problems of the family (standards of living, birth rate, feminism, etc.) TODD.

COLLEGE OF ENGINEERING

CIVIL ENGINEERING

Professor FREDERIC H. BASS; Associate Professors ADOLPH F. MEYER, JOHN I. PARCEL; Assistant Professors ALVIN S. CUTLER, FRANKLIN R. McMILLAN,* OTTO S. ZELNER;* Instructor GEORGE A. MANEY.*

COURSES

21. BUILDING SANITATION. The location and orientation of buildings; lighting, ventilation, water supply, plumbing, sewage, and refuse disposal. Two credits. BASS.

* Absent on leave, 1918-19.

† First semester only.

92. MUNICIPAL ENGINEERING. Development of municipal public works. City planning, transportation, and housing. The principles of public health and sanitation. Public water supplies, sewerage and sewage disposal, refuse collection and disposal, the sanitation of buildings. Three credits. BASS.
104. SANITATION ENGINEERING. Quantities of sewage and storm water; precipitation and run off. Sanitary sewer system for a small community; storm water system for a city district. Stream pollution and sewage disposal. Three credits. Prerequisite: Course 92. BASS.
171. CITY PLANNING. Physical elements of the city; topography, drainage, geology. Public works and structures. Street arrangement; rapid transit; railroad terminals. City districting. Sub-surface structures. Esthetic features of the city; civic centers; parks; boulevards; public buildings. Three credits. BASS, MANN.
175. INDUSTRIAL SANITATION. Principles of Public Health. Methods in use for prevention of disease. Sanitation and hospital service in factory buildings and grounds. Housing problems. Welfare work. Two credits. BASS.

MECHANICAL ENGINEERING

Professors JOHN J. FLATHER, JOHN R. ALLEN; Assistant Professors JOHN V. MARTENIS, FRANK B. ROWLEY, S. CARL SHIPLEY; Instructors WILLIAM E. BRYANT, CLARK W. HIRLEMAN, FRANCIS A. HOBART, AMOS F. MOYER, EDWARD P. QUIGLEY, WILLIAM H. RICHARDS.

COURSES

- 7a,b. INDUSTRIAL MANAGEMENT-LABORATORY. An advanced course in shop practice with especial reference to production. Time studies; stores and follow-up systems. Investigations in local factories. Lectures, assigned reading, practice, and reports. Two credits. Prerequisite: Course 111a,b. FLATHER, HOBART.
- 111a,b. INDUSTRIAL MANAGEMENT. Shop and factory organization and management; cost and wage systems. Depreciation of equipment. Machine burden. Time studies. Two credits. FLATHER.

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The Bulletin *of the University of* **Minnesota**

Social and Civic Work
Announcement of Training Course for
1918 - 1919



Vol. XXI No. 20 August 1 1918

*Entered at the post-office in Minneapolis as second-class matter
Minneapolis, Minnesota*

*Acceptance for mailing at special rate of postage provided for in section 1103,
Act of October 3, 1917, authorized July 12, 1918*

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TRAINING COURSE FOR SOCIAL AND CIVIC WORK ORGANIZATION

MARION LEROY BURTON, President of the University
JOHN B. JOHNSTON, Dean of the College of Science, Literature, and the
Arts

ARTHUR J. TODD, Director

LOTUS D. COFFMAN	} Executive Committee
CEPHAS D. ALLIN	
JAMES T. GEROULD	
FRANK J. BRUNO	

FACULTY

WILLIAM ANDERSON, Ph.D., Assistant Professor of Political Science
CAROL ARONOVICI, Ph.D., Director Wilder Foundation, St. Paul, Lecturer
on Social Work

CAROLINE BEDFORD, B.A., Assistant Secretary, Minneapolis Associated
Charities, Supervisor of Case Work

LUTHER L. BERNARD, Ph.D., Associate Professor of Sociology

FRANK J. BRUNO, B.A., B.D., Secretary Minneapolis Associated Charities,
Lecturer on Social Work

LOTUS D. COFFMAN, Ph.D., Professor of Education

OTTO W. DAVIS, B.A., Assistant Secretary Minneapolis Civic and Com-
merce Association, Lecturer on Social Work

GUY STANTON FORD, Ph.D., Dean of the Graduate School

WILLARD E. HOTCHKISS, Ph.D., Professor of Economics

ALBERT E. JENKS, Ph.D., Professor of Anthropology

ALBERT J. LOBB, Ph.B., LL.B., Instructor in Political Science

J. ANNA NORRIS, M.D., Assistant Professor of Physical Education for
Women

JOSEPH PETERSON, Ph.D., Assistant Professor of Psychology

EDWIN C. ROBBINS, Ph.D., Assistant Professor of Economics

ARTHUR H. TAYLOR, M.A., Secretary Children's Protective Society, Lec-
turer on Child Welfare

ARTHUR J. TODD, Ph.D., Professor of Sociology, Director of the Training
Course

MARION E. TEBBETTS, B.A., Supervisor of Hospital Social Service Work
in the University Hospital

MABEL S. ULRICH, M.D., Lecturer on Social Hygiene

EDWARD F. WAITE, B.A., LL.M., Judge of the Hennepin County Juvenile
Court, Lecturer on Juvenile Courts

HERBERT WOODROW, Ph.D., Associate Professor of Psychology

JEREMIAH YOUNG, Ph.D., Professor of Political Science

GENERAL STATEMENT

Because of the growing complexity of modern social and civic problems and the conviction that only increased training and technical skill can handle them effectively, American universities are pressed to offer specialized professional instruction to meet the new demands. While it may be true that social and civic work is not yet a definite profession in the strict sense that medicine, law, and teaching are professions, it is equally true that the first step toward making it truly professional is to base it upon adequate scientific training. In spite of the bewildering variety of problems which confront social workers, there is still underneath them all a certain stratum of common features for which professional training and professional technique can be communicated. It is the conviction that experience has demonstrated this fact which prompts the University of Minnesota to offer the following training course for social and civic work. The war demand for various types of skilled civilian relief work adds a certain timeliness to the announcement. The necessity for maintaining hard-won standards of social work during the war and the enormous work of reconstruction at its close make such a course all the more imperative.

For various reasons this training course has been organized and retained within the College of Science, Literature, and the Arts. Within the regulations of this College, its Faculty and administrative officers exercise primary jurisdiction over the content and methods of the training course. It covers both undergraduate and graduate work. The requirements for both entrance and graduation conform to those of the Arts College. Satisfactory completion of the four years' course leads to the degree of Bachelor of Science.

A fifth year's work is designed to lead primarily to a special certificate of proficiency in social and civic work. But students whose programs satisfy requirements of the training course and the Graduate School may receive both the special certificate and the degree of Master of Arts at the close of the fifth year.

The organization of the course of study aims to give the undergraduate the fundamentals of a broad modern education with considerable emphasis upon history, economics, political science, psychology, and language. To this end, all intensive specialization is reserved for the fourth and later years of study.

The fourth year includes comparatively few required courses, but a long list of advised electives, for which other electives may be substituted according to the individual student's needs. While the four years' course as arranged should confer upon the student a certain degree of familiarity with the problems of social and civic work, really adequate professional preparation demands at least one year of graduate study. With this professional instruction in view, during the fifth and later

years of study only an irreducible minimum of specified courses is required; the emphasis is laid upon providing individual programs to meet the student's special inclination, aptitudes, or need.

To ensure a first hand or clinical acquaintance with social problems and technique, a very considerable part of the student's time in his graduate study is devoted to supervised field work with selected social agencies and institutions in and around the Twin Cities. Moreover, every opportunity is taken to bring to the students specialists and experts from the various fields of social work, in order to build up the professional attitude and to establish professional contacts.

This is a distinctly vocational course. Only those students therefore who display evidences of real capacity and the professional spirit will be encouraged to go on with graduate study. This does not mean that qualified students having a special interest in certain courses are debarred; to the contrary they will be welcomed and every effort will be made to meet their specific needs. Nor does it mean that students who do not plan to earn their living by professional social work are to be denied entrance. As a matter of fact, it is to be devoutly hoped that many students will elect the course as a training for effective citizenship and volunteer social work, or as an adjunct to other vocations.

The course, from this standpoint, is of particular concern to the school superintendent and principal, the nurse, the public health worker, the minister, the factory welfare worker, the librarian, and the Y. M. C. A. leader.

Applicants for admission to the training course must receive the permission of the Director. His decision will be based upon the student's apparent fitness to pursue the work, upon his vocational prospects, and upon the facilities for giving the particular training the student seeks.

Tuition fees are the same as for any Arts course, but the student should count on certain expenditures for car-fare in doing his field practice work and for traveling expenses in visiting out-of-town institutions.

FACILITIES FOR STUDY, FIELD WORK, AND RESEARCH

The University Library is well provided with current literature in the social sciences, including periodicals and government publications, American and foreign. The Minneapolis Public Library and the library of the State Board of Control supplement these resources. A special seminar room is reserved in the library for advanced work in Sociology.

The cities of St. Paul and Minneapolis offer excellent opportunities for supervised field work and research in connection with several types of social agencies: charity organization and family relief, probation, child welfare, compulsory education, housing, hospital social service, recreation, and neighborhood work. The seventeen state institutions under the Board of Control offer an unmatched opportunity to study the various problems of institutional administration. Altogether, Minnesota offers an unusually diversified and attractive range of opportunities for what might

be called clinical observation in social work to supplement the more theoretical and academic phase of training.

Ordinarily the student will devote the first half of his required field work to standard case methods in one of the organized relief agencies; the remainder may be done in such other fields as his prospective line of work would lead him to elect. By a special arrangement with the Board of Control, the following institutions each offer a Training Fellowship of \$500 per year to properly qualified students who wish to do their practice work in some phase of institutional administration: Fergus Falls State Hospital for the Insane; Home School for Girls, Sauk Center.

The following outline curriculum will give an idea of the content of the course and of the general sequence of studies. The list of electives may be supplemented by others according to the needs or capacities of the student. Each student's program will be worked out in conference with the Director.

Particular attention is called to two new courses. The course on Elements of Law is designed especially for social workers. Every student should elect it as it touches the private-law background of every field of social work. The new course on Social Hygiene and Community Protection is primarily a war course but has in it also elements meeting permanent and pressing civilian community needs.

COURSE OF STUDY

FIRST-YEAR STUDIES

Required

Rhetoric, modern language, science, and History to meet requirements of the Arts College
Attendance (without credit) at a series of lectures on graphic methods

Elective

Courses open to freshmen in languages, History, science, or Mathematics

SECOND-YEAR STUDIES

Required

Modern language or English, and a year of science to meet requirements of the Arts College
Introduction to Sociology and Anthropology
General Psychology or Elements of Psychology
General Economics
American Government

Elective

Cultural Anthropology
Modern Social Reform Movements
Logic or Ethics
Courses in History

THIRD-YEAR STUDIES

Required

Treatment of Defectives and Dependents
Treatment of Delinquents
Child Welfare
Housing
Labor Problems

Elective

Courses in English, modern language, or History
Social Aspects of Education
History of Education
Rural Sociology

American Municipal Administration
(European Municipal Administration
should be elected if possible)

Social Psychology
State Care of Dependents, Defectives,
and Delinquents
Physical Anthropology
The Negro
Socialism
Wages
Trade Unions
State and Local Government
Business Law
General Bacteriology
Courses on Public Health
Elements of Law

FOURTH-YEAR AND GRADUATE STUDIES

Required

Social Psychology (if not already
elected)
Social and Industrial Legislation
Police Power
Social Statistics and Social Surveys
The Family
Social Progress
Methods of Community Organization
and Social Work in Small Towns and
Country.

(SPECIAL NOTE)

For a fifth year's work consisting of
9 hours class work and 12 hours of
supervised field work per week for
two semesters the student will re-
ceive a special certificate. He will be
eligible for the Master's degree if his
program is approved by the Graduate
School and if he prepares a satisfac-
tory thesis in addition to the work
required for the special certificate.

Elective

The American People
Field Work in Hospital Social Service
Charitable Administration, Finance, and
Publicity
Technique of Family Treatment
Juvenile Courts and Probation
Settlement and Social Center Work
The Immigrant
Seminars in Sociology and Anthro-
pology
Courses on Recreation and Playground
Work
Courses on Public Health
Principles of Accounting
Public Finance
Statistics
Constitutional Law
Legislative Power and Methods
Eugenics
Abnormal Psychology
Mental Retardation
Child Development
Courses on Education if not already
elected
Hygiene of the Family
Courses in Home Economics (especially
Dietetics and Household Administra-
tion)
Sanitary Engineering

COURSE SCHEDULE

No.	Credits	Title	Offered to	Prerequisite courses
45-46	1	Elements of Social Hygiene and Community Protective Work	Jr., sr. 9F	Soc. and An. 1 Todd, Coffman, Ulrich
	4	W		
51	3	Treatment of Dependents and Defectives	Jr., sr. 9F	Soc. and An. 1 or 6 Bruno
	8	TThS		
*52	3	Child Welfare	Jr., sr. 9F	Social Work 51 Taylor
	11	TS Third hr. ar.		
*53	3	Treatment of Delinquents.	Jr., sr., grad. 9F	Soc. and An. 1 or 6, and Psychol. 1-2 Todd
	9	MWF		
*55	2	Housing Problems	Jr., sr. 124F	Soc. and An. 1 and 6 Davis
*104	2	State Care of Dependents, Defectives, and Delinqts.	Jr., sr., grad. 9F	Soc. Work 51 and 52 or 53 Todd and supts.
	3, 4	F		
*110	2	Methods of Community Organization and Social Work in Small Towns and Country (formerly number 108)	Sr., grad. 12F	2 courses in this Dept. Todd and Bernard
	4, 5	Th		
*122	2	Social Statistics and Social Surveys	Sr., grad. 12F	2 courses in this Dept. Aronovici
	4, 5	W		
*125	2	Settlement and Community Center Work	Sr., grad. 12F	2 courses in this Dept. Aronovici
	4, 5	W		
*126	2	Settlement and Community Center Work (practice work)	Sr., grad.	Consent of Director and Course 125
	Ar	Ar	Ar	Ar
128	2	Charitable Admin., Finance, and Publicity	Sr., grad. 12F	2 courses in this Dept. Davis
	4, 5	F		
*130	2	Technique of Family Treatment	Sr., grad. 12F	Social Work 51 and 52 Bruno
	4, 5	T		
*132	2	Juvenile Courts and Probation	Sr., grad. 9F	Soc. Work 51 or 52, 53 Todd, Waite
	8	MW & app't.		
*133-134	2	Field Work in Hospital Social Service	Sr., grad.	Consent of Director Tebbetts
		By appointment		
*221-222	0	Graduate Field Practice Work	Grad.	Consent of Director Bedford
		By appointment		

COURSES OF INSTRUCTION

The following list of courses in no way pretends to do more than indicate certain professional and semi-professional subjects which social workers have found it practicable to cover. Descriptive details omitted in this outline will be found in departmental course announcements in the general bulletin of this College. Numbers in parentheses indicate identical courses in department lists.

THIRD-YEAR COURSES

SOCIAL WORK

- 45-46. ELEMENTS OF SOCIAL HYGIENE AND COMMUNITY PROTECTIVE WORK. A course to meet war needs from the standpoint of organizing community forces for social hygiene, recreation, and constructive policing. Professors COFFMAN, TODD, Dr. ULRICH.
51. TREATMENT OF DEPENDENTS AND DEFECTIVES. The extent and nature of poverty and mental defectiveness; efforts made for their amelioration and prevention. Mr. BRUNO. (Soc. 9.)
52. CHILD WELFARE. Study of social obligations to the child; development of the child-saving movement in the United States; infant and child mortality, recreation, education; courts, institutions, societies, and other public efforts for the child. Mr. TAYLOR. (Soc. 10.)
53. TREATMENT OF DELINQUENTS. The causes of crime; nature of criminal procedure; methods of treatment (prisons, reformatories, parole, probation); the juvenile offender; juvenile courts; preventive methods. Professor TODD. (Soc. 106a.)
55. HOUSING PROBLEMS. An examination of housing evils and their causes; the various movements for the prevention or improvement of bad housing; town planning; garden cities. Lectures, readings, field work, and essay. Mr. DAVIS. (Soc. 11.)
104. STATE CARE OF DEPENDENTS, DEFECTIVES, AND DELINQUENTS IN MINNESOTA. Organization, machinery, and function of such institutions as the state hospitals, asylums, training schools, prison, schools for the feeble-minded, the blind, and the deaf. Lectures and readings. Professor TODD and experts from the institutions.

SOCIOLOGY AND ANTHROPOLOGY

14. THE RURAL COMMUNITY. Associate Professor BERNARD.
110. PHYSICAL ANTHROPOLOGY. Professor JENKS.
112. THE AMERICAN NEGRO. Professor JENKS.
117. SOCIAL PSYCHOLOGY. Assistant Professor PETERSON.

ECONOMICS

- 161. LABOR PROBLEMS. Assistant Professor ROBBINS.
- 165. HISTORY AND THEORY OF SOCIALISM.
- 168. WAGES.

POLITICAL SCIENCE

- 5. EUROPEAN MUNICIPAL ADMINISTRATION. Professor ANDERSON.
- 6. AMERICAN MUNICIPAL ADMINISTRATION. Professor ANDERSON.
- 7a,b. STATE AND LOCAL GOVERNMENT. Professors YOUNG and ANDERSON.
- 48. ELEMENTS OF LAW. Mr. LOBB.
- 51-52. BUSINESS LAW. Professor YOUNG.

EDUCATION

- 1a,b. BRIEF COURSE IN THE HISTORY OF EDUCATION. Professor SWIFT.
- 3a,b. SOCIAL ASPECTS OF EDUCATION. Professor RANKIN.

FOURTH-YEAR AND GRADUATE COURSES

SOCIAL WORK

- 122. SOCIAL STATISTICS AND SOCIAL SURVEYS. Methods of gathering and presenting community facts. Lectures, problems, and field work. Dr. ARONOVICI.
- 125-126. SETTLEMENT AND COMMUNITY CENTER WORK. Leisure time problems, organization of community centers, public forums and Americanization work. Lectures and practice work. Only selected students with consent of the Director may register for the second-semester course. Dr. ARONOVICI.
- 128. CHARITABLE ADMINISTRATION, FINANCE, AND PUBLICITY. A technical study of methods of organizing charitable agencies, of financing them, and of making the public aware of their work. Lectures and practice work. Mr. DAVIS.
- 130. TECHNIQUE OF FAMILY TREATMENT. An intensive study of case work as the basis of practical dealing with problems of dependency and delinquency. Lectures and conferences. Mr. BRUNO.
- 132. JUVENILE COURTS AND PROBATION. Primarily a course in probation practice work, but prefaced by lectures on the social and legal aspects of the juvenile court. Professor TODD, Judge WAITE.
- 133-134. FIELD WORK IN HOSPITAL SOCIAL SERVICE. A course open only to students who are properly grounded in case work and who wish to specialize in this field. Miss TEBBETTS.

221-222. GRADUATE FIELD TRAINING. Twelve hours per week, each semester. Open to fifth-year students only. Miss BEDFORD.

SOCIOLOGY AND ANTHROPOLOGY

113-114. THE AMERICAN PEOPLE. Professor JENKS.

119. THE FAMILY. Professor TODD.

120. SOCIAL PROGRESS. Professor TODD.

ECONOMICS

35-36. PRINCIPLES OF ACCOUNTING. Dr. HARPER.

191. PUBLIC FINANCE. Assistant Professor BLAKEY.

POLITICAL SCIENCE

106. LEGISLATIVE POWER AND METHODS.

108. THE POLICE POWER. Professor YOUNG.

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The Bulletin *of the University of* **Minnesota**

The College of Engineering and
Architecture
Announcement for the Year
1918 - 1919



Vol. XXI No. 10 June 6 1918

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in Minneapolis as second-class matter
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1918							1919													
JULY							JANUARY							JULY						
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	..	..
..
AUGUST							FEBRUARY							AUGUST						
..	..	..	..	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	..	..	..	..	..	..
SEPTEMBER							MARCH							SEPTEMBER						
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	..	..	..	..	..	..	..	..	..	..	..	..
OCTOBER							APRIL							OCTOBER						
..	..	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	..
..
NOVEMBER							MAY							NOVEMBER						
..	..	..	..	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	..	..	..	..	..	..
DECEMBER							JUNE							DECEMBER						
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
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UNIVERSITY CALENDAR

1918-1919

1918

September	11	Wednesday	Registration closes except for new students
September	11-18	Week	Fees payable except for new students
September	17-24	Week	Examinations for removal of conditions and entrance examinations
September	23-24		Registration and payment of fees for new students
September	25	Wednesday	First semester begins
September	30	Monday	First semester evening extension classes begin
October	17	Thursday	Senate meeting, 4:00 p.m.
November	5	Tuesday	General Election Day; a holiday
November	27	Wednesday	Thanksgiving recess begins 9:00 p.m.
December	2	Monday	Thanksgiving recess ends 8:00 a.m.
December	21	Saturday	Christmas vacation begins 12 m.

1919

January	2	Thursday	Christmas vacation ends 8:00 a.m.
January	20	Monday	Second semester registration closes except for new students
January	24	Friday	First semester evening extension classes close
January	27	Monday	Final examinations begin
January	27	Monday	Payment of second semester fees closes except for new students
January	31	}	Registration and payment of fees for new students
February	1		
February	3	Monday	Second semester begins
February	3	Monday	Second semester evening extension classes begin
February	12	Wednesday	Lincoln's Birthday; a holiday
February	20	Thursday	Senate meeting, 4:00 p.m.
February	22	Saturday	Washington's Birthday; a holiday
April	17	Thursday	Easter recess begins 9:00 p.m.
April	22	Tuesday	Easter recess ends 8:00 a.m.
April	22-28	Week	Condition examinations in certain colleges
May	15	Thursday	Senate meeting, 4:00 p.m.
May	23	Friday	Final examinations begin 2:00 p.m.
May	23	Friday	Second semester evening extension classes close
May	30	Friday	Memorial Day; a holiday
May	31	Saturday	Second semester closes

4 COLLEGE OF ENGINEERING AND ARCHITECTURE

June	1	Sunday	Baccalaureate service
June	2	Monday	Senior Class Day exercises
June	4	Wednesday	Alumni Day
June	5	Thursday	Forty-seventh Annual Commencement
June	6	Friday	Summer vacation begins
June	16	Monday	Summer Session begins

The University year for 1919-20 will begin Tuesday, September 16. Classes will begin September 24.

Schedule of Condition Examinations for Students of the College of Engineering and Architecture

September, 1918,			April, 1919		
Wednesday,	18,	a.m.	Physics, Chemistry, Geology	p.m.	Tuesday, 22
Thursday,	19,	a.m.	Mathematics and Me- chanics	p.m.	Wednesday, 23
Friday,	20,	a.m.	Drawing and Descriptive Geometry	p.m.	Thursday, 24
Saturday,	21,	a.m.	Civil Engineering, Elec- trical Engineering, Me- chanical Engineering, Architecture	p.m.	Friday, 25
Monday,	23,	a.m.	Experimental Engineer- ing, Rhetoric.....	p.m.	Saturday, 26
Tuesday,	24,	a.m.	Language	a.m.	Monday, 28

Morning examinations are at nine o'clock, afternoon examinations at two o'clock.

Condition examinations are ordinarily held in the classrooms of the respective departments. The fee is one dollar. Students purposing to take such examinations are to notify the department concerned in advance, and make all arrangements with the particular instructor. Where conflicts occur in examination periods, arrangements should be made with the instructors concerned for a new schedule of time.

Condition examinations at times other than those scheduled require faculty authorization as Special Examinations, and involve a fee of five dollars.

THE COLLEGE OF ENGINEERING AND ARCHITECTURE

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RAY CUNNINGHAM, Adjutant and Assistant Commandant
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HENRY A. ERIKSON, B.F.E., Ph.D., Professor of Physics 424 S. E. Harvard St.

* On leave of absence.

6 COLLEGE OF ENGINEERING AND ARCHITECTURE

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217 S. E. Harvard St.
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- EVERHART P. HARDING, Ph.D., Associate Professor of Chemistry
817 S. E. Essex St.
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- PAUL E. KLOPSTEG, Ph.D., Assistant Professor of Physics
1026 15th Ave. S. E.
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827 University Ave. S. E.
- LOUIS W. MCKEEHAN, Ph.D., Associate Professor of Physics
930 17th Ave. S. E.
- *FRANKLIN R. McMILLAN, C.E., Assistant Professor of Structural En-
gineering
- FREDERICK M. MANN, C.E., M.S. in Arch., Professor of Architecture
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- JOHN V. MARTENIS, M.E., Assistant Professor of Mechanical Engineering
215 S. E. Harvard St.
- ADOLPH F. MEYER, C.E., Associate Professor of Hydraulic Engineering
1467 Ashland Ave., St. Paul
- THOMAS W. MITCHELL, Ph.D., Assistant Professor of Business Adminis-
tration 2349 Bourne Ave., St. Paul
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- EVERETT W. OLMSTED, Ph.D., Professor of Romance Languages
2727 Lake of the Isles Blvd.
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* On leave of absence, 1918-19.

FACULTY

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- RUTH S. PHELPS, M.A., Assistant Professor of Romance Languages
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2801 Girard Ave. S.
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- JEFFERSON M. HAMILTON, Instructor in Architecture
- CLARK W. HIRLEMAN, M.E., Instructor in Mechanical Engineering

8 COLLEGE OF ENGINEERING AND ARCHITECTURE

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- J. THORSTEN LINDBERG, Special Lecturer in Architecture
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- EDWARD P. QUIGLEY, Instructor in Forge Work 2223 Chicago Ave.
- WILLIAM H. RICHARDS, Instructor in Carpentry and Pattern Work 1423 W. 27th St.
- BERT A. ROSE, Instructor of Cadet Band 710 S. E. 7th St.
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- HARRY W. DIXON, Engineer, Assistant in Power Plant Operation 1800 4th St. S. E.
- RIVERDA H. JORDAN, Assistant in Rhetoric 74 S. E. Bedford St.
- J. WARREN STEHMAN, M.A., Instructor in Economics 503 Washington Ave. S. E.

SPECIAL LECTURERS IN ELECTRICAL ENGINEERING

- FRED DUSTIN, Former Electrical Inspector, City of Minneapolis
 "Practical Operation of the Rules for Safe Electrical Construction."
- P. G. DOWNTON, Electric Storage Battery Company
 "Electric Vehicles and Batteries"

* On leave of absence.

GENERAL INFORMATION

The College of Engineering and Mechanic Arts was authorized under the legislative act of 1868, and courses in Civil and Mechanical Engineering were first offered in 1871. A course in Electrical Engineering was first offered in 1887. In 1912 the name of the College was changed to the College of Engineering and Architecture, and an Architectural course was established.

DEGREES

The College of Engineering and Architecture offers a four-year course of study in General Engineering, and in Civil, Mechanical, and Electrical Engineering, also in Architecture. These courses lead to the degree of Bachelor of Science in Engineering or Architecture.

There is also offered a fifth year upon completion of which the student receives the degree of Civil, Mechanical, or Electrical Engineer, or Architect. This College also offers work in the Graduate School leading to the degree of Master of Science in Engineering.

THE PURPOSES OF THE COLLEGE

The purpose of this College is to give the student a broad foundation in the fundamental principles of engineering together with sufficient knowledge of professional practice to enable him to apply these principles. It is not possible in college to educate a fully trained engineer, as the application of engineering principles to the practice of engineering can only be learned through experience. There are certain subjects, such as surveying, drafting, and shop work in which a certain proficiency is acquired. These subjects enable a student upon graduation to fill satisfactorily a subordinate position until he has obtained experience.

The course in General Engineering is for those students desiring to take broad training without specializing in any particular branch of engineering.

The character of engineering work has been undergoing many changes, and the engineer is now filling many commercial and executive positions in manufacturing establishments. With these changing demands upon the engineer, the College is emphasizing more and more the commercial training and the commercial application of engineering principles.

The College endeavors to have its technical courses taught by experts in each particular branch who have had considerable practical experience in addition to their technical training.

EXTENSION WORK

Extension courses are offered in Architecture and Engineering. For definite information regarding extension work attention is directed to the Bulletin of the General Extension Division of the University.

ENTRANCE REQUIREMENTS

The entrance requirements of the College of Engineering are given in detail beginning page 11 of this Bulletin.

SPECIAL STUDENTS

In exceptional cases applicants are admitted to the college to pursue, under the direction of the faculty, special lines of study. Such students must be of mature years, and shall give satisfactory evidence of ability to do with credit the work applied for. Admission to the college of students of this class requires in each specific case a vote of the faculty.

ADVANCED STANDING

Students who have pursued courses of study in other colleges of recognized standing may receive advanced credit under the rules of the University and of the College.

CREDIT HOUR

A *credit hour* refers to a unit of time as part of a week's work. One credit hour means three actual hours of work each week. If a one credit hour subject is presented in a recitation period, it is assumed that the student will give two hours to the preparation of this hour of classroom work. Where the subject is given in laboratory, shop, or drafting room, the time spent by the student in class is three actual hours for each credit hour.

A *semester credit hour* is one credit hour a week extending through a semester.

FEES AND EXPENSES

The annual fee for students in this college is sixty dollars. See Bulletin of General Information for details, and for statements of the cost of living.

SCHOLARSHIPS AND PRIZES

For scholarships and prizes in this college, see the Bulletin of General Information. Special attention is called to the Free and Service Scholarships mentioned in the Bulletin of General Information.

THESES

Every candidate for the degree of Engineer or Architect is required to prepare a thesis on some subject particularly relating to his course. The thesis must embody the result of some research made by him, a special design, or an original report upon some engineering or architectural problem. It must be creditable from a literary, as well as from a technical, point of view.

CHANGES IN BULLETIN

The faculty of the College of Engineering and Architecture reserves the right to cancel or change without notice, any course printed in this

Bulletin. The Bulletin is a statement of present conditions, and is subject to modification in any particular by faculty action.

ENTRANCE REQUIREMENTS

- | | |
|--|---------|
| 1. English | 4 units |
| or | |
| { English | 3 units |
| and | |
| { Foreign language | 2 units |
| 2. Elementary Algebra | 1 unit |
| Plane Geometry | 1 unit |
| 3. Enough additional work to make in all 15 units, of which not more than 4 may be in Group F. | |

High-school students desiring to enter this College are urged to take Advanced Algebra, Solid Geometry, and Chemistry in high school. Students entering with deficiencies in these subjects will be required to take courses covering these deficiencies in the University before they can proceed with other work for which these are prerequisites.

Students looking forward to the study of Architecture will find it to their advantage to take freehand drawing in high school, to elect French as a language, and to cover the field of general history as far as possible.

LIST OF ENTRANCE SUBJECTS

Only those subjects included in the following groups may be counted toward admission.

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.

GROUP A. ENGLISH: three or four units.

GROUP B. LANGUAGES: Latin, Greek, German, French, Italian, Spanish, Scandinavian, one to four units each.

GROUP C. HISTORY AND SOCIAL SCIENCES: Ancient and Modern History, one unit each; English and Senior American History, one-half unit each; American Government, Economics, Economic History of England, and Economic History of the United States, one-half unit each; Commercial Geography and History of Commerce, one-half or one unit each.

GROUP D. MATHEMATICS: Elementary Algebra and Plane Geometry, one unit each; Higher Algebra, Solid Geometry, and Trigonometry, one-half unit each.

GROUP E. NATURAL SCIENCES: Physics and Chemistry, one unit each; Botany and Zoology, one-half or one unit each; Physiology, Astronomy, Geology, and Physiography, one-half unit each.

GROUP F. VOCATIONAL SUBJECTS: Business Law and Business Arithmetic, one-half unit each; Elementary and Advanced Bookkeeping, one unit each; Stenography and Typewriting, one or two units. Freehand

Drawing, Mechanical Drawing, and Shopwork, one or two units each. Agriculture, one to four units. Normal Training subjects, one to three units, provided the applicant has had one year of subsequent teaching experience.

ASSEMBLIES AND MENTOR SYSTEM

A mentor system has been introduced in this College in order to bring about a closer relation between the student and the faculty. Each member of the freshman class is assigned to some member of the faculty as his adviser. The relation of the adviser to the student is to be that of elder brother to whom the student can go at all times for advice and counsel. All students' reports are sent to the adviser so that the student and adviser can keep in intimate contact. The adviser is also expected to keep in touch with the parents of the student whenever it may seem necessary.

The assembly system is closely connected with the mentor system. Each week the freshman class is called together and transacts its class business and also listens to talks by various members of the University faculty, visiting engineers, and others. This is done in order that the class may be more closely organized and that the student may have a better idea of the University as a whole.

COURSES OF STUDY

CIVIL, MECHANICAL, ELECTRICAL, AND GENERAL ENGINEERING

The freshman year is the same for all Engineering and General or Business Courses. The freshman year for Architecture is given on pages 23 and 25.

FRESHMAN YEAR*

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Math. 71a, College Algebra and Trigonometry.....	5	5	..	..	10
Drawing 3, Engineering Drawing.....	3	..	1	8	..
Rhetoric 3, Rhetoric and Composition.....	3	3	..	..	6
Chemistry 29, Chemistry for Engineers.....	3	1	1	4	2
Mechanical Eng. 1, Elementary Shop Practice....	2	..	1	5	..
Personal Hygiene and First Aid I.....	1	..	1	2	..
Military Drill	1	..	..	3	..

Second Semester

Math. 72a, Analytic Geometry.....	5	5	..	..	10
Drawing 4, Descriptive Geometry.....	3	..	1	8	..
Rhetoric 4, Rhetoric and Composition.....	3	3	..	..	6
Chemistry 30, Chemistry for Engineers.....	3	1	1	4	3
Mechanical Eng. 2, Elementary Shop Practice....	2	..	1	5	..
Military Drill	1	..	..	3	..
Summer Reading (optional)	1	..	..	..	..

All students pursuing the above courses register for Engineering Mathematics 71a in the first semester. At the end of two weeks' trial those who, by reason of inadequate preparation or undeveloped mathematical insight, are judged unable to carry the work successfully, are re-registered in Engineering Mathematics 69-70, in which the intensive work of Engineering Mathematics 71a is expanded into a course covering the full year. The resulting deficiency in Engineering Mathematics 72 must be made up in the Summer School.

* Students who expect to take the General Course in Engineering and specialize in architectural work, should register for Drawing 9 and 10 instead of Drawing 3 and 4.

CIVIL ENGINEERING

SOPHOMORE YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Math. 73a, Differential Calculus.....	5	5	..	..	10
Physics 7, General Physics.....	4	3	1	..	8
Physics 9, General Lab. Practice.....	1	..	..	2	1
Drawing 5, Graphics	2	..	..	6	..
Civil Eng. 1, Surveying.....	3	..	1	8	..
Geology 1, General Geology.....	3	3	..	..	6
Military Drill	1	..	..	3	..

Second Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Math. 74, Integral Calculus.....	5	5	..	..	10
Physics 8, General Physics.....	4	3	1	..	8
Physics 10, General Lab. Practice.....	1	..	..	2	1
Drawing 6, Graphics.....	2	..	..	6	..
Civil Eng. 2, Surveying.....	3	..	1	8	..
Approved Elective	3	..	..	..	..
Military Drill	1	..	..	3	..

JUNIOR YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Mech. 75, Tech. Mechanics, Statics.....	3	3	..	..	6
Mech. 151, Mechanics of Materials.....	3	3	..	..	6
Exp. Eng. 101, Materials Test. Lab.....	2	..	..	4	2
Civil Eng. 51, Stresses in Structures.....	3	1	..	4	4
Civil Eng. 91, Highways and Pavements.....	2	1	..	3	2
Civil Eng. 3, Surveying.....	2	..	..	6	..
Approved Elective	3	..	..	..	..

Second Semester

Mech. 76, Tech. Mechanics, Dynamics.....	3	3	..	..	6
Mech. 152, Hydraulics.....	3	3	..	..	6
Exp. Eng. 102, Elementary Laboratory.....	2	..	..	4	2
Civil Eng. 52, Elem. Structural Design.....	2	..	..	6	..
Civil Eng. 92, Municipal Engineering.....	3	1	2	..	6
Civil Eng. 4, Surveying.....	2	..	2	4	..
Approved Elective	3	..	..	..	..

SUMMER CAMP

Civil Engineering 6, Summer Camp in Surveying, 6. Summer Camp in Surveying is held during the vacation period preceding the senior year, and is in session five weeks.

SENIOR YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Civil Eng. 121, Hydrology.....	3	2	1	2	4
Civil Eng. 103, Water Supply.....	3	1	..	6	2
Civil Eng. 111, Railway Engineering.....	3	2	..	3	4
Civil Eng. 151, Bridge Analysis.....	3	..	..	4	5
Civil Eng. 157, Reinforced Concrete.....	3	..	..	3	6
Approved Elective	3	..	..	..	..

Second Semester

Civil Eng. 122, Water Power.....	3	..	2	4	3
Civil Eng. 104, Sanitary Engineering.....	3	1	..	6	2
Civil Eng. 152, Bridge Design.....	3	..	..	9	..
Electrical Eng. 156, Electric Power.....	3	..	..	..	..
Approved Technical Elective.....	3	..	..	..	..
Approved Elective	3	..	..	..	..

COURSES OF STUDY

15

POST-SENIOR YEAR

Thesis required, and additional work each semester to aggregate eighteen credit hours. The electives of the post-senior year must be selected in advance in an approved logical order of groupings which will develop intensively the specialized fields of Engineering studied. The thesis also should bear on the general field covered by the electives, and extends through the year.

The following arrangements are presented as suggestions, but in no wise limit the combinations which may be chosen.

GENERAL

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Civil Eng. 155, Structural Design.....	3	..	..	5	4
Civil Eng. 223, Hydraulic Design.....	3	..	1	6	2
Exp. Engineering, 109 (Concrete Lab.).....	3	..	..	..	..
Electrical Engineering	3	..	..	..	..
Rhetoric 31, Technical Writing.....	3	..	..	..	..
Thesis	3	..	..	..	..

Second Semester

Civil Eng. 274, Sanitary Design.....	3	..	..	9	..
Civil Eng. 224, Special Hydraulic Prob.	3	..	..	9	..
or					
Civil Eng. 232, River Improvement.....	3	2	1	..	6
Civil Eng. 158, Reinf. Conc. Des.	3	..	..	9	..
or					
Exp. Eng. 110 (Structural and Conc. Lab.).....	3	..	..	..	..
Rhetoric 41b, Public Speaking.....	3	..	..	..	..
Thesis	3	..	..	..	..

STRUCTURAL

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Civil Eng. 155, Structural Design.....	3	..	..	5	4
Civil Eng. 201, Adv. Theory of Struct.	3	..	..	4	5
Exp. Engineering 109 (Concrete Lab.).....	3	..	..	..	..
Logic	3	..	..	..	..
Rhetoric 31, Technical Writing.....	3	..	..	..	..
Thesis	3	..	..	..	..

Second Semester

Civil Eng. 156, Structural Design.....	3	..	..	6	3
Civil Eng. 202, Adv. Theory of Struct.....	4	..	..	6	6
Exp. Engineering 110 (Struct. and Conc. Lab.)..	3	..	..	..	..
Rhetoric 41b, Public Speaking.....	3	..	..	..	..
Thesis	5	..	..	..	..

MUNICIPAL

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Civil Eng. 171, City Planning.....	3	1	..	6	2
Civil Eng. 273, Building Sanitation.....	3	1	..	6	3

	Credits	Rec.	Lect.	Lab.	Prep.
Zoology 1, Biology	3	..	..	..	..
Chemistry 109, Water Analysis.....	3	..	..	..	..
Mech. 153, Thermodynamics.....	3	..	..	..	..
Thesis	3	..	..	..	..

Second Semester

Civil Eng. 274, Sanitary Design.....	3	..	..	9	..
Exp. Engineering	3	..	..	..	..
Bacteriology 58, General Bacteriology.....	4	..	..	..	..
Mech. Eng. 127b, Power Plant Design.....	3	..	..	..	..
Thesis	5	..	..	..	..

RAILWAYS

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Civil Eng. 213, Railway Engineering.....	3	1	..	6	2
Civil Eng. 155, Structural Design.....	3	..	..	5	4
Electrical Eng.	3	..	..	..	..
Mech. Eng. 129, Steam Engines and Boilers.....	3	..	..	..	..
Economics 145, Mod. Business Corporations.....	3	..	..	..	..
Thesis	3	..	..	..	..

Second Semester

Civil Eng. 214, Railway Engineering.....	3	1	..	6	2
Metallurgy 158, Metallography for Engrs.	3	..	..	..	..
Exp. Engineering 110, (Struct. and Conc. Lab.)..	3	..	..	..	..
Mech. Eng. 138, Contracts and Specifications....	1	..	..	..	..
Economics 74, Railway Problems.....	3	..	..	..	..
Thesis	5	..	..	..	..

MECHANICAL ENGINEERING

For freshman year, see page 13

SOPHOMORE YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Math. 73a, Differential Calculus.....	5	5	..	..	10
Physics 7, General Physics.....	4	3	1	..	8
Physics 9, General Lab. Practice.....	1	..	..	2	1
Drawing 7, Graphics.....	2	..	..	6	..
Mech. Eng. 19, Mechanical Technology.....	1	..	2	..	1
Mech. Eng. 3, Shop.....	3	..	1	7	1
Option	2	..	..	..	..
Military Drill	1	..	..	3	..

Second Semester

Math. 74, Integral Calculus.....	5	5	..	..	10
Physics 8, General Physics.....	4	3	1	..	8
Physics 10, General Lab. Practice.....	1	..	..	2	1
Drawing 8, Graphics.....	2	..	..	6	..
Chemistry 38, Power Plant Chemistry.....	3	1	1	4	3
Mech. Eng. 6, Shop.....	2	..	1	4	1

COURSES OF STUDY

	Credits	Rec.	Lect.	Lab.	Prep.
Option	2	..	..	..	..
Military Drill	1	..	..	3	..
Mech. Eng. 5, Summer Shop.....	4	..	..	44*	..
Summer Reading (Optional).....	1	..	..	..	..

JUNIOR YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Mech. 75, Tech. Mechanics, Statics.....	3	3	..	..	6
Mech. 151, Mechanics of Materials.....	3	3	..	..	6
Exp. Eng. 101, Materials Testing Lab.	2	..	..	4	2
Mech. Eng. 15, Mechanism and Kinematics.....	4	3	..	3	6
Economics 11, Modern Economic Problems for Engineers	3	3	..	..	6
Option	3	..	..	..	..

Second Semester

Mech. 76, Tech. Mechanics, Dynamics.....	3	3	..	..	6
Mech. 152, Hydraulics.....	3	3	..	..	6
Exp. Eng. 102, Elementary Laboratory.....	2	..	..	4	2
Mech. Eng. 116, Machine Design.....	4	1	1	8	2
Economics 12, Modern Economic Problems for Engineers	3	3	..	..	6
Option	3	..	..	..	..

SENIOR YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Mech. Eng. 129, Steam Engines and Boilers.....	3	3	..	..	6
Exp. Eng. 103, Steam and Power Lab.....	2	..	..	4	2
Elect. Eng. 157, Electric Power, D. C.	3	2	..	3	4
Mech. Eng. 117, Mach. Design, V. Gears.....	2	..	..	6	..
Metallurgy 157, Metallography.....	3	1	1	3	1
Political Science 25, Am. Gov't.....	3	..	..	..	6
Approved Elective	3	..	..	..	..

Second Semester

Mech. Eng. 124, Int. Combustion Eng.....	3	3	..	..	6
Exp. Eng. 104, Power and Gas Eng. Lab.....	2	..	..	4	2
Elect. Eng. 158, Electric Power, A. C.	3	2	..	3	4
Mech. Eng. 132, Meas. of Power.....	2	2	..	2	2
Civil Eng. 50, Elements of Structures.....	3	..	..	..	..
Political Science 26, Business Law.....	3	..	..	..	6
Approved Electives	2 or 3	..	..	..	..

POST-SENIOR YEAR

First Semester

Required of all

	Credits	Rec.	Lect.	Lab.	Prep.
Mech. Eng. 111, Industrial Management.....	2	1	1	..	4
Mech. Eng. 115, Power Engineering.....	3	2	..	4	3

* The Summer Course in Shop is held during the vacation period following the sophomore year, and is in session for four weeks.

18 COLLEGE OF ENGINEERING AND ARCHITECTURE

	Credits	Rec.	Lect.	Lab.	Prep.
Mech. Eng. 133, Heating and Ventilating.....	2	2	..	..	4
Exp. Eng. Engineering Laboratory.....	3	..	..	6	3
Mech. 153, Thermodynamics.....	3	3	..	..	6
Approved Elective	0-3	..	..	..	..
Options	3-5	..	..	..	..

Second Semester

Mech. Eng. 138, Contracts and Specif.....	1	1	..	..	2
Exp. Eng., Engineer. Lab. or equivalent.....	3	..	..	..	..
Civil Eng. 162, Reinforced Concrete.....	2	2	..	..	4
Mech. 154, Steam and Water Turbines.....	3	3	..	..	6
Thesis	3	..	..	9	..
Approved Elective	0-3	..	..	..	..
Options	3-5	..	..	..	..

Options must be selected from one of the following groups at the beginning of the fifth year.

Electives may be selected from any optional group, or an approved free elective may be chosen.

Total credits not less than 18 nor more than 20.

POST-SENIOR OPTIONS IN RAILWAY MECHANICAL ENGINEERING

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Mech. Eng. 139, Railway Technology.....	2	..	..	4	2
Mech. Eng. 141, Railway Design.....	3	..	..	8	1
Mech. Eng. 143, Locomotive Construction.....	1	1	..	..	2
Elect. Eng. 113, Electric Railways.....	2	..	..	..	..
Civil Eng. 213, Railway Engineering.....	3	..	..	..	..
Economics 73, Railway Problems.....	3	3	..	..	6

Second Semester

Mech. Eng. 142, Railway Design.....	3	..	..	8	1
Mech. Eng. 144, Locomotive Construction.....	1	1	..	..	2
Mech. Eng. 145, Locomotive Road Testing.....	3	..	..	9	..
Elect. Eng. 228, Stm. Ry. Electrification.....	2	..	..	..	..
Economics 74, Railway Problems.....	3	3	..	..	6
Metallurgy 162, Adv. Metallography.....	3	1	1	6	1

POST-SENIOR OPTIONS IN INDUSTRIAL ENGINEERING

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Mech. Eng. 7a, Industrial Managmt. Lab.....	2	..	..	4	2
Mech. Eng. 125, Tool Design.....	3	..	..	6	3
Civil Eng. 175, Industrial Sanitation.....	2	..	2	..	4
Economics 34, Business Management.....	3	1	2	..	6
Economics 35, Accounting.....	3	..	..	..	..

Second Semester

Mech. Eng. 7b, Industrial Managmt. Lab.....	2	..	..	4	2
Mech. Eng. 125, Tool Design.....	2	..	..	6	3

COURSES OF STUDY

19

	Credits	Rec.	Lect.	Lab.	Prep.
Mech. Eng. 140, Safety Engineering.....	2	..	2	..	4
Elect. Eng. 234, Valuation of Public Utility Properties	1	..	1	..	..
Economics 161, or 165, Labor Problems.....	3	3	..	..	6

POST-SENIOR OPTIONS IN POWER ENGINEERING

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Mech. Eng. 121, Steam Engine Design.....	3	..	..	8	1
Mech. Eng. 123, Gas Engine Design.....	3	..	..	8	1
Mech. Eng. 113, Power Plant Operation.....	1 or 2	..	..	3 or 6	..
Civil Eng. 121, Hydrology.....	3	..	..	..	..

Second Semester

Mech. Eng. 119, Autos and Gas Tractors.....	3	..	2	4	2
Mech. Eng. 127, Power Plant Design.....	3	1	1	6	1
Mech. Eng. 113, Power Plant Operation.....	1 or 2	..	..	3 or 6	..
Mech. Eng. 136, Comp. Air and Refrig.....	3	3	..	..	6
Mech. Eng. 147, Mech. Equip. of Bldgs.....	3	..	1	6	1
Civil Eng. 122, Water Power.....	3	..	..	..	..

GENERAL OPTIONS

First Semester

Psychology, part of Course 5a.....	2
Logic, part of Course 9a.....	2
Public Speaking	3
Technical Writing	2
English	3
French	3
German	3
Spanish	3
Political Science (Govt.).....	3
Economics 73*	3
Economics 161*	3

Second Semester

Logic, part of Course 9b.....	2
Psychology, part of Course 5b.....	2
Public Speaking	3
Technical Writing	2
English	3
French	3
German	3
Spanish	3
Political Science (Bus. Law.).....	3
Economics 74*	3
Economics 166*	3

* Must be preceded by 11 and 12.

Students who did not have two years of German or French in high school are urged to elect a foreign language.

ELECTRICAL ENGINEERING

For freshman year, see page 13

SOPHOMORE YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Math. 73a, Differential Calculus.....	5	5	..	..	10
Physics 7, General Physics.....	4	3	1	..	8
Physics 9, General Lab. Practice.....	1	..	..	2	1
Drawing 7, Graphics.....	2	..	..	6	..
Elec. Eng. 51, Applied Electricity.....	3	1	1	2	5
Mech. Eng. 3a, Shop.....	3	..	1	7	1
Military Drill.....	1	..	..	3	..

Second Semester

Math. 74, Integral Calculus.....	5	5	..	..	10
Physics 8, General Physics.....	4	3	1	..	8
Physics 10, General Lab. Practice.....	1	..	..	2	1
Drawing 8, Graphics.....	2	..	..	6	..
Elec. Eng. 52, Applied Electricity.....	3	1	1	2	5
Mech. Eng. 4b, Shop.....	3	..	1	8	..
Military Drill.....	1	..	..	3	..

JUNIOR YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Mech. 75, Tech. Mechanics, Statics.....	3	3	..	..	6
Mech. 151, Mechanics of Materials.....	3	3	..	..	6
Exp. Eng. 101, Materials Testing Lab.....	2	..	..	4	2
Elec. Eng. 101, Elec. Machinery.....	3	3	..	..	6
Elec. Eng. 103, Elec. Mach. Lab.....	2	..	..	4	2
Physics 103, Electrical Measurements.....	2	..	..	4	2
Approved Elective.....	3	..	..	..	..

Second Semester

Mech. 76, Tech. Mechanics, Dynamics.....	3	3	..	..	6
Mech. 152, Hydraulics.....	3	3	..	..	6
Exp. Eng. 102, Elementary Lab.....	2	..	..	4	2
Elec. Eng. 102, Elec. Machinery.....	3	3	..	..	6
Elec. Eng. 104, Elec. Mach. Lab.....	2	..	..	4	2
Mech. Eng. 16, Mechanism and Kinematics.....	2	..	1	3	2
Approved Elective.....	3	..	..	..	..

SENIOR YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Elec. Eng. 105, Alternating Currents.....	3	3	..	..	6
Elec. Eng. 107, Alt. Cur. Lab.....	2	..	..	4	2
Elec. Eng. 117, Electrical Design.....	2	..	..	6	..

COURSES OF STUDY

	Credits	Rec.	Lect.	Lab.	Prep.
Mech. Eng. 129, Steam Eng. and Boilers.....	3	3	..	..	6
Exper. Eng. 105, Steam and Power Lab.....	2	..	..	0	..
Economics 11, Modern Economic Problems for Engineers	3	3	..	..	6
Approved Elective	3	..	..	..	..

Second Semester

Elec. Eng. 106, Alternating Currents.....	3	3	..	..	6
Elec. Eng. 108, Alt. Cur. Lab.....	2	..	..	4	2
Elec. Eng. 118, Electrical Design.....	2	..	..	6	..
Mech. Eng. 116, Machine Design.....	4	..	..	8	..
Economics 12, Modern Economic Problems for Engineers	3	3	..	..	6
Approved Elective	4	..	..	..	..

POST-SENIOR YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Elec. Eng. 213, Transient Elec. Phenom.....	2	2	..	..	4
Elec. Eng. 205, Central Stations.....	2	..	2	..	4
Elec. Eng. 229, Laboratory Special Problems.....	2	..	..	4	2
Elec. Eng. 203, Thesis.....	3	..	..	..	9
Electives	9	..	..	..	..

Second Semester

Elec. Eng. 214, Transient Elec. Phenom.....	2	2	..	..	4
Elec. Eng. 206, Electrical Transmission.....	2	..	2	..	4
Elec. Eng. 230, Laboratory Special Problems.....	2	..	..	4	2
Elec. Eng. 204, Thesis.....	3	..	..	7	..
Electives	9	..	..	..	..

For students expecting to enter the various fields of Electrical Communication, or any other special field, the curriculum specified for the post-senior year is subject to modification, after conference and approval by the Department faculty. Students desiring to specialize in Electro-Chemistry may be allowed substitutions in the senior and post-senior years.

ELECTIVES

Suggested for juniors: American Government
 English
 Foreign Language
 Psychology (first semester)
 Logic (second semester)
 Public Speaking
 Technical Writing
 War-time courses

Students who did not have two years of German or French in high school are urged to begin a foreign language before the junior year.

Suggested for seniors: Business Law
 Electric Lighting
 Journal Reading
 Mathematics
 Power Plant Operation
 Psychology
 Public Speaking
 Railway Electrical Engineering
 Surveying
 War-time courses

Suggested for post-seniors: Accounting
 Batteries and Electric Vehicles
 Business Organization
 Illuminating Engineering
 Labor Problems
 Precise Measurements
 Radio-Signaling
 Railway Problems
 Steam Railroad Electrification
 Telegraphy and Telephony
 Valuation

See also electives suggested for juniors and seniors.

GENERAL COURSE IN ENGINEERING

For freshman year, see page 13

SOPHOMORE YEAR*

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Math. 73a, Differential Calculus.....	5	5	..	..	10
Physics 7, General Physics.....	4	3	1	..	8
Physics 9, General Laboratory Practice.....	1	..	..	2	1
Drawing 5 or 7.....	2	..	..	6	..
Approved Technical Elective.....	3	..	..	..	..
Approved Elective	3	..	..	..	..
Military Drill	1	..	..	3	..

Second Semester

Math. 74b, Integral Calculus.....	5	5	..	..	10
Physics 8, General Physics.....	4	3	1	..	8
Physics 10, General Laboratory Practice.....	1	..	..	2	1
Drawing 6 or 8.....	2	..	..	6	..
Approved Technical Elective.....	3	..	..	..	..
Approved Elective	3	..	..	..	..
Military Drill	1	..	..	3	..

JUNIOR YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Mech. 75, Technical Mechanics—Statics.....	3	3	..	..	6
Mech. 151, Mechanics of Materials.....	3	3	..	..	6

	Credits	Rec.	Lect.	Lab.	Prep.
Exp. Eng. 101, Materials Testing Lab.....	2	..	..	4	2
Approved Technical Electives.....	5	..	..	..	..
Approved Electives	5	..	..	..	..

Second Semester

Mech. 76, Technical Mechanics, Dynamics.....	3	3	..	..	6
Mech. 152, Hydraulics.....	3	3	..	..	6
Exp. Eng. 102, Hydraulic and Steam Lab.....	2	..	..	4	2
Approved Technical Electives.....	5	..	..	..	..
Approved Electives	5	..	..	..	..

SENIOR YEAR

Each Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Approved Technical Electives.....	9	..	..	..	..
Approved Electives	9	..	..	..	..

* Students pursuing the course in General Engineering are required at the end of the sophomore year to submit to the Dean of the College a list of proposed electives for the junior and senior years.

ARCHITECTURE

FRESHMAN YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Mathematics 71a, College Algebra and Trigonom..	5	5	..	..	10
Drawing 31, Graphics	2	..	2	..	4
Rhetoric 3, Rhetoric and Composition.....	3	3	..	..	6
French 1	3	3	..	..	6
Architecture 21, Freehand Drawing.....	2	..	..	6	..
Architecture 31, Elements of Architecture.....	3	..	1	8	..
Personal Hygiene and First Aid I.....	1	..	1	2	..
Military Drill	1	..	..	3	..

Second Semester

Mathematics 72a, Analytic Geometry.....	5	5	..	..	10
Drawing 32, Graphics.....	2	..	2	..	4
Rhetoric 4, Rhetoric and Composition.....	3	3	..	..	6
French 2	3	3	..	..	6
Architecture 22, Freehand Drawing.....	2	..	..	6	..
Architecture 32, Elements of Architecture.....	3	..	1	8	..
Military Drill	1	..	..	3	..

SOPHOMORE YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Mech. 91, Mechanics.....	4	4	..	..	8
Physics 1, General Physics.....	3	2	1	..	6
Physics 3, General Laboratory Practice.....	1	..	..	3	..
Architecture 23, Freehand Drawing.....	2	..	..	6	..
Architecture 33, Elementary Design.....	4	..	..	12	..
Architecture 43, Specifications and Working Draw.	3	..	1	8	..
Military Drill	1	..	..	3	..

Second Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Mech. 92, Strength of Materials.....	4	4	..	..	8
Physics 2, General Physics.....	3	2	1	..	6
Physics 4, General Laboratory Practice.....	1	..	..	3	..
Architecture 24, Freehand Drawing.....	2	..	..	6	..
Architecture 34, Elementary Design.....	4	..	..	12	..
Architecture 44, Specifications and Working Draw.	3	..	1	8	..
Military Drill	1	..	..	3	..

JUNIOR YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Architecture 15, Architectural History.....	2	..	..	..	4
Architecture 25, Freehand Drawing.....	3	..	..	9	..
Architecture 35, Architectural Design.....	6	..	..	18	..
Architecture 65, Theory of Architecture.....	1	..	1	..	2
Civil Engineering 41, Elements of Structures.....	3	..	..	5	4
Approved Electives	3	..	..	..	..

Second Semester

Architecture 16, Architectural History.....	2	..	2	..	4
Architecture 26, Freehand Drawing.....	3	..	..	9	..
Architecture 36, Architectural Design.....	6	..	..	18	..
Architecture 66, Theory of Architecture.....	1	..	1	..	2
Civil Engineering 42, Reinforced Concrete.....	3	..	..	5	4
Approved Electives	3	..	..	..	..

SENIOR YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Architecture 17, Architectural History.....	2	..	2	..	4
Architecture 27, Life Drawing.....	2	..	..	6	..
Architecture 57, Decorative Composition.....	2	..	..	3	3
Architecture 37, Architectural Design.....	8	..	..	24	..
Architecture 67, Hist. of Sculpture and Painting.	2	..	..	..	4
Civil Engineering 21, Building Sanitation.....	2	2	..	..	4

Second Semester

Architecture 18, Architectural History.....	2	..	2	..	4
Architecture 28, Life Drawing.....	2	..	..	6	..
Architecture 58, Decorative Composition.....	2	..	..	3	3
Architecture 38, Architectural Design.....	8	..	..	24	..
Architectural Practice	2	..	..	6	..
Mechanical Eng. 134, Heating and Ventilating....	2	2	..	..	4

POST-SENIOR YEAR

Work divided into major and minor groups all elective.

Required number of credit hours 18 or 19.

All students required to take one major and not less than two or more than three minor groups.

Credit hour value of major group 10, or minor group 4 or 3, making total credit hour program 10, 4, 4; or 10, 3, 3, 3.

- Major groups: (a) Architectural Design
 (b) Architectural Construction
- Minor groups: (a) Painting, Modeling, Figure Composition, Decorative Design
 (b) Liberal Studies
 (c) Engineering or Technical Studies
 Structures
 Materials Laboratory
 Heating and Ventilation
 Mechanical Equipment of Buildings
 Electrical Equipment of Buildings
 (d) Architectural History Research

GENERAL COURSE IN ARCHITECTURAL ENGINEERING

FRESHMAN YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Math. 71a, College Algebra and Trigonometry.....	5	5	..	..	10
Drawing 31, Graphics.....	2	..	2	..	4
Rhetoric 3, Rhetoric and Composition.....	3	3	..	..	6
Chemistry 29, Chemistry for Engineers.....	3	1	1	4	3
Architecture 31, Elements of Architecture.....	3	..	1	8	..
Architecture 21, Freehand Drawing.....	2	..	..	6	..
or					
Mechanical Engineering 1, Shop.....	2	..	1	5	..
Personal Hygiene and First Aid I.....	1	..	1	2	..
Military Drill	1	..	..	3	..

Second Semester

Math. 72, Analytic Geometry.....	5	5	..	..	10
Drawing 32, Graphics.....	2	..	2	..	4
Rhetoric 4, Rhetoric and Composition.....	3	3	..	..	6
Chemistry 30, Chemistry for Engineers.....	3	1	1	4	3
Architecture 32, Elements of Architecture.....	3	..	1	8	..
Architecture 22, Freehand Drawing.....	2	..	..	6	..
or					
Mechanical Engineering 2, Shop.....	2	..	1	5	..
Military Drill	1	..	..	3	..

SOPHOMORE YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Math. 73a, Differential Calculus.....	5	5	..	..	10
Physics 7, General Physics	4	3	1	..	8
Physics 9, General Laboratory Practice.....	1	..	..	2	1
Approved Architectural Elective.....	5	..	..	..	..
Approved General Elective.....	3	..	..	..	..
Military Drill	1	..	..	3	..

Second Semester

Math. 74a, Integral Calculus.....	5	5	..	..	10
Physics 8, General Physics.....	4	3	1	..	8

	Credits	Rec.	Lect.	Lab.	Prep.
Physics 10, General Laboratory Practice.....	1	..	..	2	1
Approved Architectural Elective.....	5	..	..	..	..
Approved General Elective.....	3	..	..	..	..
Military Drill	1	..	..	3	..

JUNIOR YEAR

First Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Mech. 75, Technical Mechanics—Statics.....	3	3	..	..	6
Mech. 151, Mechanics of Materials.....	3	3	..	..	6
Exp. Eng. 101, Materials Testing Lab.....	2	..	..	4	2
Approved Architectural Elective.....	5	..	..	..	..
Approved Elective	5	..	..	..	..

Second Semester

Mech. 76, Technical Mechanics—Dynamics.....	3	3	..	..	6
Mech. 152, Hydraulics.....	3	3	..	..	6
Approved Architectural and Technical Electives..	7	..	..	..	..
Approved Electives	5	..	..	..	..

SENIOR YEAR

Each Semester

	Credits	Rec.	Lect.	Lab.	Prep.
Approved Architectural and Technical Electives..	9	..	..	..	..
Approved Electives	9	..	..	..	..

DEPARTMENTAL STATEMENTS

ARCHITECTURE

Professor FREDERICK M. MANN; Assistant Professors SAMUEL C. BURTON,
 JAMES H. FORSYTHE, ROY C. JONES;* Instructors JEFFERSON M. HAM-
 ILTON, JACOB J. LIEBENBERG; Special Lecturers JOHN O. CEDERBERG,
 J. THORSTEN LINDBERG.

COURSES

No.	Title	Credits	Required of	Prereq. courses
15.	Architectural History.....	2	Jr. Arch.	31, 32
16.	Architectural History.....	2	Jr. Arch.	31, 32
17.	Architectural History.....	2	Sr. Arch.	15
18.	Architectural History.....	2	Sr. Arch.	16
21-22.	Elementary Freehand Drawing....	4	Fr. Arch.	..
23-24.	Freehand Drawing.....	4	Soph. Arch.	22
25-26.	Freehand Drawing.....	6	Jr. Arch.	24
27-28.	Life Drawing.....	4	Sr. Arch.	26
31.	Elements of Architecture.....	3	Fr. Arch.	..
32.	Elements of Architecture.....	3	Fr. Arch.	31
33-34.	Architectural Design, Elementary... 8		Soph. Arch.	32
35-36.	Architectural Design, Intermediate.. 12		Jr. Arch.	34
37-38.	Architectural Design, Advanced.... 16		Sr. Arch.	36
43.	Specifications and Working Drawings 3		Soph. Arch.	31, 32
44.	Specifications and Working Drawings 3		Soph. Arch.	43
57.	Decorative Composition.....	2	Sr. Arch.	36
58.	Decorative Composition.....	2	Sr. Arch.	26, 36
65-66.	Theory of Architecture.....	2	Jr. Arch.	34
67.	History of Sculpture and Painting.. 2		Jr. Arch.	15, 16
68.	Architectural Practice.....	2	Sr. Arch.	Senior standing

General.—The course in Architecture aims to meet the exacting requirements of the professional practice of architecture. The scientific and liberal studies of the course form a necessary foundation for the special studies in architecture, which culminate in the study of original design. The graduate is of immediate value as architect's assistant, and after a period of practical experience, is prepared for independent practice.

The General Course in Architectural Engineering forms an outline of fundamental studies in Engineering and Architecture, to which special studies in related fields may be added to meet the special requirements of preparation for the practice of Architectural or Structural Engineering, City Planning, and City Management, certain types of Business Administration, Building Contracting, and similar activities. Before the beginning of the sophomore year the student, in consultation with the faculty of the Architectural Department, is required to complete the schedule of studies to which he will adhere throughout the course.

Students who wish to extend and broaden their course in Architecture can arrange a six-year schedule leading to the degree of B.S. in the College of Science, Literature, and the Arts; and B.S. in Architecture, in the College of Engineering and Architecture.

* Absent on leave in service of the Government.

15. ARCHITECTURAL HISTORY. Technical study of architecture of Ancient Egypt, Assyria, Persia, Greece, and Rome, with emphasis on the latter two. Study of political, social, and economic conditions affecting architecture of this period. Illustrated lectures and library research. FORSYTHE.
16. ARCHITECTURAL HISTORY. Technical study of the architecture of the Renaissance, mainly in Italy. Study of political, social, and economic conditions affecting the architecture of the 15th, 16th, and 17th centuries. Illustrated lectures and library sketches and research. FORSYTHE.
17. ARCHITECTURAL HISTORY. Technical study of architecture of the Middle Ages; the sources and influences in the development of the Romanesque and Gothic styles, particularly in France. Lectures and library research. MANN.
18. ARCHITECTURAL HISTORY. Study of the development of architecture from the seventeenth century to the present time, particularly in France, England, and America. Spirit of Modern and Early Renaissance architecture contrasted. Lectures and library research. MANN.
- 21-22. ELEMENTARY FREEHAND DRAWING. Drawing with charcoal, pencil, pen and ink, and color from architectural ornament and details of the figure; drawing from memory. The course is arranged to give an appreciation of balance in light and shade. BURTON.
- 23-24. FREEHAND DRAWING. Drawing from the antique in charcoal, pen and ink, pastel, and pencil. Painting from still life in oils and water-color. Study of the elementary principles of composition and of color arrangement.
- 25-26. FREEHAND DRAWING. Drawing and painting from the antique and from life. The study of draperies in preparation for work in decorative figure composition, and of the application of the figure to mural decoration. BURTON.
- 27-28. LIFE DRAWING. Drawing from life. Figure composition; studies in mural decoration; decoration of architectural spaces. BURTON.
31. ELEMENTS OF ARCHITECTURE. Study of elements, forms and principles of architecture. Exercises in drawing; theory and practice of wash rendering; architectural lettering. Original problems in the architectural treatment of walls, doors, windows, and mouldings. Lectures and library research. FORSYTHE, HAMILTON.
32. ELEMENTS OF ARCHITECTURE. Study of the elements, forms, and principles of architecture. Original problems in elementary architectural design. Rendered compositions of architectural fragments. Lectures and library research. FORSYTHE, HAMILTON.

- 33-34. ARCHITECTURAL DESIGN.* Original problems dealing in general with elements of elevation, and their composition into simple architectural units. Sketch problems dealing with elementary plan composition. Individual criticism and library research. HAMILTON.
- 35-36. ARCHITECTURAL DESIGN.† Original problems dealing in general with the elements of plan. Composition of simple complete buildings. Sketch problems dealing with plan composition. Individual and general criticism and library research. FORSYTHE.
- 37-38. ARCHITECTURAL DESIGN. Original problems dealing with composition of single buildings or groups of buildings and those of special character. Subjects of decorative or imaginative interest. Sketch problems. MANN, FORSYTHE.
43. SPECIFICATIONS AND WORKING DRAWINGS. Wood construction, properties and uses of wood. Preparation of plans and detail working drawings of frame house. Written reports from buildings under construction, with measured drawings of roofs, dormers, cornice, windows, stairs, fireplace, cupboards, etc. CEDERBERG.
44. SPECIFICATIONS AND WORKING DRAWINGS. Masonry construction. Materials, their manufacture and properties. Preparation of plans and detail working drawings for a simple fireproof building. Written reports from buildings under construction, with measured drawings of important details of construction. Specifications. CEDERBERG.
57. DECORATIVE COMPOSITION. Historic ornament and color as applied to architectural decoration. MANN.
58. DECORATIVE COMPOSITION. Clay modeling. Design of relief decoration. Manipulation of scale models of architectural subjects. Drawing and clay modeling. BURTON.
- 65-66. THEORY OF ARCHITECTURE. Study of the guiding principles of architectural composition. Discussion of character, scale, proportion, etc. Exercises in program analysis. Consideration of the requirements of different classes of buildings. Lectures and library research. MANN, FORSYTHE.

* Work in all the design courses is carried on simultaneously and students pass from one to the next in sequence in varying lengths of time, according to their accomplishment, and irrespective of University time units. The normal time required to complete the six courses is three years. To students completing them in less, special advance work is open.

† By special arrangement in cooperation with the Minnesota Chapter of the American Institute of Architects, each junior architect, who has had less than one year of practical office experience, may be assigned to practical work in an architect's office either in Minneapolis or St. Paul. This work extends over not less than eighteen hours of each week during either the first or second semester, and takes the place of one of the junior design courses, either Architecture 35 or 36, and carries six semester credit hours.

67. HISTORY OF SCULPTURE AND PAINTING. Historical study of ancient and modern sculpture and of the modern schools of painting. BURTON.
68. ARCHITECTURAL PRACTICE. Relations of the architect, owner, and builder; forms of contracts, professional ethics, and office administration. MANN.

CHEMISTRY

Professors GEORGE B. FRANKFORTER, CHARLES F. SIDENER; Associate Professor EVERHART P. HARDING; Assistant Professor FRANK W. BLISS.

COURSES

No.	Title	Credits	Required of	Prereq. courses
19.	General Chem. and Qual. Analysis	5	Fr.	None
29-30.	Chemistry for Engineers.....	6	Fr.	One yr. prep. Gen. Chem.
38.	Power Plant Chemistry.....	3	Soph., M. E.	26
109.	Water Analysis	3	Elective p.-sr. C. E.	26

19. GENERAL CHEMISTRY AND QUALITATIVE ANALYSIS. Designed for those who have had no high-school chemistry, in preparation for Course 30. See statement under 29-30. FRANKFORTER, BLISS, and Assistants.

29-30. CHEMISTRY FOR ENGINEERS. An advanced course for engineers; general chemistry, with an introduction to analytical chemistry and chemical theories. FRANKFORTER, BLISS, and Assistants.

38. POWER PLANT CHEMISTRY. Methods of sampling and analyzing coal, liquid fuels, and gases, and methods of determining their calorific value for heat efficiencies and control work. Boiler waters—their examination, character, and treatment. Lectures and laboratory work. HARDING and Assistants.

109. WATER ANALYSIS. This course includes an exhaustive discussion of the chemical and sanitary properties of water. FRANKFORTER and Assistants.

CIVIL ENGINEERING

Professor FREDERIC H. BASS; Associate Professors ADOLPH F. MEYER, JOHN I. PARCEL; Assistant Professors ALVIN S. CUTLER, FRANKLIN R. MCMILLAN,* OTTO S. ZELNER; Instructor GEORGE A. MANEY.*

COURSES

No.	Title	Credits	Required of	Prereq. courses
1.	Surveying	3	Soph. C. E.	Math. 71a, Draw. 1-3
2.	Surveying	3	Soph. C. E.	1
3.	Surveying	2	Jr. C. E.	2

* On leave of absence.

No.	Title	Credits	Required of	Prereq. courses
4.	Surveying	2	Jr. C. E.	3
6.	Summer Camp.....	6	Jr. C. E.	4
10.	Surveying	1	Elective p.-sr. E. E. & M. E.	
21.	Building Sanitation.....	2	Sr. Arch.	..
41.	Elements of Structures.....	3	Jr. Arch.	Mech. 92
42.	Reinforced Concrete.....	3	Jr. Arch.	Mech. 92
50.	Elements of Structures.....	3	Sr. M. E.	Mech. 75
51.	Stresses in Structures.....	3	Jr. C. E.	Mech. 75
52.	Elementary Structural Design.....	2	Jr. C. E.	C. E. 51; Mech. 151
91.	Highways and Pavements.....	2	Jr. C. E.	2
92.	Municipal Engineering.....	3	Jr. C. E.	..
103.	Water Supply.....	3	Sr. C. E.	92
104.	Sanitary Engineering.....	3	Sr. C. E.	92
107-8.	Geodesy	3	Elective	4, 6
111.	Railway Engineering.....	3	Sr. C. E.	4
112.	Railway Engineering.....	3	Elective sr. C. E.	111
121.	Hydrology	3	Sr. C. E.	.....
122.	Water Power.....	3	Sr. C. E.	121; Mech. 152 Exp. Eng. 102
151.	Bridge Analysis.....	3	Sr. C. E.	52
152.	Bridge Design.....	3	Sr. C. E.	151
155.	Structural Design.....	3	Elective p.-sr.	p.-sr. standing
156.	Structural Design.....	3	Elective p.-sr.	p.-sr. standing
157.	Reinforced Concrete.....	3	Sr. C. E.	51-52
158.	Reinforced Concrete Design.....	3	Elective sr. C. E.	157
162.	Reinforced Concrete.....	2	Elective sr. M. E. & E. E.	
171.	City Planning.....	3	Elective p.-sr.	..
175.	Industrial Sanitation.....	2	Elective p.-sr. M. E. & E. E.	
201.	Advanced Theory of Structures... 3	3	Elective p.-sr.	p.-sr. standing
202.	Advanced Theory of Structures... 4	4	Elective p.-sr.	p.-sr. standing
203-4.	Theory of Indeterminate Strctrs... 4	4	Graduate (one or two semesters)	
213.	Railway Engineering.....	3	Elective p.-sr. C. E. & M. E.	111
214.	Railway Engineering	3	Elective p.-sr. C. E.	111
223.	Hydraulic Design.....	3	Elective p.-sr. C. E.	122
224.	Special Hydraulic Problems.....	3	Elective p.-sr. C. E.	223
232.	River Improvement.....	3	Elective p.-sr.	..
241-42.	Reinforced Concrete Analysis.....	2 or 3	Graduate and elective	157 or equiva- lent
273.	Building Sanitation.....	3	Elective p.-sr.	..
274.	Sanitary Design.....	3	Elective p.-sr.	..

1. SURVEYING. Field problems; use of chain, compass, transit and level. Computation and platting of all surveys made in the field. Determination of area—D.M.D.; and methods of platting. Surveys of the U. S. public lands. CUTLER, ZELNER.
2. SURVEYING. Lectures, drawing room and field work, including a study of topographic maps and signs; principles of the stadia, leveling, platting of profiles and grades. CUTLER, ZELNER.

3. SURVEYING. A complete topographical survey, stadia method, is made and platted. CUTLER, ZELNER.
4. SURVEYING. Elements of hydrographic, municipal, and railroad surveying. Use of current meters, plane table, barometer, sextant, theodolite. Meridian by solar observations. Computing and staking railroad curves. Preparatory to the more advanced work carried on in Summer Camp. CUTLER, ZELNER.
6. SUMMER CAMP. Five weeks. Continuation of Course 4, including extended railroad, topographic, hydrographic, and triangulation surveys. CUTLER, ZELNER.
10. SURVEYING. A short course in the use, care, and adjustment of surveying instruments. (Open to seniors and post-seniors.) ZELNER.
21. BUILDING SANITATION. The location and orientation of buildings; lighting, ventilation, water supply, plumbing, sewage, and refuse disposal. BASS.
41. ELEMENTS OF STRUCTURES. Theory and design of beams, columns, roof trusses, plate girders. PARCEL.
42. REINFORCED CONCRETE. Elementary principles and designing methods. PARCEL.
50. ELEMENTS OF STRUCTURES. A brief course for Mechanical and Electrical Engineers. Laws of equilibrium applied to structural frames; design of roof truss and plate girder.
51. STRESSES IN STRUCTURES. The fundamental principles of structural mechanics, and their applications to beams and girders, simple trusses, the framed bent, etc. PARCEL.
52. ELEMENTARY STRUCTURAL DESIGN. Proportioning of tension and compression members, riveted joints. Design and detail drawing of roof truss and plate girder. PARCEL.
91. HIGHWAYS AND PAVEMENTS. Lectures, recitations, laboratory work, and field inspection, relating to the economics, location, construction, and maintenance of highways and pavements. BASS.
92. MUNICIPAL ENGINEERING. Development of municipal public works. City planning, transportation, and housing. The principles of public health and sanitation. Public water supplies, sewerage and sewage disposal, refuse collection and disposal, the sanitation of buildings. BASS.
103. WATER SUPPLY ENGINEERING. Sources of water supply; quality of water. Laboratory methods of testing water; wells, surface water intakes, conduits and pipe lines, distribution systems, and purification plants. Selection of pumping machinery and motive power. BASS.

104. SANITARY ENGINEERING. Quantities of sewage and storm water; precipitation and run-off. Sanitary sewer system for a small community; storm water system for a city district. Stream pollution and sewage disposal. BASS.
- 107-8. GEODESY. Methods of conducting a geodetic survey, lectures and assigned readings. ZELNER.
111. RAILWAY ENGINEERING. The mathematics of curves and earthwork; their application to location and construction; switches and crossovers; methods of computing earthwork and haul. Completion of maps and profiles of summer camp work, field and office work. CUTLER.
112. RAILWAY ENGINEERING. Design and construction of railroad buildings and structures; culverts, wooden trestles, switches, crossovers, crossing frogs. The student is familiarized with the principal structures coming under the supervision of the maintenance-of-way department of a modern railroad. CUTLER.
121. HYDROLOGY. Rainfall, evaporation, transpiration, percolation, run-off. Flood and low water flows of streams. Storage for use in water supply, water power, irrigation, and navigation. Mass curves and frequency curves. MEYER.
122. WATER POWER. Types of low, medium, and high head developments. Details of developments; spillway dams; hollow reinforced concrete dams, arch dams, high masonry dams, movable dams. Turbine settings and characteristics. To be taken with Exp. Eng. 108. MEYER.
151. BRIDGE ANALYSIS. Analysis of various types of railway bridge trusses (including Baltimore and Petit types) under moving loads.
152. BRIDGE DESIGN. Complete design and detail of typical railway structure such as plate girder viaduct or riveted truss span.
155. STRUCTURAL DESIGN. Complete design and general drawing of railway pin truss span. PARCEL.
156. STRUCTURAL DESIGN. Critical and comparative study of designing principles and methods. Specifications and office methods. PARCEL.
157. REINFORCED CONCRETE. Principles of reinforced concrete. Theory of beams, slabs, and columns, and their application to ordinary structures. Lectures, problems, and design. McMILLAN.
158. REINFORCED CONCRETE DESIGN. Continuation of Course 157 with special emphasis on the practical features of design of buildings, bridges, retaining walls, etc. Problems in design and lectures. McMILLAN.

162. REINFORCED CONCRETE. A short course embracing the principal features of Course 157.
171. CITY PLANNING. The physical elements of the City; topography, drainage, geology. Public works and structures. Street arrangement; rapid transit; railroad terminals. City districting. Sub-surface structures. Esthetic features of the city; the civic center; parks; boulevards; public buildings. BASS, MANN.
175. INDUSTRIAL SANITATION. Principles of Public Health. Methods in use for prevention of disease. Sanitation and hospital service in factory buildings and grounds. Housing problems. Welfare work. BASS.
201. ADVANCED THEORY OF STRUCTURES. Fundamental theory of deflections and indeterminate stresses. Applications to the simpler cases of continuous girders, swing bridges, and redundant members. PARCEL.
202. ADVANCED THEORY OF STRUCTURES. A continuation of 159. Swing bridges and arches (including the reinforced concrete arch). Secondary stresses and wind stresses in tall office buildings. PARCEL, McMILLAN.
- 203-4. THEORY OF INDETERMINATE STRUCTURES. Critical and detailed study of selected problems in indeterminate structures. PARCEL.
213. RAILWAY ENGINEERING. Train resistance, ruling and momentum grades, curvature, distance, rise and fall, as factors in location and operation of railroads. Train loading, acceleration, retardation; locomotives and equipment. Operating costs governing grade revision. CUTLER.
214. RAILWAY ENGINEERING. Lectures, office work, and field inspection. Design and operations of various types of yards and terminals, and terminal facilities, including the hump, engine house, coal and water station. Signalling and interlocking. CUTLER.
223. HYDRAULIC DESIGN. Detailed design of hollow reinforced concrete, arch, and high masonry dams. Design of power house from forebay to tailrace for typical developments. Pipe lines, reservoirs, surge tanks. Inspection of plants. MEYER.
224. SPECIAL HYDRAULIC PROBLEMS. Study of special hydraulic problems in laboratory, drafting room, and field. To be taken parallel with Ex. E. 118. MEYER.
232. RIVER IMPROVEMENT. River hydraulics and the maintenance of regimen. The improvement of rivers for navigation, etc. The economics of water transportation. MEYER.
- 241-42. REINFORCED CONCRETE ANALYSIS. One or two semesters, two meetings per week. Open to those who have completed 157 or equivalent.

Critical review of literature of reinforced concrete; study of test data and analysis of stresses in reinforced concrete structures. Two or three credits. McMILLAN.

273. BUILDING SANITATION. A design course in the sanitation of buildings. Heating and ventilating, plumbing, lighting. Housing problems. BASS, ROWLEY.
274. SANITARY DESIGN. Continuation of Course C.E. 104. Design of water purification, sewage disposal, and refuse disposal plants. BASS.

DRAWING AND DESCRIPTIVE GEOMETRY

Professor WILLIAM H. KIRCHNER; Assistant Professors ROBERT W. FRENCH, FRANK B. ROWLEY, OTTO S. ZELNER; Instructors FRED W. BENTLEY, INGVALD KVITRUD, MAURICE B. LAGAARD, AMOS F. MOYER, HOWARD D. MYERS.*

COURSES

No.	Title	Credits	Required of	Prereq. courses
1.	Drawing and Solid Geometry.....	6	Fr. Eng. not in 3	..
3.	Engineering Drawing.....	3	Fr. Eng.	Solid Geometry
4.	Descriptive Geometry.....	3	Fr. Eng.	3 or 4, Math. 71
5.	Graphics	2	Soph. C. E.	3, 4
6.	Graphics	2	Soph. C. E.	5
7.	Graphics	2	Soph. M. E. & E. E.	3, 4
8.	Graphics	2	Soph. M. E. & E. E.	7
31-32.	Graphics	4	Fr. Arch	..
51.	Lettering	1	Elective sr. & p.-sr.	..
111-12.	Advanced Descriptive Geometry... 6	6	Elective	5, Math. 74
113a,b.	Perspective	3	Elective	10, Math. 72

1. DRAWING AND SOLID GEOMETRY. A combined course in elementary drafting and solid geometry.
3. ENGINEERING DRAWING. The elements of drafting including an introductory course in the science of representation and constructive geometry. Sketching, lettering, projections, working drawings, conventions, standards, tracing, and blue printing. KIRCHNER, FRENCH, BENTLEY, KVITRUD, MOYER.
4. DESCRIPTIVE GEOMETRY. An elementary course in graphical methods of representation, correlated in part with analytical geometry. Lectures, demonstrations, and drawing room exercises. KIRCHNER, FRENCH, BENTLEY, KVITRUD, MOYER.
5. GRAPHICS. For Civil Engineers. Developments and intersections. Descriptive geometry applied to the solution of engineering problems, including such problems as oblique structural connections, battered and skewed surfaces in stone or concrete, earthwork, and contours. FRENCH.

* On leave of absence.

- 6. GRAPHICS. For Civil Engineers. Structural drawing. Details, assembly drawings, bills of material. Drafting room methods and systems. FRENCH.
- 7. GRAPHICS. For Mechanical and Electrical Engineers. Developments and intersections. Descriptive geometry applied to the solution of engineering problems. Sheet metal work, equipment layouts, skew belting, spiral conveyors and propellers. ROWLEY, FRENCH, BENTLEY, KVITRUD.
- 8. GRAPHICS. For Mechanical and Electrical Engineers. Working drawings of machinery. Assembly drawings, outline drawings, diagrammatic layout, and detail drawings. Drafting room methods and systems. ROWLEY, FRENCH, BENTLEY, KVITRUD.
- 31-32. GRAPHICS. For Architects. Lectures and exercises in constructive and descriptive geometry with applications. Shades and shadows. Perspective. KIRCHNER.
- 51. LETTERING. A course in freehand lettering for seniors and post-seniors. ZELNER.
- III-12. ADVANCED DESCRIPTIVE GEOMETRY. Methods of representation; parallel and central projection. Geometrography, axonometry, and photogrammetry. KIRCHNER.
- IIIa,b. PERSPECTIVE. The principles and practice of perspective, including shadows, reflections, distortions, corrections, systems, methods, the practical problem, and inverse constructions. KIRCHNER.

ECONOMICS

Professors WILLARD E. HOTCHKISS, JOHN H. GRAY,* E. DANA DURAND;* Assistant Professors JOHN D. BLACK, ROY G. BLAKEY, WILLIAM W. CUMBERLAND, J. FRANKLIN EBERSOLE, EDWIN CLYDE ROBBINS; Instructors ALBERT C. HODGE, ALBERT C. JAMES, J. WARREN STEHMAN; in the General Extension Division, Associate Professors CHARLES H. PRESTON, CLARE L. ROTZEL.

COURSES†

No.	Title	Credits	Required of	Prereq. courses
3-4.	General Economics.....	6‡	Elective	None
11-12.	Modern Economic Problems for Engineers	6	Jr. M. E., sr. E. E., and elective	None
35-36.	Accounting Principles.....	6‡	Elective	None
43.	Banking	3	Elective	3
52.	Corporation Finance.....	3	Elective	6 credits incl. 3
59.	Insurance	3	Elective	3-4

* On leave of absence.

‡ Both semesters must be completed before credit is given for the first semester.

† For further courses offered in the Economics Department, see College of Science, Literature, and the Arts Bulletin.

No.	Title	Credits	Required of	Prereq. courses
85.	Marketing	3	Elective	3-4
86.	Advertising	3	Elective	3-4 with 85 suggested
88.	Retail Marketing.....	3	Elective	6 credits incl. 85
101.	Statistics	3	Elective	6 credits incl. 3
123.	Business Organization.....	3	Elective	3-4
124.	Relation of Government to Business	3	Elective	3-4
131.	Cost Accounting.....	3	Elective	35-36
133-34.	Auditing	6†	Elective	135-136
135-36.	Accounting Problems.....	6†	Elective	35-36
144.	Business Cycles.....	3	Elective	43
161.	Labor Problems.....	3	Elective	6 credits incl. 3
173.	Railway Problems.....	3	Elective	6 credits incl. 3

3-4. GENERAL ECONOMICS. Principles that underlie the present industrial order and the main public economic problems of to-day, such as the labor movement, social insurance, railway, trust, and other monopoly problems. BLACK, BLAKEY, CUMBERLAND, ROBBINS, JAMES, STEHMAN.

11-12. MODERN ECONOMIC PROBLEMS FOR ENGINEERS. Effect of industrial development; international commerce; corporation organization and finance; banking and credit; public ownership and finance; trusts, monopolies; transportation problems, insurance, conservation, labor problems. Lectures, textbook, talks by men actively engaged in fields studied.

35-36. PRINCIPLES OF ACCOUNTING. The purpose and principles of account classification; capital and revenue; accruals; valuation; depreciation, preparation and interpretation of balance sheets, income accounts, and other statements; corporation accounts. A laboratory course with supplementary lectures. HODGE.

43. PRINCIPLES AND PRACTICE OF BANKING. Contemporary banking institutions, their organization and operation; loans, reserves, note issues, clearing houses, domestic and foreign exchange; the banking systems of foreign countries; and the Federal Reserve Banks of the United States. STEHMAN.

52. CORPORATION FINANCE. The organizing, financing, and managing of corporations. The relation of the government to the corporation. The operations of the stock exchange and a study of corporate securities for purposes of investment and speculation. STEHMAN.

59. INSURANCE. Principles of insurance with special reference to fire, life, and accident insurance. Critical examination of policy contracts, the premium, reserve, and rights and obligations of policy holders. Public regulation of insurance companies. JAMES.

85. MARKETING OF PRODUCTS. Domestic merchandising methods of manufacturers. Problems of wholesalers and commission men; distributing system and market organization; price policies. JAMES.

86. ADVERTISING AND SELLING. Functions and principles of advertising; advertising media; planning and executing an advertising campaign. Copy. Sales management and personal salesmanship. JAMES.
88. RETAIL MARKETING. Problems and methods of the so-called regular retailer, department stores, and chain stores. Development of retail trade centers. Coöperation between the retailer and the local board of trade. The retailer and the consumer. JAMES.
101. THEORY AND PRACTICE OF STATISTICS. Principles of collection, tabulation, and interpretation of statistical material, illustrated by present-day statistical data. Lectures, assigned readings, and special investigations by individual members of the class.
- *123. BUSINESS ORGANIZATION AND MANAGEMENT. Organization: Principles applying to business in general and to particular concerns, evolution, objects, adjustments, limits, functional division; specialization: functional and other forms. Standardization. Management; coordination of functions, handling of men, employment, external versus internal factors. HOTCHKISS.
- *124. BUSINESS AND GOVERNMENT. Business expansion, diversification and conflicting interests. Laissez faire versus regulation. Enforcement of minimum standards. Administration of business legislation. Co-operation between government and business. Public coördination of business forces. Reaction of emergency measures on permanent policy. HOTCHKISS.
131. COST ACCOUNTING. Analysis of production cost; methods of record-materials, labor and machine costs; apportioning indirect expenses; relation of cost to general accounts; use of cost data to enforce operating efficiency. Laboratory with lectures. HODGE.
- 133-134. AUDITING. Preparation for, and conduct of, an audit; the auditor's report and certification, and legal responsibilities. Textbook, assigned readings, class discussions, and lectures.
- 135-136. ACCOUNTING PROBLEMS. A study of the preparation of business and financial statements, chiefly from the standpoint of administrative statistics; based on problems from C. P. A. examinations and other sources. HODGE.
144. PANICS, COMMERCIAL CRISES, AND CYCLES OF TRADE. American business conditions since 1890 with regard to the great cycles of alternate prosperity and depression and financial panics. Critical examination of all the available business barometers designed to forecast similar conditions. EBERSOLE.
161. LABOR PROBLEMS. Modern labor problems: woman and child labor, industrial education, unemployment, poverty, industrial hygiene, welfare work, profit-sharing, coöperation, labor unions, strikes, boycotts,

conciliation, and arbitration; economic causes and effects of immigration. ROBBINS.

173. RAILWAY PROBLEMS. The theory and practice of railway rate making. Railway organization and finance viewed historically and scientifically. Government regulation, the conflict between state and federal authorities and suggested improvements in railway control. STEHMAN.

ELECTRICAL ENGINEERING

Professors GEORGE D. SHEPARDSON, FRANK W. SPRINGER; Assistant Professor WILLIAM T. RYAN; Professorial Lecturer CHARLES L. PILLSBURY; Instructors EDWIN R. MARTIN, HUBERT M. TURNER.

COURSES

No.	Title	Credits	Required of	Prereq. courses
51-2.	Applied Electricity.....	6	Soph. E. E.	See statement
101-2.	Electrical Machinery.....	6	Jr. E. E.	Physics 8
103-4.	Electrical Machinery Laboratory...	4	Jr. E. E.	Physics 8
105-6.	Alternating Currents.....	6	Sr. E. E.	101-104
107-8.	Alternating Current Laboratory...	4	Sr. E. E.	101-104
109a,b.	Power Plant Operation.....	1	Elective sr. & p.-sr.	101-104
111.	Electric Lighting.....	2	Elective sr. & p.-sr.	102 or 158
113-14.	Electric Railways.....	4	Elective sr. & p.-sr.	105, 155, or 158
115-16.	Journal Reading.....	2	Elective sr. & p.-sr.	105
117-18.	Electrical Design.....	4	Sr. E. E.	105-106
152.	Electric Lighting.....	1	Elective Arch.	Physics 1-4
155.	Electric Power.....	3	Sr. E. M.	Physics 3-4
156.	Electric Power.....	3	Sr. C. E.	Physics 8
157-8.	Electric Power.....	6	Sr. M. E.	Physics 8
160.	Batteries and Electric Vehicles....	1	Elective sr. & p.-sr.	102 or 158
203-4.	Thesis.....	6	P.-sr. E. E.	105-106
205.	Central Stations.....	2	P.-sr. E. E.	105 or 158
206.	Electrical Transmission.....	2	P.-sr. E. E.	106 or 158
208.	Elec. Ignition and Accessories....	1-2	Elective p.-sr.	
210.	Elec. Equipment of Buildings....	1	Elective p.-sr.	106 or 158
211a,b.	High Tension Testing.....	1-2	Elective p.-sr. E. E.	105-106
213-14.	Transient Electric Phenomena....	4	P.-sr. E. E.	105-106
215-16.	Radio Signaling.....	4	P.-sr. E. E.	105-106
219.	Telegraph and Telephone Apparatus	2	Elective p.-sr. E. E.	106
220.	Telegraph and Telephone Circuits..	2	Elective p.-sr. E. E.	106
221-22.	Precise Elec. Measurements.....	2	Elective p.-sr. E. E.	108
223.	Electrochemical Engineering.....	2	Elective p.-sr. E. E.	106 or 158
226.	Illuminating Engineering.....	2	Elective p.-sr.	111
228.	Steam Railroad Electrification....	2	Elective p.-sr.	114
229-30.	Laboratory Special Problems.....	4	P.-sr. E. E.	108
232.	Design Special Problems.....	2	Elective p.-sr. E. E.	202
234.	Valuation of Public Utility Prop- erties.....	1	Elective p.-sr.	205
<i>Special War-Time Courses</i>				
41-2.	Military Signaling.....	6	Elective	None
43.	Military Signaling.....	2-3	Elective	See statement
119-20.	Radio Communication.....	8	Elective	105 or 157 156 or 157
123.	Ignition Systems.....	2	Elective	101, 156 or 157

- 51-2. APPLIED ELECTRICITY. Introduction to the development, principles, materials, safety, and general application of electrical engineering. Lecture, class, and laboratory. Open to students registered for Physics 7 and 9. SHEPARDSON, SPRINGER, RYAN, MARTIN.
- 101-102. ELECTRICAL MACHINERY. Electrical engineering measuring instruments and their use, units, theory of dynamo-electric machinery, methods of regulation, construction and operation of generators and motors, methods of testing. SPRINGER.
- 103-104. ELECTRICAL MACHINERY LABORATORY. To be taken with Course 101-102. Electrical engineering measurements, calibration of instruments, operation and characteristic curves of generator and motor. Lectures and practice. SPRINGER, MARTIN.
- 105-106. ALTERNATING CURRENTS. Phenomena, measurement, and use of alternating currents, theory of line, transformer, generator, and motor, types of apparatus. SHEPARDSON.
- 107-108. ALTERNATING CURRENT LABORATORY. To be taken with Course 105-106. Experimental study of alternating currents, regulation and efficiency tests of alternators, transformers, motors, and rotaries. SHEPARDSON, SPRINGER.
- 109a,b. POWER PLANT OPERATION. Practice in operation and care of gas producer, gas engine, boilers, engines, turbine, dynamos, battery, switch-boards, and auxiliary apparatus of the University Lighting Plant. RYAN, MARTENIS, DIXON.
111. ELECTRIC LIGHTING. Principles of vision, photometers, and measurement of light, methods and calculations of illumination, various sources of light, development of electric illuminants, distribution systems. Lectures, problems, and laboratory practice. SHEPARDSON.
- 113-14. RAILWAY ELECTRICAL ENGINEERING. History, economics, application, principles of mechanics applied to train movement, electric locomotives, generation, transmission, conversion of electric power, application to railway motors. Lectures, technical reports on physical advantages of electric traction for train service, etc. MARTIN.
- 115-16. JOURNAL READING. Weekly discussion of current electrical periodicals. SHEPARDSON.
- 117-18. ELECTRICAL DESIGN. The design of direct current generators and motors, and alternating current transformers; complete working drawings and specifications to accompany each design. The design of alternating current generators and motors and switch-boards. RYAN.
152. ELECTRIC LIGHTING. Comparison of different sources of light, elements of measurement of light, distribution of light, choice of reflectors, elements of calculation of illumination. RYAN.

155. **ELECTRIC POWER.** Equivalent to Course 156. For senior students in the School of Mines. Open to seniors in Civil and in General Engineering, and in Architecture. RYAN.
156. **ELECTRIC POWER.** Elementary principles of continuous currents. Continuous current generators and motors. Elementary principles of alternating currents. Alternating current generators, transformers, and motors. Measurement of power. Elementary principles of transmission and distribution. Lectures, recitations, and laboratory work. RYAN, MARTIN.
- 157-8. **ELECTRIC POWER.** An elementary study of the problems involved in the generation, distribution, measurement, and utilization of electric power. Lectures, recitations, and laboratory work, supplemented by numerous problems. RYAN, MARTIN.
160. **BATTERIES AND ELECTRIC VEHICLES.** Theory of the storage battery as used in electric trucks and automobiles; electric automobile equipment; charging devices, such as mercury arc and vibrating rectifiers and special synchronous converters. RYAN, MARTIN.
- 203-204. **THESIS.** An investigation of some approved problem in electrical engineering. SHEPARDSON, SPRINGER, RYAN, MARTIN, TURNER.
205. **CENTRAL STATIONS.** Electric power generating stations and distributing systems; load diagrams; selection of prime movers and units; cost of electrical energy; methods of charging; maintenance of plants; emergencies. RYAN.
206. **ELECTRICAL TRANSMISSION.** Considerations involved in the designing and building of transmission lines, Kelvin's law and its limitations, the transmission line as a mechanical structure, lightning arresters, study of particular high-tension lines. RYAN.
208. **ELECTRICAL IGNITION AND AUTOMOBILE ELECTRICAL ACCESSORIES.** Oscillographic, rotating mirror, rotating gap, and electrical measurements applied to the study of ignition apparatus; characteristics of automobile accessories, such as generators, starters, controllers, electrical transmitting devices, etc. Laboratory and lectures. SPRINGER.
210. **ELECTRICAL EQUIPMENT OF BUILDINGS.** Lectures on electrical equipment of modern office and factory buildings. Detailed study of plans and specifications. Inspection and reports on jobs under construction, and after completion. Special lecturers.
- 211a,b. **HIGH TENSION AND HIGH FREQUENCY TESTING.** Low frequency pressure to 320,000 volts, high frequency to several million volts applied to study of dielectric phenomena, such as testing of high tension transmission cables, transformer oil, transmission line insulators. Laboratory and library reference course. SPRINGER.

- 213-214. TRANSIENT ELECTRIC PHENOMENA. Transient phenomena accompanying change of circuit conditions, with differential equations. Abnormal currents, voltages, frequencies produced by switching, short circuits, arcing grounds; distributed capacity, inductance, standing waves, etc.; power and energy of complex circuits. TURNER.
- 215-216. RADIO-SIGNALING. Maxwell's electromagnetic theory, Hertz's experimental work, phenomena of electric oscillations, generation and reception of damped and undamped waves, propagation of electromagnetic waves through space, detectors, measuring instruments, effect of earth's curvature. Lecture and laboratory. TURNER.
219. TELEGRAPH AND TELEPHONE APPARATUS. Theoretical and experimental study of apparatus used for signaling, telegraphy, and telephony. Lecture and laboratory. SHEPARDSON.
220. TELEGRAPH AND TELEPHONE CIRCUITS. Theoretical and experimental study of telephone circuits and the phenomena of telephonic transmission, applications of hyperbolic functions to line phenomena. SHEPARDSON.
- 221-222. PRECISE ELECTRICAL ENGINEERING MEASUREMENTS. Lectures and laboratory work. Precise measurements of resistance, voltage, current, self-induction, and capacity, standardization of measuring instruments. SPRINGER.
223. ELECTROCHEMICAL ENGINEERING. Theoretical and experimental study of the engineering problems of electrolytic and electro-thermal processes. SHEPARDSON.
226. ILLUMINATING ENGINEERING. Lectures and laboratory work, investigation of performance of electric and gas lamps, reflectors and diffusers, luminous efficiency, distribution, color characteristics, physiological phenomena, methods of determining location, kind, and quality of lights for obtaining desired illumination. SHEPARDSON.
228. STEAM RAILROAD ELECTRIFICATION. American and European railroad electrification, engineering practice, detailed cost, equipment, electric power generation, purchased power contracts, studies of operating and financial results, technical reports on new projects. Studies of railroad electrification. Estimates and valuations. MARTIN.
- 229-230. ELECTRICAL LABORATORY. Efficiency tests and special problems.
232. ELECTRICAL DESIGN. Special problems. RYAN.
234. VALUATION OF PUBLIC UTILITY PROPERTIES. Cost of organizing and securing capital, discounts on bonds, fees; franchise values. Depreciation and obsolescence, deferred maintenance. Public utilities, fair rates and returns, regulation of natural monopolies. PILLSBURY.

SPECIAL WAR-TIME ELECTIVE COURSES

The following war-time courses are offered at the request of the Federal Board for Vocational Education and of the Signal Corps, and with their coöperation. They are offered to men physically and mentally qualified, who are registered for the draft, or who signify their intention of enlisting in the Army or Navy.

- 41-2. MILITARY SIGNALING. Two lectures per week and problems on fundamental principles of direct and alternating currents, as applied to wire telegraphy and telephony, and to radio telegraphy. Five hours per week practice in receiving and sending messages by International Code. TURNER and Assistants.
- 43. MILITARY SIGNALING. Modification of Course 41 for students who are taking, or have taken, other electrical courses equivalent to the work covered in the lectures. Six or nine hours per week practice on International Code. TURNER and Assistants.
- 119-120. RADIO COMMUNICATION. Three lectures and three laboratory hours per week on radio and other means of communication used by United States Signal Corps for ground, aerial, and aviation service. Two hours weekly practice on International Code. Open to men who are taking, or who have taken courses in alternating currents. SHEPARDSON, SPRINGER, RYAN, TURNER.
- 123. GAS-ENGINE IGNITION. Lectures and laboratory work on fundamental principles of electrical ignition and starting apparatus. Experimental study of representative systems. Open to men who have taken or are taking Course 101 or 156, or 157. SPRINGER.

EXPERIMENTAL ENGINEERING

Professors JOHN R. ALLEN, WILLIAM E. BROOKE; Associate Professor ADOLPH F. MEYER; Assistant Professors FRANKLIN R. McMILLAN,* FRANK B. ROWLEY, CHARLES F. SHOOP; Instructors MAURICE B. LAGAARD, AMOS F. MOYER.

COURSES

No.	Title	Credits	Required of	Prereq. courses
101a,b.	Materials Testing Laboratory.....	2	Jr. Engrs. Jr. E. M. & Met. E.	Mech. 151
102a,b.	Elementary Laboratory.....	2	Jr. Engrs. Jr. E. M. & Met. E.	Mech. 152
103.	Steam and Power Laboratory.....	2	Sr. M. E.	M. E. 130
104.	Power and Gas Engine Laboratory	2	Sr. M. E.	102
105.	Steam and Power Laboratory.....	2	Sr. E. E.	102
106.	Water Power Laboratory.....		Sr. C. E.	102 with C. E. 122
108.	Experimental Laboratory.....	2	Sr. E. M. & Met. E.	102
109-10.	Advanced or Research Laboratory..	2 to 10	Elective	To be approved

* On leave of absence.

- 101a,b. MATERIALS TESTING LABORATORY. Investigation of physical properties of various metals and engineering materials (wood, cement, ropes, etc.). Lectures on materials of construction and standard methods of testing. Mining and Metallurgical Engineers carry Course 101b for twelve weeks only.
- 102a,b. ELEMENTARY LABORATORY. Calibration of gages, pitot tube, indicator spring, thermometers, pyrometer, etc. Study of lubricants, steam calorimeters, valve setting. Tests of hoists, etc. Mechanical efficiency of steam and internal combustion engines. Tests of power pump. Boiler trial.
103. STEAM AND POWER LABORATORY. Calibration of dynamometers and measurement of power. Tests of injectors, ejectors, steam and power pumps, steam turbines, steam engines, and boilers.
104. POWER AND GAS ENGINE LABORATORY. Tests of gas, gasoline, and hot air engines, gas producers, air compressors. Automobile and locomotive testing. Tests of complete power and lighting plants.
105. STEAM AND POWER LABORATORY. Calibration of dynamometers and measurement of power. Tests of steam and power pumps, internal combustion engines, steam turbines, steam engines, boilers, and complete power and lighting plants.
106. WATER POWER LABORATORY. Consisting principally of experimental and demonstration work on overfall and siphon spillways. To be taken parallel with C.E. 122.
108. EXPERIMENTAL LABORATORY. (Twelve weeks' course.) Hydraulic measurements. Tests of water motors, rams, steam pumps, steam engines, and boilers.
- 109-110. ADVANCED OR RESEARCH LABORATORY. Courses may be elected along line of concrete, structural and road materials, hydraulics, steam and gas engineering, etc. Investigations, reports, special problems and related tests. Courses to be approved and administered under supervision of Research Committee of Engineering College.

FRENCH

Professors EVERETT W. OLMSTED, COLBERT SEARLES, IRVILLE C. LE COMPTE ;
Assistant Professors FRANCIS B. BARTON, JULES T. FRELIN, RUTH S. PHELPS.

COURSES

No.	Title	Credits	Required of	Prereq. courses
1-2.	Beginning French	6	Fr. Architects	None
3a,b.	Intermediate French.....	6	Fr. Architects	1-2, or 2 yrs. preparation

- 1-2. BEGINNING FRENCH. Stress on accurate pronunciation, reading vocabulary, and the essentials of grammar. Daily oral and written exercises (dictation and reproduction in French).
- 3a,b. INTERMEDIATE FRENCH. Six-hour semester course. Grammar, composition and reading, increased use of French in the classroom. Selections from modern prose and poetry.

GEOLOGY AND MINERALOGY

Professor WILLIAM H. EMMONS; Assistant Professor TERENCE T. QUIRKE.

COURSES

No.	Title	Credits	Required of	Prereq. courses
1.	General Geology.....	3	Sophomore C. E.	None
14.	Applied Geology.....	3	Elective	1

1. GENERAL GEOLOGY. Materials of the earth and geologic processes. Application of geology to engineering problems. Lectures, rock study, and field excursions. QUIRKE.
14. APPLIED GEOLOGY FOR CIVIL ENGINEERS. Occurrence, properties, production, and uses of building stones, cements, clays, fuels, and road metals. A brief introduction to the study of ore deposits and historical geology. QUIRKE.

MATHEMATICS AND MECHANICS

Professor WILLIAM E. BROOKE; Assistant Professors HANS H. DALAKER, WILLIAM F. HOLMAN, BURT L. NEWKIRK, GEORGE C. PRIESTER; Instructor JENNESS B. FREAR.

COURSES IN MATHEMATICS

No.	Title	Credits	Required of	Prereq. courses
Math. 69.	Higher Algebra, 3 hrs.....	0	Fr. not in 71a	..
Math. 71a,b.	College Algebra and Trigonometry	5	Fr.	..
Math. 72a,b.	Analytic Geometry.....	5	Fr.	Math. 71
Math. 73a,b.	Differential Calculus.....	5	Soph.	Math. 72
Math. 74a,b.	Integral Calculus.....	5	Soph.	Math. 73
Math. 146-47.	Advanced Calculus with Applications	6	Elective	Math. 76

Math. 69. HIGHER ALGEBRA. Fundamental rules, fractions, linear simultaneous equations, graphs, theory of exponents, surds, imaginaries, quadratic equations, binomial theorem. DALAKER, FREAR.

Math. 71a,b. COLLEGE ALGEBRA AND TRIGONOMETRY. Solution of numerical equations of higher degree, logarithms, use of slide-rule. Trigonometric functions and tables, addition theorem and relations, plane triangles and their solution by tables and slide-rule. Applications to surveying and statics. DALAKER, PRIESTER, FREAR.

Math. 72a,b. ANALYTIC GEOMETRY. Rectilinear and polar coördinates, the straight line and circle, transformation of coördinates, conic sections and other loci, slopes, tangents, derivatives, empirical curves, the elements of geometry of three dimensions. PRIESTER, FREAR.

Math. 73a,b. DIFFERENTIAL CALCULUS. Derivatives, maxima and minima, expansion of functions, curvature; with applications to mechanical and physical problems. DALAKER, HOLMAN, NEWKIRK, FREAR.

Math. 74a,b. INTEGRAL CALCULUS. Integration of standard forms. Integration as a summation. Application to length of curves, areas, volumes. Approximate integration, Simpson's rule. Solution of some differential equations. Application to engineering problems. DALAKER, HOLMAN, NEWKIRK, FREAR.

Math. 146-147. ADVANCED CALCULUS WITH APPLICATIONS. Designed to extend the engineer's working knowledge of the Calculus. Wilson's *Advanced Calculus*. BROOKE, NEWKIRK.

COURSES IN MECHANICS

No.	Title	Credits	Required of	Prereq. courses
Mech. 75.	Technical Mechanics—Statics	3	Jr.	Math. 74 and Phys. 7 and 8
Mech. 76.	Technical Mechanics—Dynamics	3	Jr.	Mech. 75
Mech. 91.	Mechanics	4	Soph. Arch.	Math. 72
Mech. 92.	Strength of Materials	4	Soph. Arch.	Mech. 91
Mech. 151.	Mechanics of Materials	3	Jr., sr.	Mech. 75 or with 75
Mech. 152.	Hydraulics	3	Jr., sr.	Mech. 76 or with 76
Mech. 153.	Thermodynamics	3	Sr. M. E.	Mech. 152
Mech. 154.	Steam and Water Turbines	3	Elective, sr. M. E.	Mech. 153
Mech. 155.	Mechanics of the Aeroplane	3	Elective	Mech. 76
Mech. 253-4.	Advanced Technical Mechanics	6	Elective	Mech. 76
Mech. 255-6.	Advanced Mechanics of Materials	3	Elective	Mech. 151

Mech. 75. TECHNICAL MECHANICS. Statics. Resolution of forces, moments, conditions of equilibrium, free body method, center of gravity, moment of inertia, stresses in framed structures and in machines. DALAKER, NEWKIRK, PRIESTER.

Mech. 76. TECHNICAL MECHANICS. Dynamics. Dynamics of a particle, including Newton's laws of motion and kinematics of circular, harmonic, and curvilinear motion in general. Theorems of work and energy, impulse and momentum, d'Alembert's principle. Elementary dynamics of rigid bodies. DALAKER, NEWKIRK, PRIESTER.

Mech. 91. MECHANICS FOR ARCHITECTS. (Designed for those who have not taken Calculus.) Resolution of forces, conditions of equilibrium, center of gravity, moment of inertia of plane sections, stresses in framed structures. PRIESTER.

- Mech. 92. STRENGTH OF MATERIALS. (Designed for those who have not taken Calculus.) Mechanical and elastic properties of materials of construction, design of riveted joints, beam theory, columns. PRIESTER.
- Mech. 151. MECHANICS OF MATERIALS. Mechanical and elastic properties of materials of construction, beams, shafts, columns, combined stresses, hollow cylinders and spheres, rollers, plates, true stresses, theory of internal stress. BROOKE, HOLMAN, NEWKIRK, PRIESTER.
- Mech. 152. HYDRAULICS. Laws of equilibrium of fluids, flow through orifices and over weirs, pressure and flow through tubes and pipes, flow in conduits and rivers. Dynamic pressure of water, elementary principles of turbines and pumps. BROOKE, HOLMAN, NEWKIRK, PRIESTER.
- Mech. 153. THERMODYNAMICS. The mechanical theory of heat as applied to steam, oil, gas, and hot-air engines, and to compressors, including use of steam tables and entropy diagrams. BROOKE.
- Mech. 154. STEAM AND WATER TURBINES. Various types of steam turbines; velocity, impulse, and reaction. Nozzles, vanes, discs, bearings, governors. Thermodynamic analysis and efficiency. Theory of the operation, construction, and regulation of water turbines. Selection of turbine for given conditions. BROOKE.
- Mech. 155. MECHANICS OF THE AEROPLANE. Principles of dynamic flight. Resistance of the air, relative motion, stream lines, aspect ratio, lift, drift, center of pressure, oscillations. Automatic stability, inherent stability, types of planes, speed, weight, area of planes, power. Propellers. Motors. BROOKE.
- Mech. 253-4. ADVANCED TECHNICAL MECHANICS. Special problems in the dynamics of machinery; vibrations, balancing, whirling shafts, rapidly rotating disks, dynamical stability, gyroscope. NEWKIRK.
- Mech. 255-6. ADVANCED MECHANICS OF MATERIALS AND THE THEORY OF ELASTICITY. BROOKE.

For elective and advanced courses in mathematics and mechanics, see Bulletin of the Graduate School.

MECHANICAL ENGINEERING

Professors JOHN J. FLATHER, JOHN R. ALLEN; Assistant Professors JOHN V. MARTENIS, FRANK B. ROWLEY, S. CARL SHIPLEY; Instructors WILLIAM E. BRYANT, CLARK W. HIRLEMAN, FRANCIS A. HOBART, AMOS F. MOYER, EDWARD P. QUIGLEY, WILLIAM H. RICHARDS.

COURSES

No.	Title	Credits	Required of	Prereq. courses
1-2.	Elementary Shop Practice.....	4	Fr. Engrs.	...
3a,b.	Pattern Making and Foundry Practice	3	Soph. M. E. & E. E.	1-2

4a,b. Machine Shop Practice.....	3	Soph. E. E.	3
6. Machine Shop Practice.....	2	Soph. M. E.	3
5. Advanced Machine Shop Practice..	4	Jr. M. E.	4
7a,b. Industrial Management Laboratory	2	P.-sr. elective	111
8. Industrial Education.....	3	Schl. of Ed.	
15. Mechanism and Kinematics.....	4	Jr. M. E.	Math. 74
16. Mechanism and Kinematics.....	2	Jr. E. E.	Math. 74
19. Mechanical Technology.....	1	Soph. M. E.	...
111a,b. Industrial Management.....	2	P.-sr. M. E.	...
113a,b. Power Plant Operation.....	1 or 2	P.-sr. elective	...
115. Power Engineering.....	3	P.-sr. M. E.	129, 132
116. Machine Design.....	4	Jr. M. E. & sr. E. E.	Mech. 75 & 151
117. Machine Design, Valve Gears.....	2	Sr. M. E.	Regis. in 129
119. Automobiles and Gas Tractors.....	3	P.-sr. elective	124
121. Steam Engine Design.....	3	P.-sr. elective	129
123. Gas Engine Design.....	3	P.-sr. elective	116 and 124
124. Internal Combustion Engines and Gas Producers.....	3	Sr. M. E.	Chem. 38
125a,b. Tool Design.....	3	P.-sr. elective	5
126. Adv. Machine Design.....	3	P.-sr. M. E.	116
127a,b. Power Plant Design.....	3	P.-sr. elective	116, 129 E. E. 138
129. Steam Engines and Boilers.....	3	Sr. M. E. & E. E.	Mech. 151
131a,b. Heat Engines and Boilers.....	3	Elective	Mech. 151
132. Measurement of Power.....	2	Sr. M. E.	Mech. 152
133. Heating and Ventilating.....	2	P.-sr. M. E.	Physics 8
134. Heating and Ventilating.....	2	Sr. Arch.	Physics 2
136. Compressed Air and Refrigerating Machinery.....	2	P.-sr. elective	Mech. 153
138. Contracts and Specifications.....	1	P.-sr. M. E.	...
139. Railway Technology.....	2	P.-sr. elective	...
140. Safety Engineering.....	2	P.-sr. elective	111
141. Railway Design.....	3	P.-sr. elective	139
142. Railway Design.....	3	P.-sr. elective	141
143. Locomotive Construction.....	1	P.-sr. elective	139
144. Locomotive Construction.....	1	P.-sr. elective	139
145. Locomotive Road Testing.....	3	P.-sr. elective	Regis. in 141
147a,b. Mechanical Equipment of Buildings	3	P.-sr. elective	Physics 8
149. Seminar.....	1	Sr. or p.-sr. elective	...
150. Seminar.....	1	Sr. or p.-sr. elective	...
160. Aeronautical Engineering.....	3	Elective sr. & p.-sr.	123 and Mech. 153
162. Aeroplane Design.....	3	Elective sr. & p.-sr.	123 and Mech. 155

I-2. ELEMENTARY SHOP PRACTICE. A general course in shop practice, which includes pattern making, foundry, forge, and machine work. SHIPLEY, BRYANT, HOBART, QUIGLEY, RICHARDS.

3a,b. PATTERN MAKING AND FOUNDRY PRACTICE. Patterns for parts of steam and gas engines, machine tools, and special machinery; molding, core making, mixing for the casting of machine parts in iron, brass, bronze, and aluminum. Machine molding and special processes. BRYANT, RICHARDS.

4a,b. MACHINE SHOP PRACTICE. Machine operations. Manufacturing methods. Shop practice, lectures, and recitations. SHIPLEY, HOBART, and Assistants.

5. **ADVANCED MACHINE SHOP PRACTICE.** Machine and tool construction, jigs, fixtures, and special problems. Summer course of four weeks, during the vacation period following the sophomore year. SHIPLEY, HOBART, and Assistants.
6. **MACHINE SHOP PRACTICE.** Course 4a condensed. Also heat treatment of steel in the forge shop. SHIPLEY, HOBART, QUIGLEY, and Assistants.
- 7a,b. **INDUSTRIAL MANAGEMENT LABORATORY.** An advanced course in shop practice with especial reference to production. Time studies; stores and follow-up systems. Investigations in local factories. Lectures, assigned reading, practice, and reports. FLATHER, HOBART.
8. **INDUSTRIAL EDUCATION.** Special course in shopwork including sloyd. For teachers in College of Education. RICHARDS.
15. **MECHANISM AND KINEMATICS.** Transmission of motion. Levers, gearing, linkwork, belts, screws, epicyclic trains, parallel motions, quick-return movements. The paths, speeds, and accelerations of important mechanisms; centroids, analysis of mechanisms; cams; roulettes, tooth profiles; kinematic pairs; machine parts. MARTENIS.
16. **MECHANISM AND KINEMATICS.** The transmission of motion without consideration of the strength of parts. Levers, gearing, linkwork, kinematic pairs; machine parts, construction of tooth profiles. A short course arranged for electrical engineers. MARTENIS.
19. **MECHANICAL TECHNOLOGY.** A study of mechanical processes involved (a) In various manufacturing industries; (b) In the production of materials of construction, including the metallurgy of iron and steel; and (c) In the development and utilization of power. Lectures by members of the department and others.
- 111a,b. **INDUSTRIAL MANAGEMENT.** Shop and factory organization and management; cost and wage systems. Depreciation of equipment. Machine burden. Time studies. FLATHER.
- 113a,b. **POWER PLANT OPERATION.** Operation and maintenance of boilers, engines, gas producers, gas engines, steam turbines, and accessory apparatus. Smoke prevention. Flue gas analysis. Power costs. MARTENIS, RYAN, and Assistants.
115. **POWER ENGINEERING.** Advanced study and application of engines, stokers, boilers; coal handling equipment and accessories. Layout of manufacturing shops. Routing of work, transmission systems and selection of motors, factory lighting and heating. Lectures, recitations, drawing room work. FLATHER.
116. **MACHINE DESIGN.** Calculation and design of such machine parts as fastenings, bearings, rotating pieces, pulleys and belting, spur gearing, bevel gears, spiral gears, and rope driving. Recitations, lectures, and drawing room practice. FLATHER, MARTENIS, and Assistants.

117. MACHINE DESIGN. Application of graphical methods to the design of valve gears and link motions. MARTENIS.
119. AUTOMOBILES AND GAS TRACTORS. A study of mechanical problems involved in automobiles, trucks, and tractors with particular attention to starting and ignition devices, carburetors, lubrication, cooling, and transmissions. Laboratory experiments will be made in connection with the course. SHIPLEY.
121. STEAM ENGINE DESIGN. Calculations and working drawings for a high speed automatic or Corliss steam engine. Theoretical diagrams and determination of details. FLATHER,
123. GAS ENGINE DESIGN. Calculations and working drawings for a single cylinder stationary gas engine. Theoretical diagrams and details of parts. FLATHER, MOYER.
124. INTERNAL COMBUSTION ENGINES AND GAS PRODUCERS. Principles of two- and four-cycle operation. Otto, semi-Diesel, and Diesel. Mechanism of various engines. Carburation, governing, cooling, lubrication, types of transmissions, and differentials. Gas producers, types, operation, suction, pressure, blast furnace. By-products recovery. MOYER.
- 125a,b. TOOL DESIGN. Design of tools for manufacturing interchangeable parts; jigs and milling fixtures. HOBART.
125. ADVANCED MACHINE DESIGN. Original design, including machinery for changing size and form, cranes, pumping, transmission machinery, and engineering appliances. Lectures, problems, and drawing room practice. FLATHER,
- 127a,b. POWER PLANT DESIGN. Problems, designs, and estimates for power plants and central stations. Selection of motive powers, relative advantages of steam and producer gas plants, choice of engines and boilers; pumps, shafting, piping, and accessories. FLATHER.
129. STEAM AND GAS ENGINES AND BOILERS. Steam boilers, stokers, smoke prevention, chimneys. Mechanics of steam engine; work in cylinder; reciprocating parts; steam distribution; indicator cards, mechanism of engine; slide valve, Zeuner diagram, Corliss valves; governors; compounding, steam turbines; elementary study of gas engines. FLATHER,
- 131a,b. HEAT ENGINES AND BOILERS. Course 129 condensed.
132. MEASUREMENT OF POWER. A study of the methods employed in measuring power. Dynamometers; railway dynamometer cars, friction brakes; power required to drive machine tools and shafting; shop layouts, ship dynamometers. FLATHER.
133. HEATING AND VENTILATING. Principles of heating and ventilating. Construction and operating of heating apparatus. Steam, hot water,

- exhaust, vacuum, and fan systems. Lectures, recitations, and designs. ALLEN, MARTENIS.
134. HEATING AND VENTILATING. A course for architects. ALLEN, MARTENIS.
136. COMPRESSED AIR AND REFRIGERATING MACHINERY. (a) Air compressors and motors, and transmission of power by compressed air. (b) Principles of refrigeration. Various types of refrigerating machines, refrigerants, and applications to ice making, cold storage, cooling of air, liquids, and solids. Lectures and recitations. MARTENIS.
138. CONTRACTS AND SPECIFICATIONS. A study of engineering specifications. Classes of specifications; essential features; clauses; details. Bids and bidders; engineering contracts. Examples. Lectures, recitations, and practice in writing specifications. FLATHER.
139. RAILWAY TECHNOLOGY. The practical details of construction of locomotives. A systematic course of visits to the various railroad shops in the vicinity; lectures and recitations.
140. SAFETY ENGINEERING. A study of the methods employed to promote safety in the factory; fire hazards, fire protection; automatic sprinkler apparatus; workmen's compensation laws. SHIPLEY.
- 141-142. RAILWAY DESIGN. Locomotive and car details; the locomotive boiler, linkages, and assembled parts.
- 143-144. LOCOMOTIVE CONSTRUCTION. Design and construction of locomotives. Carriage; frames, springs, equalizing arrangements, running gear, brakes, trucks, lubrications. Boilers; proportions, grates, flues, smokebox, stacks; riveted joints, bracing, staying. Engine details; heat insulation, cylinder proportions. Lectures and assigned reading.
145. LOCOMOTIVE ROAD TESTING. Tests on locomotives and trains. Dynamometer car and drawbar pull. FLATHER and Assistants.
- 147a,b. MECHANICAL EQUIPMENT OF BUILDINGS. Appliances used; heating, ventilating, plumbing systems; piping for fire protection, compressed air, gas and vacuum cleaning; elevators. Choice of systems. Theory and practice of designing and detailing layouts. Equipment designs for various types of buildings. MARTENIS, ROWLEY.
- 149-150. SEMINAR. FLATHER, MARTENIS.
160. AERONAUTICAL ENGINEERING. Design of aerial propellers, aeroplane engines. Application of theory of propellers and gasoline engines to aeroplanes. Includes calculations and drawings for high speed multi-cylinder light weight engine; balancing reciprocating parts; uniform torque; theoretical diagrams, etc.
162. AEROPLANE DESIGN. Calculations and drawings for a given aeroplane; stability, strength, propulsion, and motive power required.

The special courses in Mechanical Engineering which were given as substitutes for certain required work in the Mechanical Engineering Department during the year 1917-18, will be again offered for the year 1918-19. They are:

- MARINE BOILERS, 2 credits, first semester
 MARINE ENGINES, 3 credits, first semester
 MARINE TURBINES, 2 credits, second semester

In addition to these courses a special elementary course in AUTOMOTIVE ENGINES was offered in the second semester to the sophomore Mechanical Engineers and others qualified. This course will again be offered during the year 1918-19.

METALLURGY

Professor WILLIAM R. APPLEBY; Assistant Professor SAMUEL L. HOYT.

COURSES

No.	Title	Credits	Required of	Prereq. courses
157.	Metallography for Engineers.....	3	Sr. M.E. Elective sr. or p-sr.	
158.	Advanced Metallography	2 or 3	Elective	157

157. METALLOGRAPHY FOR ENGINEERS. Metallurgy of iron and steel. Microscopic and thermal analysis of steel and cast iron; heat and mechanical treatment. Laboratory work. HOYT.
158. ADVANCED METALLOGRAPHY. Continuation of Met. 157. Metallography applied to engineering practice; commercial heat treatment; uses and properties of alloy steels. Engineering specifications involving the use of metals and alloys. Laboratory work. HOYT.

MILITARY SCIENCE AND TACTICS

Captain STARKEY Y. BRITT, U. S. Army, Retired, Professor of Military Science and Tactics, and Commandant, Head of Department. Assistant, Sergeant JOSEPH HAVLICEK, U. S. Army, Retired, Instructor. RAY CUNNINGHAM, Adjutant and Assistant Commandant, appointed by University.

REQUIRED WORK

All physically fit male students are required to take Military Training during their freshman and sophomore years, unless they have secured such training at an approved institution endorsed by the Military Department. This course is a prerequisite for graduation. No credits are allowed for this work.

ELECTIVE WORK

The Advanced Course is a two-years course, and is elective for juniors, who have completed two full years of drill. They must pass a

physical examination, and be selected for the work by the President of the institution and the Professor of Military Science and Tactics.

They must sign the following contract:

CONTRACT

"In consideration of commutation of subsistence to be furnished in accordance with law, we hereby agree to continue in the Reserve Officers' Training Camp during the remainder of our course in the University of Minnesota, to devote five hours per week during such period to the Military Training prescribed, and to pursue the courses of camp training during such period as prescribed by the Secretary of War."

The Advanced Course consists in three hours practical drill per week, and two hours theoretical instruction. Upon completion of this course and graduation from college, a member of the R. O. T. C. is eligible for appointment by the President of the United States as a Reserve Officer; and may be called into active service when required.

The following subjects required for advanced students may be accepted by the Professor of Military Science and Tactics, as taught in the regular college course: Military History, Hygiene, Camp Sanitation, First-Aid Instruction and Governmental Administration and Transportation, and it is presumed that each member of the Reserve Officers' Training Corps during his academic year has taken one course, or equivalent credit in either French, German, or Spanish. Three credits are given each semester for satisfactory advanced work in the Military Course.

An excellent additional course is given in the College of Science, Literature, and the Arts for all members of the R. O. T. C., and a course in signalling and telegraphy in the College of Engineering and Architecture. The Commandant recommends that all R. O. T. C. men take these courses.

All members of the R. O. T. C., freshmen, sophomores, juniors, and seniors, receive their uniform from the Government, and juniors and seniors in the advanced course receive in addition to uniform 30 cents per day as commutation of rations.

PERSONAL HYGIENE AND FIRST AID

Associate Professor RICHARD O. BEARD; Assistant Superintendent of Nurses MARION L. VANNIER.

COURSES

No.	Title	Credits	Rec.	Lect.	Lab.	Prep.
1.	Personal Hygiene and First Aid to the Sick or Injured	1	..	1	2	..
I.	PERSONAL HYGIENE AND FIRST AID TO THE SICK OR INJURED. Lectures and demonstrations of first aid procedure. Practical exercises will be conducted in the University Hospital or Out-Patient Department. Three hours weekly during one quarter of school year. BEARD, VANNIER.					

PHYSICS

Professors HENRY A. ERIKSON, Chairman, W. F. G. SWANN, ANTHONY ZELENY; Associate Professors LOUIS W. MCKEEHAN,* JOHN T. TATE,* Assistant Professor PAUL E. KLOPSTEG.

COURSES

No.	Title	Credits	Required of	Prereq. courses
1.	General Physics	3	Soph. Arch.	Math. 72
2.	General Physics	3	Soph. Arch.	1
3.	General Laboratory Practice.....	1	Soph. Arch.	Regis. in 1
4.	General Laboratory Practice.....	1	Soph. Arch.	See statement
7.	General Physics	4	Soph. Engrs.	Math. 72
8.	General Physics	4	Soph. Engrs.	7, See statement
9.	General Laboratory Practice.....	1	Soph. Engrs.	Regis. 7
10.	General Laboratory Practice.....	1	Soph. Engrs.	Regis. 8
163.	Electrical Measurements	2	Jr. E. E.	8, 10

1. GENERAL PHYSICS. Mechanics of solids, fluids, sound, heat. Experimental rather than mathematical; fundamental principles. First part of general Course 1-2. Should be taken with Course 3, but may be taken separately. One lecture, two recitations per week. ZELENY, KLOPSTEG.
2. GENERAL PHYSICS. Electricity, magnetism, light. Treatment experimental; fundamental principles, including radioactivity, ionization, X-radiation. Second part of general Course 1-2. Should be taken with Course 4, but may be taken separately. One lecture, two recitations per week. ZELENY, KLOPSTEG.
3. GENERAL LABORATORY PRACTICE. Physical measurements in the mechanics of solids and fluids, sound, and heat, giving the student a knowledge of experimental methods, and an acquaintance with the fundamental facts of the subject. MCKEEHAN.
4. GENERAL LABORATORY PRACTICE. Physical measurements in electricity, magnetism, and light. Open to all who have completed or are taking Course 2, and have attended Course 3 or 9. MCKEEHAN.
7. GENERAL PHYSICS. Mechanics of solids and fluids, sound, and heat; numerous problems to illustrate the principles. Must be taken in conjunction with Course 9. The first part of a general course 7-8, 9-10. One lecture, three recitations per week. ERIKSON, TATE.
8. GENERAL PHYSICS. Electricity, magnetism, and light. Must be taken in conjunction with Course 10. The second part of a general course 7-8, 9-10. One lecture, three recitations per week. ERIKSON, TATE.
9. GENERAL LABORATORY PRACTICE. Physical measurements in the mechanics of solids and fluids, sound, and heat. Must be taken in conjunction with Course 7. MCKEEHAN.

* On leave of absence.

10. GENERAL LABORATORY PRACTICE. Physical measurements in electricity, magnetism, and light. Must be taken in conjunction with Course 8. MCKEEHAN.

163. ELECTRICAL MEASUREMENTS. Devoted mainly to the study of capacity, inductance, and magnetic induction. ZELENY.

For electives in the Department of Physics see Bulletin of the College of Science, Literature, and the Arts.

POLITICAL SCIENCE

Professors JEREMIAH S. YOUNG, CEPHAS D. ALLIN; Assistant Professor WILLIAM ANDERSON.

COURSES

No.	Title	Credits	Required of	Prereq. courses
25.	American Government	3		None
26.	Business Law	3		25

25. AMERICAN GOVERNMENT. An introductory course in Political Science, dealing with forms of government. The development, organization, and actual workings of national, state, and local government in the United States.

26. BUSINESS LAW. A course in business law, arranged for engineers, including the law of contracts, suretyship, agency, partnership, corporations, negotiable instruments, conveyances, patents, and riparian rights.

RHETORIC AND PUBLIC SPEAKING

Professor JOSEPH M. THOMAS; Assistant Professors HALDOR GISLASON, CHARLES W. NICHOLS, FRANK M. RARIG; Instructor HOWARD T. VIETS; Assistant RIVERDA H. JORDAN.

COURSES

No.	Title	Credits	Required of	Prereq. courses
3-4.	Rhetoric and Composition.....	6	Fr.	None
31.	Technical Writing	2 or 3	Elective	3-4
41a,b.	Public Speaking	3	Elective	3-4
42.	Public Speaking	3	Elective	3-4

3-4. RHETORIC AND COMPOSITION. Training in writing; study of the work of writers who have handled scientific subjects with clearness and power; outside reading. NICHOLS, VIETS, JORDAN.

31. TECHNICAL WRITING. A semester course in business letters, reports, etc., planned to meet the professional needs of engineering students. NICHOLS.

41a,b. PUBLIC SPEAKING. A general course in public speaking. RARIG, GISLASON.

42. PUBLIC SPEAKING. A continuation of Course 41. RARIG, GISLASON.

SUMMER READING

All engineering students are advised to take general courses in reading of a non-professional character, during their college course. The purpose of this general reading is to increase the acquaintance of the student with literature, history, and general science; to develop in him a taste for good reading; and to impress him with the importance of such knowledge not only as a source of individual enjoyment but as a practical aid to engineers in their social and business relations.

A circular on general reading has been prepared and may be secured at the Dean's office. This contains a list of books from which the student may make his own selection. The books have been chosen for their value in providing general training, but an attempt has been made to include only readable and attractive works. Most of the books in the list are available in standard low priced editions, and each student is urged to purchase his own copy and thus add to the value and pleasure of the reading. A statement of the books read during the college year is required at the close of the year, and a statement of those read during the summer vacation is required at the beginning of the next college year. In addition the student may be asked to give the substance of the books read and his impressions concerning them. One credit will be allowed for each course satisfactorily completed.

7.

The Bulletin *of the University of* **Minnesota**

*The College of Agriculture, Forestry,
and Home Economics*
Announcement of
Courses in Agriculture for the Year
1918 - 1919

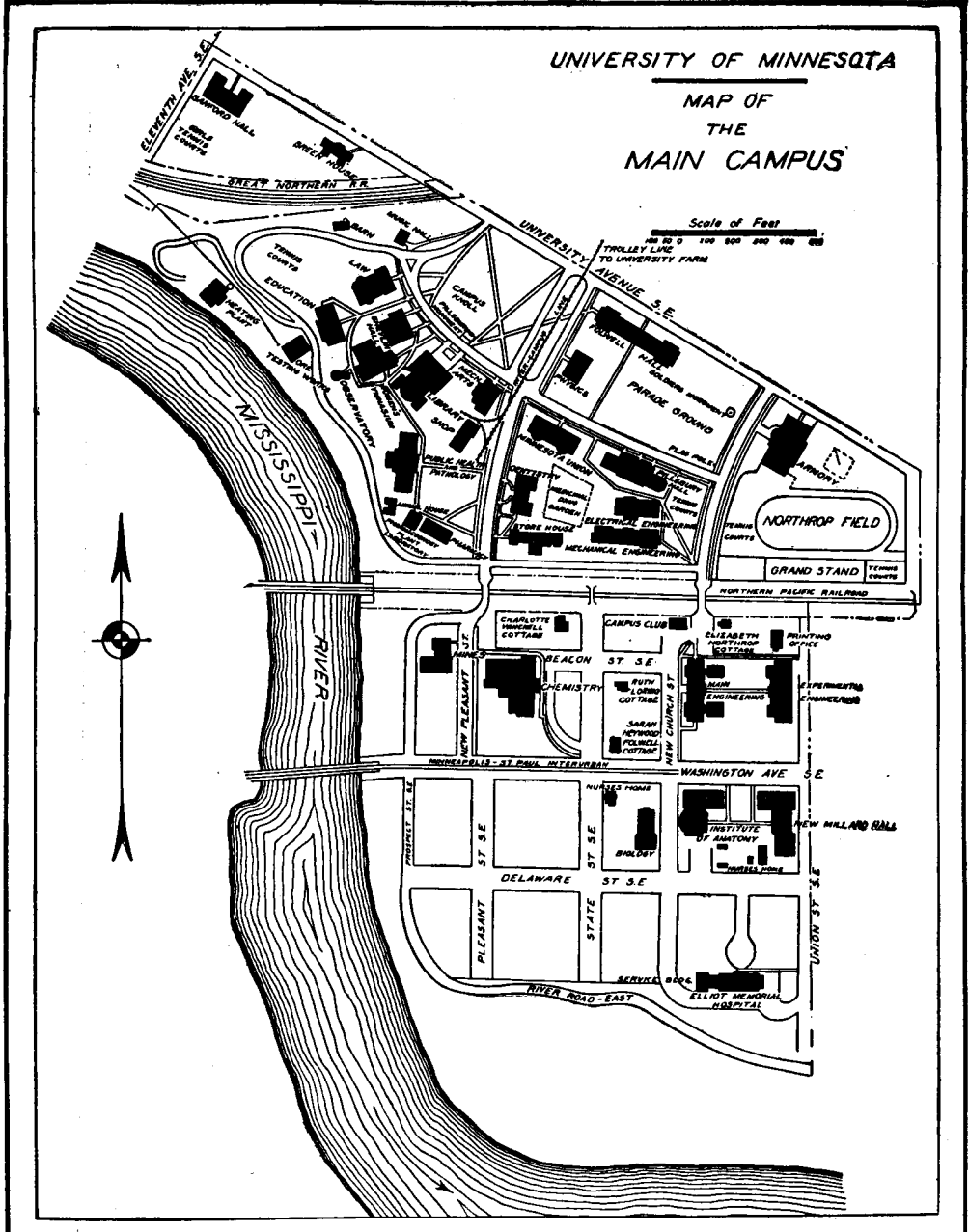
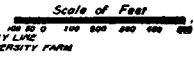


Vol. XXI No. 11 June 10 1918

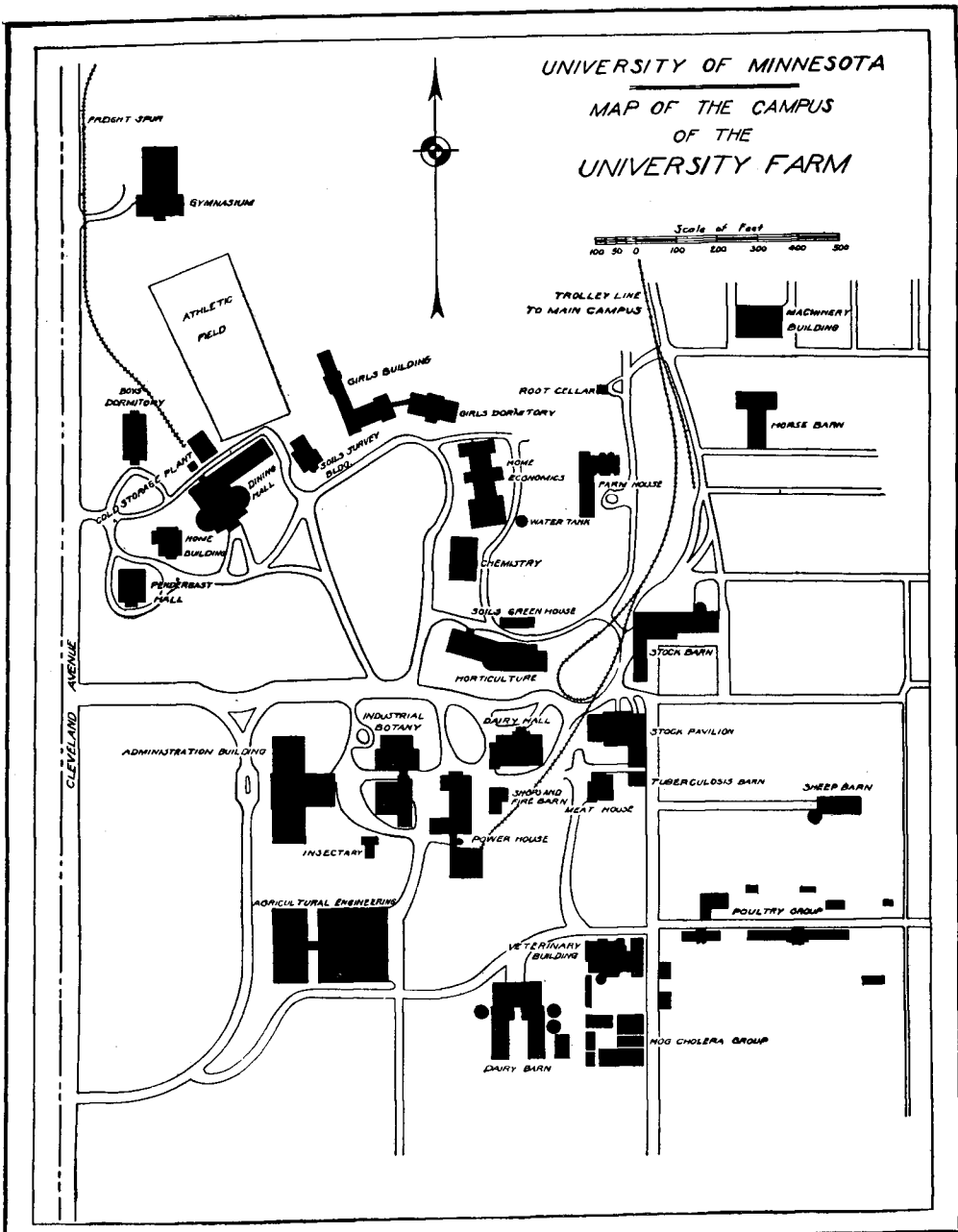
*Entered at the post-office
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Minneapolis, Minnesota*

UNIVERSITY OF MINNESOTA

MAP OF THE MAIN CAMPUS



Area of Main Campus, 108.5 acres



Area of University Farm, 422.56 acres

1918							1919														
JULY							JANUARY							JULY							
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	..	..
..	
AUGUST							FEBRUARY							AUGUST							
..	..	..	..	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	..	..	..	..	..	..
SEPTEMBER							MARCH							SEPTEMBER							
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	..	..	..	..	..	..	..	..	..	..	..	..
OCTOBER							APRIL							OCTOBER							
..	..	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	..
..	
NOVEMBER							MAY							NOVEMBER							
..	3	4	5	6	7	8	2	1	2	3	1
10	11	12	13	14	15	16	9	4	5	6	7	8	9	10	2	3	4	5	6	7	8
17	18	19	20	21	22	23	16	11	12	13	14	15	16	17	9	10	11	12	13	14	15
24	25	26	27	28	29	30	23	18	19	20	21	22	23	24	16	17	18	19	20	21	22
..	30	25	26	27	28	29	30	31	23	24	25	26	27	28	29
..	30
DECEMBER							JUNE							DECEMBER							
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	
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CALENDAR

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

1918-1919

1918			
September	11	Wednesday	Registration closes except for new students
September	17-24	Week	Entrance examinations, registration of new students, and payment of fees
September	25	Wednesday	First semester begins
September	30	Monday	Farm experience examinations
October	11	Friday	Half holiday. Annual freshman-sophomore contest
October	17	Thursday	Senate meeting, 4:00 p.m.
October	19	Saturday	Last day for removal of second semester incompletes
October	28	Monday	School of Agriculture, first term begins
November	5	Tuesday	General Election Day; a holiday
November	27	Wednesday	Thanksgiving recess begins 9:00 p.m.
December	2	Monday	Thanksgiving recess ends 8:00 a.m.
December	2-7	Week	Second semester condition examinations
December	3	Tuesday	Creamery Butter Makers' Short Course (10-days' session), and Cheese Makers' Short Course (three-weeks' session) begin
December	16-20	Week	Ice Cream Makers' Short Course
December	20	Friday	School of Agriculture, first term closes
December	21	Saturday	Christmas vacation begins 12 m.
1919			
December	30	Week	Farmers' and Home-Makers' Week Short Course
January	4		
January	2	Thursday	Christmas vacation ends 8:00 a.m. Senior field work in forestry begins
January	6	Monday	School of Agriculture, second term begins
January	6	Monday	Dairy Short Course begins
January	20	Monday	Second semester registration closes except for new students
January	27	Monday	Final examinations begin
January	31	}	Registration of new students and payment of fees
February	1		
February	3	Monday	Second semester begins. Senior field work in forestry closes
February	12	Wednesday	Lincoln's Birthday; a holiday
February	20	Thursday	Senate meeting, 4:00 p.m.

COURSES IN AGRICULTURE

February	22	Saturday	Washington's Birthday; a holiday
February	29	Saturday	Last day for removal of first semester incompletes
March	26	Wednesday	School of Agriculture closes
March	31	} Week	Boys' and Girls' Week
April	5		
April	17	Thursday	Easter recess begins 9:00 p.m.
April	22	Tuesday	Easter recess ends 8:00 a.m.
April	22-26	Week	First semester condition examinations
May	15	Thursday	Senate meeting, 4:00 p.m.
May	23	Friday	Final examinations begin 2:00 p.m.
May	30	Friday	Memorial Day; a holiday
May	31	Saturday	Second semester closes
June	1	Sunday	Baccalaureate service
June	2	Monday	Senior Class Day exercises
June	4	Wednesday	Alumni Day
June	5	Thursday	Forty-seventh Annual Commencement
June	6	Friday	Summer vacation begins
June	11	Wednesday	Freshman work in forestry at Itasca Park begins
June	16	Monday	Summer Session and Teachers' Training School begin
August	16	Saturday	Freshman forestry work at Itasca Park closes

THE COLLEGE OF AGRICULTURE

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FACULTY

9

- ROBERT C. LANSING, M.A., Assistant Professor of Rhetoric
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* On leave of absence, 1918-19.

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11

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Work 61 S. St. Albans St., St. Paul
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2256 Commonwealth Ave., St. Paul
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1366 Raymond Ave., St. Paul
- LEWIS H. FUDGE, Assistant State Leader, Boys' and Girls' Club Work
1393 Cleveland Ave., St. Paul
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- KEMPER A. KIRKPATRICK, Assistant State Leader County Agents
1416 Raymond Ave., St. Paul
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FACULTY

15

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FACULTY COMMITTEES

1918-1919

Executive.—Executive Committee of the Department of Agriculture.

Enrollment.—WEST, BIESTER, DUTCHER, MOWRY, PIERCE, WENTLING.

Curriculum and Catalog

Agricultural Courses.—BOSS, BRIERLEY, GAY, HAYES, STORM, WEST.

Forestry Courses.—CHEYNEY, ALLISON, KENETY, WENTLING.

Home Economics Courses.—BERRY, H. GOLDSTEIN, VERMILYE, WEIGLEY, WELLER.

Students' Work.—FREEMAN, BEGGS, BERRY, CHEYNEY, NICHOLSON, WEST.

Student Organizations.—LANSING, FITCH, FREEMAN, WEIGLEY, WELLER.

Faculty Business.—GORTNER, RUGGLES, STAKMAN, VERMILYE.

Appointment.—STORM, ARNY, BERRY, WEIGLEY.

Farm Experience.—BOSS, BRIERLEY, KILDEE, PATERSON.

GENERAL INFORMATION

ADMISSION

New students are admitted at the opening of the first semester in September and the second semester in February.

All students entering for the first time must submit their credentials to the Enrollment Committee.

Admission is either by certificate or by examination. Candidates must have completed the equivalent of a four-year high school course and must present:

1. Four units of English; or three units of English and four units of a foreign language; or three units of English and two units in each of two foreign languages.
2. One unit of algebra and one unit of plane geometry.
3. Enough additional work to make in all fifteen units, of which not more than four may be in subjects not listed in the admission groups.

Graduates of the School of Agriculture of the University of Minnesota who have completed the two summers of supervised work offered in the School course, one additional School year, and one additional summer's work, or the equivalent thereof, will be admitted to the College of Agriculture, Forestry, and Home Economics.

For details of admission requirements and definition of "unit," see the Bulletin of General Information.

Every prospective student is urged to obtain before entering college at least six months' practical experience on a farm. Entering students whose farm experience credentials are not satisfactory will be examined as to their familiarity with farm practices, and farm experience will be required during the college course in accordance with the results of these examinations. For students specializing in Dairy Husbandry at least three of the six months of approved farm experience must be on an accredited dairy farm.

Applicants for admission are urged to present Physics (1 unit), Chemistry (1 unit), and Higher Algebra ($\frac{1}{2}$ unit), for entrance credits. If these subjects are not completed in the high school, they will have to be taken in the University, thus postponing some of the vocational courses.

FEES

Incidental semester fee	
Residents of Minnesota	\$20.00
Non-residents	40.00
Deposit (first semester only)	5.00
Health fee (per semester)	3.00
Military Deposit (freshmen or sophomores, first semester in residence only)	
Subject to change to meet contract price of uniform	23.65
Gymnasium suit deposit	4.51
Minnesota Union (per semester)	1.00

Special fees

Examination for removal of conditions.....	1.00
Examinations for credit (after the first semester in residence).....	5.00
Special examinations	5.00
Change of registration.....	2.50

Late registration.—Old students must indicate their registration not later than two weeks before the day set for classes to begin. All students must complete their registration (including payment of fees) before the day set for classes to begin. Penalty for delay in either indicating or completing registration, one dollar. An additional twenty-five cents is charged for each day of delay after the last day set for the completion of registration and a similar charge for each day of delay after the last day set for payment of fees.

Important.—The regulations require that no student be allowed to register after the semester opens except by special committee action.

FACULTY REGULATIONS

Students are held responsible for compliance with all faculty regulations. These regulations are published in a booklet issued to students at the time of registration.

REQUIREMENTS FOR GRADUATION AND DEGREES

After the completion of the prescribed course of study, including all of the required work and the requisite amount of elective work equivalent to a total of 144 credit hours, candidates will be recommended for graduation with the degree of Bachelor of Science.

PROFESSIONAL CERTIFICATE

The University State Teachers' Certificate in Agricultural Education will be granted in 1918-19 to graduates of the College of Agriculture, Forestry, and Home Economics, who have completed fifteen hours in approved professional courses, and to graduates of the College of Education who have carried the prescribed course leading to such a certificate.

The Industrial Certificate which all Minnesota teachers of agriculture are required to have, will be granted in 1918-19 by the State Department of Education to graduates of the College of Agriculture, Forestry, and Home Economics, who are recommended by the College and who have the professional training required by the regulations of the State Department of Education for special teachers of agriculture, and to graduates of the College of Education who have completed the course leading to such a certificate.

Students desiring this industrial certificate should consult with the Chief of the division of Agricultural Education before registering for the work in the junior year.

COURSE OF STUDY

The work of the freshman year and a majority of that of the sophomore year is the same for all students. The work of the junior and senior years is arranged to permit specialization.

The College recognizes four principal groups of students:

1. Those who are preparing for general agricultural pursuits, such as county agent work, dairying, stock raising, vegetable and fruit farming, grain farming, and the management of general and specialized types of farms.

2. Those who are preparing to become specialists in any of the above lines for the practice of professional agriculture in college or experiment station. For these students graduate work after the completion of the prescribed course is advised.

3. Those who are preparing to become teachers of agriculture and manual training in secondary schools.

4. Those who expect to become specialists in some one of the special agricultural sciences such as Agricultural Biochemistry, Agricultural Economics, Entomology, Plant Breeding, Plant Pathology, Soils, etc. For thorough preparation in any of the lines listed in this group, graduate work, after the completion of the four-year course, is essential.

Groups of courses, supplementary to those required of all students, are outlined on pages 23 to 25. Some one of these should be chosen not later than the close of the freshman year.

Students who have in mind some definite field of work not covered by these suggested lines of specialization should consult the Dean of the College for advice in the modification of his course of study or for the arrangement of a curriculum particularly suited to the vocation for which he desires to prepare himself.

After selecting or arranging such a course of study, each student should consult frequently with the head of the division, or divisions, giving the major work in his curriculum, advising particularly with reference to electives and practical vacation work which may be of value in his chosen line of specialization.

EXPLANATION OF COURSE NUMBERS

Odd numbers indicate first-semester courses; even numbers, second-semester courses. A combination of the two (e.g., 5-6) indicates courses continuing through the year. In the case of courses repeated the second semester, the suffix *a* indicates first semester, the suffix *b*, second semester.

All undergraduate courses are numbered from 1 to 100. All courses open to undergraduates and graduates are numbered from 101 to 200.

Numbers following the descriptive name of a course indicate the number of credit hours.

Course numbers in parentheses, following the number of credit hours indicate prerequisite courses.

One credit hour is equivalent to (1) one lecture or recitation period requiring two hours of preparation, (2) two periods of laboratory work requiring one hour of preparation, or (3) three periods of laboratory work with no preparation, each week for one semester.

GROUP I. GENERAL REQUIREMENTS FOR ALL STUDENTS IN AGRICULTURE

FRESHMAN YEAR

All of the following work is required of every student except for the exemptions indicated. For some students this represents more than the regular amount of work of 18 credit hours per semester. In such cases those subjects listed below which can not be taken in the freshman year must take precedence the following year.

1. *Non-credit courses* required for graduation in addition to the 144 credit hours.
 - Agron. 7, Farm Practices. Those entering with sufficient knowledge of general farm practices, as shown by certificate or examination, are exempt.
 - Freshman Lectures. A course of nine lectures intended primarily to familiarize the new student with the College, college customs, and methods of procedure.
 - Military Drill. One afternoon per week both semesters. Students found to be physically unfit may be required to substitute special corrective exercises in gymnasium.
 - Phys. Educ. 1, Personal Hygiene. Two lectures per week, first six weeks of the first semester.
 - Phys. Educ. 3a,b, Gymnasium. Two hours per week, last twelve weeks of the first semester or the first twelve weeks of the second semester.
2. *General courses*.—All of the following, except An. Biol. 3-4, Chem. 33, and Rhet. 3, may be registered for either semester except that the proper sequence of continuation courses and the prerequisites must be observed. Ordinarily, if Botany is registered for in the freshman year, registration for Zoology should be postponed until the sophomore year, and vice versa.
 - Agron. 1a,b, Farm Crops, 3
 - An. Biol. 3-4, General Zoology, 6. Should be postponed until the sophomore year by those who take Bot. 1-2.
 - An. Husb. 1a,b, Types and Breeds of Livestock, 3.
 - Bot. 1a,b,-2a,b, General Botany, 6. Students presenting a unit of high-school botany for admission may omit the first semester and substitute three credits elective later in their course of study. This course should be postponed until the sophomore year by those who take An. Biol. 3-4.
 - Chem. 3a,b, Advanced General Chemistry and Qualitative Analysis, 3. Those required to take Chem. 33 are exempt.
 - Chem. 33, General Chemistry and Qualitative Analysis, 5. Students presenting one unit of high-school chemistry may omit this course and register for Course 3. Those required to take this course because of inability to successfully carry Course 3 will be allowed not more than three credits.
 - Chem. 4a,b, General Chemistry and Qualitative Analysis, 3. (Chem. 3 or 33)
 - Dy. Husb. 7a,b, Elements of Dairy Husbandry, 3.
 - Econ. 2a,b, Industries and Commerce of the United States, 3.
 - Farm Eng. 11a,b, Applied Mathematics, 3. Students presenting a half unit of higher algebra for admission may omit this and substitute three credits elective later in their course of study.
 - Farm. Eng. 13a,b, Farm Motors, 3
 - Hort. 90a,b, General Horticulture, 3. This course should be omitted by those intending to specialize in any horticultural line of work or in Agricultural Education and three credits elective substituted later in the course of study.

Rhet. 1a,b,-2a,b, Rhetoric, 6

Rhet. 3, Elementary Rhetoric, 3. Required only of those who are found to be unable to carry Course 1.

SOPHOMORE YEAR

1. *Non-credit courses* required for graduation in addition to the 144 credit hours.

Military Drill. One afternoon per week both semesters. Students found to be physically unfit may be required to substitute special corrective exercises in gymnasium.

2. *Freshman courses* which were not completed during the freshman year.

3. *General courses*.—With the exception of Farm Eng. 21-22, these courses may be registered for either semester except that the proper sequence of continuation courses and prerequisites must be observed.

Agr. Biochem. 7-8, General Agricultural Biochemistry, 6. (Chem. 6 cred.). Not required of those who are specializing in a course of study requiring Chem. 35-36.

Econ. 3a,b, Principles of Economics, 3

Farm Eng. 3a,b, Mechanical Drawing 3. Those presenting a unit of high-school mechanical drawing may omit this and substitute three credit hours elective later in their course of study.

Farm. Eng. 21-22, Agricultural Physics, 6. Those presenting a unit of high-school physics and those selecting a line of specialization which requires Physics 1-2, may omit this and substitute six credit hours elective later in their course of study.

Path. 6a,b, Elementary Bacteriology, 3

Pol. Sci., 1a,b, American Government, 3

Rhet. 11a,b, Argumentation, 3 (Rhet. 2)

Rhet. 22a,b, Public Speaking, 3 (Rhet. 2)

4. *Special courses* as prescribed by the curriculum of the line of specialization selected. Enough of these courses should be selected to make up, together with those listed in 2 and 3 above, eighteen credit hours each semester. See special requirements on pages 23 to 25.

JUNIOR YEAR

1. *General courses*.—Soils, 2, Soils, 4. (Chem. 6 cred.)

2. *Special courses* as prescribed by the curriculum of the line of specialization. See special requirements on pages 23 to 25.

3. *Electives*.—Enough elective credits should be registered for to make up with 1 and 2, above, 18 credit hours each semester.

SENIOR YEAR

1. *Special courses* as prescribed by the curriculum of the line of specialization selected. See special requirements on pages 23 to 25.

2. *Electives*.—Enough elective credits should be registered for to make up, with the special courses, 18 credit hours each semester.

GROUP II. SPECIAL REQUIREMENTS IN THE DIFFERENT LINES OF SPECIALIZATION (SUPPLEMENTARY TO GROUP I)

Course descriptions will be found under corresponding course numbers of divisions indicated. These are arranged in alphabetical order on pages 27 to 73. In planning registration please note particularly (a) prerequisites for prescribed courses; (b) classes of students to which courses are offered; (c) number of credits; (d) semester or semesters offered (indicated by course numbers, see page 20), and be sure that provision

is made in registration for the proper sequence of continuation and full year courses. In arranging a program, required courses which are not repeated each semester should be given precedence.

AGRICULTURAL BIOCHEMISTRY

General statement.—Students specializing in Agricultural Biochemistry are expected to include among their electives the following courses or their equivalent: Ger. 1, French 1, Bot. 9-10 or Physiol. 103-104, and as much Mathematics as practicable. The following sequence of Mathematics courses is suggested as desirable: Math. 1, 2, 9, and 11 (see bulletin of College of Science, Literature, and the Arts).

Sophomore year, 8 credits: Chem. 35-36

Junior year, 21 credits: Agr. Biochem. 9-10; Physics 1-2, 3-4; Pl. Path. 11

Senior year, 16 credits: Agr. Biochem. 111, 113; Chem. 121-122, 123-124; Soils 104a.

AGRICULTURAL ECONOMICS

Sophomore year, 3 credits: Econ. 18

Junior year, 28 credits: Agron. 101b, 107; An. Husb. 13; Econ. 19, Econ. Elect. (6 cred.); Ent. 3; Farm Eng. 10; Pl. Path. 1.

Senior year, 24 credits: Agron. 102, Agron. Elect. (3 cred.), F. Mgt. Elect. (3 cred.); Econ. 101, 107, 108, 119, 120.

AGRICULTURAL EDUCATION

General statement.—Students desiring to procure a State Professional Certificate should consult the Chief of the Division of Agricultural Education before registering for the work of the sophomore year.

Sophomore year, 6 credits: Agr. Educ. 11, 21 or Educ. 5

Junior year, 33 credits: Agr. Educ. 68, Agron. 3b, 107, 110; An. Husb. 3, 4, 5, 13; Dy. Husb. 4; Ent. 3; Pl. Path. 1; Vet. Med. 8

Senior year, 24 credits: Agr. Educ. 41, 131, 151; Agron. 102; Farm Eng. 7; Pl. Path. 6, 9; Poult. Husb. 1

AGRICULTURAL EDUCATION—MANUAL TRAINING

General statement.—Students desiring to procure a state professional certificate should consult the Chief of the Agricultural Education Division before registering for the work of the sophomore year.

In order to be certified for the Industrial certificate in Manual Training and Agriculture, the following courses must be completed in addition to the required work outlined below: An. Husb. 5, 13 (junior year), and Poult. Husb. 1, Ent. 16 (senior year).

Sophomore year, 6 credits: Agr. Educ. 11, 21 or Educ. 5

Junior year, 27 credits: Agr. Educ. 68; Agron. 3b, 107, 110; An. Husb. 3, 4; Dy. Husb. 4; Ent. 3; Pl. Path. 1; Vet. Med. 8

Senior year, 27 credits: Agr. Educ. 41, 131, 133, 151; Agron. 102; Farm Eng. 4 or 16, 5, 7, Adv. Draw. or Adv. Woodwork

AGRONOMY

Sophomore year, 6 credits: Bot. Elect. (6 cred.)

Junior year, 18 credits: Agron. 107; An. Nutr. 1; Dy. Husb. 2; Ent. 3; Pl. Path. 1; Vet. Med. 8

Senior year, 25 credits: Agron. 102, 103, 106, 110; Agron. Elect. (3 cred.); An. Husb. 7; Farm. Eng. 7; Pl. Path. 9

ANIMAL HUSBANDRY

General statement.—Students specializing in Animal Husbandry are advised to select at least a portion of their electives from the following: Agron. 103; Dy. Husb. 2; Econ. 18; Ent. 9; Rur. and Agr. Journ. 11-12

- Sophomore year, 4½ credits: Dy. Husb. 4; Vet. Med. 2
 Junior year, 19½ credits: An. Husb. 3, 4; An. Nutr. 1; Dy. Husb. 12; Vet. Med. 3-4, 6, 12
 Senior year, 30 credits: Agron. 102, Agron. Elect. (3 cred.); An. Husb. 5, 7, 9, 101, and one of the following: 104, 106, 108, or 110; An. Husb. Elect. (4 cred.); Farm. Eng. 7; Poult. Husb. 1

DAIRY HUSBANDRY—PRODUCTION

General statement.—Students specializing in Dairy Husbandry are required to obtain at least three of the six months of approved farm experience required for graduation on an accredited dairy farm.

- The following electives are recommended: Agron. 103; Econ. 18; Ent. 9; Poult. Husb. 1; Rur. and Agr. Journ. 11-12
 Sophomore year, 7½ credits: Dy. Husb. 4, 11; Vet. Med. 2
 Junior year, 24½ credits: Agron. Elect. (3 cred.); An. Husb. 3, 4; An. Nutr. 1; Dy. Husb. 2, 102; Vet. Med. 3-4, 6
 Senior year, 22 credits: Agr. Biochem. 12; Agron. 102; An. Husb. 5, 7; Dy. Husb. 101; Farm. Eng. 7; Vet. Med. 12

DAIRY HUSBANDRY—MANUFACTURE

General statement.—Students specializing in Dairy Husbandry are required to obtain at least three of the six months of approved farm experience required for graduation on an accredited dairy farm.

- The following electives are recommended: Agron. 5, 103; Econ. 18; Ent. 9; Poult. Husb. 1; Rur. and Agr. Journ. 11-12
 Sophomore year, 7½ credits: Dy. Husb. 4, 11; Vet. Med. 2
 Junior year, 24½ credits: An. Husb. 3, 4; An. Nutr. 1; Dy. Husb. 2, 9, 10; Vet. Med. 3-4, 6
 Senior year, 22 credits: Agr. Biochem. 12; Agron. 102; An. Husb. 5, 7; Dy. Husb. 101; Farm. Eng. 7; Vet. Med. 12

ENTOMOLOGY AND ECONOMIC ZOOLOGY

General statement.—Students planning to specialize in Entomology and Economic Zoology are advised to register for An. Biol. 3-4 during their freshman year.

A reading knowledge of French and German is desirable and is essential to graduate work.

- Sophomore year, 6 credits: Ent. 1-2
 Junior year, 18 credits: Agron. Elect. (3 cred.); Ent. 101-102, Ent. or Hort. Elect. (3 cred.); Hort. Elect. (3 cred.); Pl. Path. 1
 Senior year, 12 credits: Ent. 107-108, Pl. Path. 14, 107

FARM MANAGEMENT

- Sophomore year, 3 credits: Econ. 18
 Junior year, 21 credits: Agron. 101b, 107; An. Nutr. 1; Dy. Husb. 2; Ent. 3; Pl. Path. 1; Vet. Med. 8
 Senior year, 25 credits: Agron. 102, 108, 110; An. Husb. 7; Econ. Elect. (3 cred.); Farm. Eng. 7; F. Mgt. Elect. (3 cred.); Pl. Path. 9

HORTICULTURE

General statement.—Electives should include work in Botany, Economics, Entomology, and Plant Pathology

- Sophomore year, 6 credits: For. 21; Hort. 32
 Junior year, 24 credits: Bot. Elect. (6 cred.); Ent. 1-2; Hort. 6; Hort. Elect. (3 cred.); Pl. Path. 1, 14
 Senior year, 21 credits: Agron. 102; Hort. 105, 107 or 131, 109, 110; Hort. Elect. (6 cred.)

PLANT PATHOLOGY

General statement.—Students specializing in Plant Pathology should consult the Chief of the Division, with reference to requirements in mathematics, before registering for the work of the sophomore year.

Sophomore year, 6 credits: Bot. Elect. (6 cred.)

Junior year, 26 credits: Bot. Elect. (6 cred.); Ent. 3, 18; Physics 1-2, 3-4; Pl. Path. 1, 14

Senior year, 21 credits: Agr. Biochem. 111; Agron. 103; Bot. or Ent. Elect. (6 cred.); Hort. Elect. (3 cred.); Plant Path. 104, 107

SOILS

General statement.—Students specializing in Soils should consult the Chief of the Division, with reference to requirements in mathematics, before registering for the work of the sophomore year.

Sophomore year, 11 credits: Chem. 11-12; Geol. 1

Junior year, 27 credits: Chem. 35-36; Farm Eng. 10; Physics 1-2, 3-4; Pl. Path. 1; Soils 104a

Senior year, 19 credits: Agr. Biochem. 111; Agron. 102; Ent. 3; Geol. 21; Soils 106, 107, 110

ELECTIVES

Students should consult with the division in which they are specializing with reference to the elective courses which must be chosen to make up the 144 credit hours required for graduation.

Only a limited number of elective courses are open to freshmen. First year students, who for any reason are unable to follow the regular curriculum, are advised to fill their program with a required course from the sophomore schedule, if possible, and postpone the choice of electives until the sophomore year. This plan will enable the student to obtain a better view-point from which to select his electives and allow a wider range of subjects from which to choose.

FRESHMAN ELECTIVES

The following divisions and departments offer elective work to freshmen. For the descriptions of available courses see pages 27 to 73, and for departments marked S., L., and A., see bulletin of the College of Science, Literature, and the Arts.

Agricultural Education	Home Economics
Farm Engineering	Mathematics (S., L., and A.)
Forestry	Poultry Husbandry
German	Romance Languages
History (S., L., and A.)	

SOPHOMORE, JUNIOR, AND SENIOR ELECTIVES

Nearly all of the divisions offer elective work to sophomores, juniors, and seniors. In selecting courses special attention should be paid to prerequisites, the classes to which the courses are offered, and, in the case of courses offered by departments of other schools and colleges of the University, to the regulations of the school or college concerned.

Elective courses in the college of Science, Literature, and the Arts, are separated into Junior College courses, open to freshmen and sophomores, and Senior College courses, open to juniors and seniors. In addition to satisfying other prerequisites an average grade of C (81-87) must be maintained for the first two years in order to register for a Senior College elective.

DESCRIPTION OF COURSES

For explanation of course numbers and credits see page 20.

AGRICULTURAL BIOCHEMISTRY

Professor ROSS AIKEN GORTNER; Associate Professor CLYDE H. BAILEY;
Assistant Professors R. ADAMS DUTCHER, CLARENCE A. MORROW,
JOHN J. WILLAMAN.

General statement.—This Division offers two types of work, namely, courses in those phases of chemistry which have special application in agriculture or home economics for students whose major work is in other divisions; and courses designed to train chemists for research or instruction in the special field of Agricultural Biochemistry. For specialization in this Division, see special requirements in Course of Study.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
7-8.	General Agricultural Biochemistry...	6	Soph., jr., sr.	Chem. 1 yr.
9.	Quantitative Analysis.....	5	Jr., sr.	Chem. 2 yrs.
10.	Agr. Quant. Analysis.....	5	Jr., sr.	9
12.	Dairy Chemistry.....	5	Jr., sr.	7-8
14.	Grain Grading.....	2	Jr., sr.	7-8, Agron. 110
<i>Advanced Courses</i>				
105.	Detection of Adulteration.....	5	Sr.	10
106.	Agr. Products and By-Products....	3	Sr.	10
108.	Chem. of Wheat and Its Products...	2	Sr.	3 or 7-8
110.	Flour Laboratory Methods.....	3	Sr.	10; parallel 108
111.	Phytochemistry	3	Sr.	Biol. 2 yrs., Org. Chem.
113.	Biochemical Lab. Methods.....	2	Sr.	Biol. 2 yrs., Org. Chem.
114.	Laboratory Problems.....	3 or 5	Sr.	111, 113
115.	Chemistry of Animal Nutrition.....	3	Jr., sr.	7-8

INTRODUCTORY COURSES

- 7-8. GENERAL AGRICULTURAL BIOCHEMISTRY. A qualitative and quantitative study of the types of organic compounds found in plants and animals, and of the chemical changes which occur during the growth and utilization of plant and animal products. DUTCHER.
9. QUANTITATIVE ANALYSIS. The principles involved in gravimetric and volumetric analyses. The course includes the gravimetric determination of iron, sulphur, phosphorus, magnesium, and chlorine; acidimetry, alkalimetry; the volumetric determination of iron and calcium; and iodimetry. MORROW.
10. AGRICULTURAL QUANTITATIVE ANALYSIS. Methods of proximate analysis of agricultural products, including the determination of moisture, ash, fats, starch, sugars, fiber, proteins, and the different nitrogenous constituents of foods and feeding stuffs. MORROW.

12. DAIRY CHEMISTRY. The chemistry of milk and its products. Preliminary practice in quantitative methods followed by laboratory work in the analysis of milk, butter, and cheese, and the detection of adulterants in them. DUTCHER.
14. GRAIN GRADING. A lecture and laboratory course in grain grading rules, regulations, and standards, and their application in grain grading practices. BAILEY.

ADVANCED COURSES

105. DETECTION OF ADULTERANTS OF FOODS AND FEEDING STUFFS. The use of proximate analyses and special tests for the determination of quality and the detection of adulteration of foods and feeds. Includes chemical and microscopical examinations. WILLAMAN.
106. AGRICULTURAL PRODUCTS AND BY-PRODUCTS. The composition of the principal products and by-products of agriculture and their utilization as raw material in various industries, and the methods of chemical control work in these industries. BAILEY.
108. CHEMISTRY OF WHEAT AND WHEAT PRODUCTS. A lecture course, with collateral library reference work, on the chemical technology of the production and milling of wheat and the conversion of its products into human food. BAILEY.
110. FLOUR LABORATORY METHODS. A laboratory course in the methods of analyses of wheat and its products; milling tests of wheat; and baking and special tests of flour. BAILEY.
111. PHYTOCHEMISTRY. An advanced course in the chemistry of fats, carbohydrates, tannins, proteins, enzymes, and colloids and their relation to the vital processes involved in plant and animal growth and nutrition. MORROW.
113. BIOCHEMICAL LABORATORY METHODS. Special methods of examination of plant and animal tissues for particular fats, carbohydrates, proteins, and enzymes. MORROW.
114. LABORATORY PROBLEMS IN BIOCHEMISTRY. Special laboratory work in the preparation and isolation of pure compounds which occur in living cells, in the study of biochemical reactions, and in special methods of identification or determination of biochemical products. GORTNER, BAILEY, DUTCHER, MORROW, WILLAMAN.
115. CHEMISTRY OF ANIMAL NUTRITION. A lecture and laboratory course emphasizing the chemical composition of feeding materials, animal tissues, animal by-products, and chemical processes involved in digestion and metabolism. Special attention will be paid to recent methods of nutritional investigation. DUTCHER.

AGRICULTURAL ECONOMICS

See Economics (page 43).

AGRICULTURAL EDUCATION

Professors ASHLEY V. STORM, DEXTER D. MAYNE,; Assistant Professors ALBERT M. FIELD, BUEFORD M. GILE; Instructors JOHN V. ANKENY, PERCY B. BARKER, WILLIAM P. DYER; Extension Specialists THEODORE A. ERICKSON, GEORGE F. HOWARD.

General statement.—For specialization in this department, see special requirements in Course of Study.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
11a,b.	Principles of Vocational Education	3	†Soph., jr., sr.	None
21.	Vocational Education.....	3	†Soph., jr., sr.	None
41a,b.	Teaching	3	†Sr.	131, Agron. 107, 110, see course description
63.	General Agriculture.....	3	All	None
64.	General Agriculture.....	3	All	None
68.	Home and School Gardening.....	3	†Jr., sr.	None
<i>Advanced Courses</i>				
131a,b.	Methods in Teaching High School Agriculture	3	†Sr.	11
151a,b.	Organization and Management....	3	†Sr.	68
161.	Fundamentals of Agriculture.....	3	†Jr., sr.	None
162.	Fundamentals of Agriculture.....	3	†Jr., sr.	None
171a,b.	Extension Work.....	3	†Sr.	None
173.	History of Agriculture.....	3	†Soph., jr., sr.	None
175a,b.	Visual Presentation.....	3	†Jr., sr.	None
181.	Agricultural Statistics and Graphic Representation	3	Soph., jr., sr.	None

† Offered only to those preparing to teach.

INTRODUCTORY COURSES

- 11a,b. PRINCIPLES OF VOCATIONAL EDUCATION. The fundamental principles upon which education is based. Emphasis is placed on those phases which are most closely related to industrial education. DYER, GILE.
21. VOCATIONAL EDUCATION. A short history of vocational education; the present status in Europe and the United States; manual training, and home arts in an educational system; the place of agriculture in the public schools with special reference to Minnesota. MAYNE.
- 41a,b. *TEACHING. Observation of regular classes; interpretation of class practices; preparation of lesson plans and actual teaching of classes

* Students who are prepared may be required to do their teaching in manual training.

under careful supervision in recitation and laboratory; criticism and discussion of plans, methods, and results of student's teaching. Students are admitted to this course only when recommended by the faculty of the division in which they are specializing and when accepted by the Division of Agricultural Education. STORM, ANKENY, BARKER, FIELD, GILE.

63. GENERAL AGRICULTURE. For students specializing in such divisions as Agricultural Biochemistry, Economic Zoology, Plant Pathology, and in other colleges. A series of units by division chiefs and other agricultural specialists. STORM, BARKER, MAYNE.
64. GENERAL AGRICULTURE. Continuation of Course 63. Credit is given for either course separately but there is no duplication of subject matter and both should be taken to obtain a general knowledge of agriculture. STORM, ANKENY, MAYNE.
68. HOME AND SCHOOL GARDENING. Lecture and laboratory. The elements of horticulture as applied to high-school instruction, plant propagation, fruit growing, home gardening, school gardening, and the planning of home and school grounds. Same as Hort. 94. FIELD, BRIERLEY.

ADVANCED COURSES

- 131a,b. METHODS IN TEACHING HIGH-SCHOOL AGRICULTURE. Fundamental elements of method in teaching as related to teaching agriculture in high school. Organizing subject matter of daily work; selection and manipulation of devices. Classroom and laboratory method. Specific plans for teaching secondary agriculture. FIELD.
- 151a,b. ORGANIZATION AND MANAGEMENT. Organization and management of work in secondary schools, particularly of Minnesota, with special reference to agricultural work, courses of study, programs, equipment, laboratory and class management, extension work, plots, and coordination of work. STORM, DYER.
161. FUNDAMENTALS OF AGRICULTURE. Essential for principals and superintendents of schools in which agriculture is taught, and valuable for students of other colleges whose time for agriculture is limited. Agricultural college experts will give work in their special fields. STORM, BARKER.
162. FUNDAMENTALS OF AGRICULTURE. Continuation of Course 161. Credit is given for either course separately, but there is no duplication of subject matter and both should be taken to obtain a fundamental knowledge of agriculture. STORM, GILE.
- 171a,b. EXTENSION WORK. Federal, state, and local extension aims, organization. Assembling and use of extension data and equipment. Development of extension methods especially as applied to the work in Minnesota. STORM, BARKER, GILE.

173. HISTORY OF AGRICULTURE. A history of agricultural progress with special reference to the greater movements and to sources from which modern agriculture has received its most valuable acquisitions. Comparisons of our own agriculture with that of other countries. DYER.
- 175a,b. VISUAL PRESENTATION. Designed to prepare persons for presenting materials by means of slides, films, charts, etc. Students assisted in assembling materials for their own use and in acquiring skill and technique in preparation and operation of various mediums. FIELD.
181. AGRICULTURAL STATISTICS AND GRAPHIC REPRESENTATION. Course teaches application of statistical methods to agriculture and different means of representing agricultural statistics graphically. Of value to all students to enable them to interpret, present, and use agricultural statistics and graphic representations. BARKER.

AGRONOMY AND FARM MANAGEMENT

Professors ANDREW BOSS, COATES P. BULL; Associate Professors ALBERT C. ARNY, HERBERT K. HAYES; Assistant Professors LOUIS B. BASSETT, ALVA H. BENTON, RALPH J. GARBER, FRANCIS W. PECK; Extension Specialists GEORGE J. BAKER, WILLIAM L. CAVERT, THOMAS B. McCULLOUGH, CLARENCE D. PATTERSON.

General statement.—For specialization in this department, see special requirements in Course of Study.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1a,b.	Farm Crops	3	Fr.	None
3b.	Farm Machinery.....	3	Sr.	None
7.	Farm Practices.....	None	Fr.	None
<i>Advanced Courses</i>				
101b.	Farm Management I.....	3	Jr., sr.	1, Econ. 3
102a,b.	Farm Management II.....	3	Sr.	1, Econ. 3; An. Husb. 7 or 13; Soils, 2
*103.	Principles of Genetics.....	3	Jr., sr.	Bot. 1 yr., An. Biol. 1 yr.
*106.	Plant Breeding.....	3	Jr., sr.	103
107.	Cereal and Corn Crops.....	3	Jr., sr.	1, Bot. 1 yr.
108.	Farm Management III.....	3	Sr.	101, 102
110.	Forage, Fiber, Root, and Potato Crops	3	Jr., sr.	1, Bot. 1 yr.

* Open to any student of the University having the required prerequisites.

INTRODUCTORY COURSES

- 1a,b. FARM CROPS. An elementary study of the important field crops of the United States with emphasis upon those of local importance; distribution, economic importance, agricultural classifications, cultural methods, and principles of improvement.

COURSES IN AGRICULTURE

- 3b. FARM MACHINERY. Lectures, practical discussions, and practice work in the best methods of adjustment, handling, and adapting various kinds of machinery to the soils, weeds, and seasons. BASSETT.
7. FARM PRACTICES. A laboratory course designed to give training and experience in the elementary farm operations. BASSETT.

ADVANCED COURSES

- 101b. FARM MANAGEMENT I. Textbook and practice work in the art of record keeping, accounting, and kindred subjects. Designed especially for students expecting to become farm managers or farm-management field men. PECK.
- 102a,b. FARM MANAGEMENT II. A course in which the business side of farming is emphasized. Special attention is given to farm organization, equipment, and operation. BOSS, PECK.
103. PRINCIPLES OF GENETICS. Same as Hort. 109. Lectures and laboratory work designed to familiarize the student with the underlying principles of breeding. Heredity, variation, biometry, and evolution are emphasized. HAYES, DORSEY.
106. PLANT BREEDING. Same as Hort. 110. Applied genetics is emphasized. The method of breeding each of the important agricultural and horticultural crops with special attention to experiment station investigations and to the methods used by plant breeders. HAYES, DORSEY.
107. CEREAL AND CORN CROPS. An advanced study of cereal and corn crops. Structure, group classification, improvement, growing, and utilization. Typical samples of grain and those containing unsoundness are studied. Score card practice and comparative placing on intrinsic value included. ARNY.
108. FARM MANAGEMENT III. An advanced seminar course, including farm practices, farm equipment, cost of production, and efficiency of labor. BOSS, PECK.
110. FORAGE, FIBER, ROOT, AND POTATO CROPS. Laboratory and lecture work combined with assigned readings on the important forage, fiber, root, and potato crops. The study of each crop is followed by brief score card practice and comparative placing on intrinsic value. ARNY, WELLINGTON.

ANIMAL BIOLOGY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professors HENRY F. NACHTRIEB, THOMAS S. ROBERTS, CHARLES P. SIGERFOOS; Associate Professor HAL DOWNEY; Assistant Professors ELMER LUND, OSCAR W. OESTLUND; Instructors GEORGE D. ALLEN, CHARLES E. JOHNSTON, ADOLPH R. RINGOEN.

General statement.—Courses in this Department are closely correlated with those offered by the Division of Entomology and Economic Zoology of the College of Agriculture, Forestry, and Home Economics. For courses of that Division see page 48.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
3-4.	General Zoology.....	6*	All	None
7-8.	Histology and Embryology.....	6*	Soph., jr., sr.	3-4
15-16.	General Physiology.....	6*	Soph., jr., sr.	12 cred. incl. 3-4, Chem. 3
19-20.	Comparative Gross Anatomy of Vertebrates	6*	Soph., jr., sr.	3-4
23-24.	Entomology	6*	Soph., jr., sr.	3-4
28.	Ornithology	3	Soph., jr., sr.	3-4
51.	Protozoology	3	Jr., sr.	9 cred. incl. 3-4
<i>Advanced Courses</i>				
101-102.	Advanced Entomology.....	6	Jr., sr.	23-24 or equivalent
115-116.	Mammalogy	6	Jr., sr.	3-4, and 19-20 or equivalent
131-132.	Embryology	6	Jr., sr.	7-8
143-144.	Genetics and Eugenics.....	6	Sr.	3-4

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

* Both semesters must be completed before credit is given.

INTRODUCTORY COURSES

- 3-4. GENERAL ZOOLOGY. A survey of the animal kingdom emphasizing the principles of development and structure in relation to functions and habit, heredity and evolution, and the animals of economic importance. Lectures, quizzes, and laboratory. NACHTRIEB, ALLEN, RINGOEN.
- 7-8. HISTOLOGY AND EMBRYOLOGY. A comparative microscopic study of the origin and structure of the tissues of vertebrates and invertebrates, and of the organs of mammals. Textbook, lectures, and laboratory. DOWNEY.
- 15-16. GENERAL PHYSIOLOGY. Characteristic properties of living substance as shown by preparation and properties of typical biological compounds, colloids, enzyme action, growth, inanition, production of movements, heat, electricity, and light. Mechanisms and conditions of excitation and response. LUND.
- 19-20. COMPARATIVE GROSS ANATOMY OF VERTEBRATES. Lower vertebrates. Dissection and study of selected types, cyclostomes to reptiles or birds inclusive; special consideration of history of organ systems. Mammalian anatomy. An intensive study of the cat. Textbook, laboratory guide. Lectures, laboratory, quizzes. JOHNSON.
- 23-24. ENTOMOLOGY. Elements of entomology leading up to discussion of the principles of taxonomy and their application to the classification

- of insects. Textbook, lectures, quizzes, and laboratory work. OESTLUND.
28. ORNITHOLOGY. The study of the structure, classification, and habits; special reference to birds of Minnesota. Considerable time devoted to field study. Bird or field-glasses and handbook required. Laboratory, lectures, quizzes. Class limited to 10. ROBERTS.
51. PROTOZOOLOGY. Lectures, reference, and laboratory work on the structure and life-histories of Protozoa, with special reference to the relations of the Protozoa to diseases of animals. SIGERFOOS.

ADVANCED COURSES

- 101-102. ADVANCED ENTOMOLOGY. Advanced work in the ecology and taxonomy of insects. Lectures, laboratory, and field work. OESTLUND.
- 115-116. MAMMALOLOGY. Structure and classification of North American mammals. The mammalian skeleton; its modifications, with consideration of our domestic animals; dissection of a typical mammal. Classification, natural history, and geographic distribution with special reference to Minnesota mammals. JOHNSON.
- 131-132. EMBRYOLOGY. A brief survey of general embryology, and the organogeny of the vertebrates with special reference to the circulatory system. Conference, reference, and laboratory work with Kellicott's *General Embryology* and *Outlines of Chordate Development* as texts. NACHTRIEB.
- 143-144. GENETICS AND EUGENICS. Facts and theories of heredity and the application of the laws governing natural inheritances for the improvement of a race. Lectures, reference, conference, and laboratory work. NACHTRIEB.

ANIMAL HUSBANDRY

ANIMAL INDUSTRY GROUP

Professor CARL W. GAY; Assistant Professors ROBERT C. ASHBY, JOSEPH S. MONTGOMERY, THOMAS G. PATERSON; Instructors PHILIP A. ANDERSON.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1a,b.	Types and Breeds of Livestock....	3	Fr., soph.	None
3.	Market Classes of Livestock.....	3	Soph., jr.	1
4.	Livestock Judging.....	1½	Soph., jr.	3
5.	Livestock Breeding.....	2	Sr.	*Vet. Sci. 6
6.	Horse Power.....	1	Soph.	1
7.	Livestock Feeding and Management	4	Sr.	An. Nutr. 1

* Not required of those specializing in Agricultural Education.

No.	Title	Credits	Offered to	Prereq. courses
9.	Meats	3	Sr.	4, An. Nutr. 1
13.	Elements of Feeding.....	4	Jr.	None
<i>Advanced Courses</i>				
101.	Advanced Stock Judging.....	3	Sr.	4
104.	Horse Husbandry.....	2	Sr.	4, 5, 7
106.	Beef Cattle Husbandry.....	2	Sr.	4, 5, 7
108.	Sheep Husbandry.....	2	Sr.	4, 5, 7
110.	Swine Husbandry.....	2	Sr.	4, 5, 7
112.	Advanced Meats.....	5	Sr.	9
114.	Seminar	3	Sr.	7
116a,b.	Applied Swine Husbandry.....	1-3	Sr.	7, see statement

INTRODUCTORY COURSES

- 1a,b. TYPES AND BREEDS OF LIVESTOCK. The types as related to performance or production in horses, beef cattle, sheep, and swine, and the origin, history, characteristics, and economic importance of the breeds, classified according to type. GAY.
3. MARKET CLASSES OF LIVESTOCK. The market classes of cattle, sheep, and swine, and practice work in judging market classes. PATERSON.
4. LIVESTOCK JUDGING. Practice in judging breeding classes of horses, beef cattle, sheep, and swine. Placings and reasons are submitted, followed by a general discussion with the instructor. MONTGOMERY.
5. LIVESTOCK BREEDING. The application of the principles of genetics to the breeding of livestock; a consideration of practical breeder's problems concluded by general pedigree work in the stud, herd, and flock books. GAY.
6. HORSE POWER. The horse as a motor; mechanics of locomotion; factors determining a horse's efficiency for work; the types and classes of horses adapted to the different kinds of horse labor. GAY.
7. LIVESTOCK FEEDING AND MANAGEMENT. Feeding livestock under farm conditions; equipment; management. Efficiency and economy in growing and fattening meat animals; feeding draft horses and colts. Consideration of experimental work and present practice. Practical feeding problems. Only two credits allowed to those who have completed Course 13. ASHBY.
9. MEATS. General course in the dressing of animals and the cutting of carcasses. Lectures and laboratory work. ANDERSON.
13. ELEMENTS OF FEEDING. A general course giving a brief survey of livestock and dairy feeding designed for those students not specializing in either animal or dairy husbandry. Not open to those who have completed Course 7 or Dy. Husb. 2. ASHBY, KILDEE.

ADVANCED COURSES

101. ADVANCED STOCK JUDGING. Continuation of Course 4. The selection of breeding horses, beef cattle, sheep, and swine. Stock farms in the

- vicinity of the Twin Cities visited in connection with this course. MONTGOMERY.
104. HORSE HUSBANDRY. The feeding, breeding, management, and marketing of horses. Studbook registration, pedigrees, and blood-lines with relation to breed improvement. Practicums dealing with breaking colts, stable management, and fitting for show purposes. MONTGOMERY.
106. BEEF CATTLE HUSBANDRY. The management of pure bred herds of beef cattle, building equipment, selection of foundation stock, methods of improvement, and marketing. Pedigrees, herd book registrations, and practicums. PATERSON.
108. SHEEP HUSBANDRY. The care and management of pure bred sheep, study of pedigrees, registrations, fitting for show purposes, marketing. Practicums in feeding, shearing, blocking, and caring for young lambs. PATERSON.
110. SWINE HUSBANDRY. Cost of producing pork; equipment; swine types; pure bred vs. market hogs; building a breeding herd; feeding; marketing breeding stock; herd management; pedigree studies; fitting and showing. Barn work and feeding practice. ASHBY.
112. ADVANCED MEATS. Continuation of Course 9. Particular attention is given the more important details concerning meat, its physical and chemical composition. PATERSON.
114. SEMINAR. Special problems and review of investigations pertaining to the livestock industry. GAY.
- 116a,b. APPLIED SWINE HUSBANDRY. Individual problems offering to those most interested in this phase of animal production opportunity for additional and specialized work. Admission only upon approval of instructor. ASHBY.

ANIMAL NUTRITION

ANIMAL INDUSTRY GROUP

Professors THEOPHILUS L. HAECKER, HENRY H. KILDEE; Assistant Professor ROBERT C. ASHBY.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Course</i>				
1.	Principles of Nutrition.....	3	Jr.	Vet. Sci. 2
<i>Advanced Course</i>				
101.	Studies in Animal Nutrition.....	3	Sr.	1

INTRODUCTORY COURSE

- I. PRINCIPLES OF NUTRITION. The principles of animal nutrition, their relation to the economic production of animal products, and the relation of the constituents in feed consumed to amount and character of products yielded. HÆCKER, ASHBY, KILDEE.

ADVANCED COURSE

101. STUDIES IN ANIMAL NUTRITION. Analysis of the problem of animal nutrition; the relationship of food consumed to milk production; utilization of nutrients in beef and pork production; and the distribution in the body. HÆCKER.

BEE CULTURE

Professor FRANCIS JAGER; Instructor LLOYD V. FRANCE.

General statement.—Theoretical and practical instruction on bees, honey, and wax production. At least one year of botany should be completed before electing these courses. General Zoology and Economic Entomology are also desirable. If not already completed they should be taken at same time as the courses in Bee Culture.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
6.	Elements of Beekeeping.....	3	Jr., sr.	None
7.	Advanced Beekeeping.....	3	Jr., sr.	6

INTRODUCTORY COURSES

6. ELEMENTS OF BEEKEEPING. Elementary study of queens, drones, and workers, hives and appliances, handling of bees, spring, summer, winter management, swarming and increase, honey and wax production, feeding and bee diseases. JÄGER, FRANCE.
7. ADVANCED BEEKEEPING. Anatomy of the bee, queen rearing, commercial production of honey, out apiaries, accounting and marketing. JÄGER, FRANCE.

BOTANY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professors CARL OTTO ROSENDAHL, JOSEPHINE E. TILDEN,; Assistant Professors FREDERIC K. BUTTERS, NED L. HUFF; Instructor WILLIAM S. COOPER; Teaching Fellows HORACE GUNTHORP, PAUL A. HARVEY, ARTHUR M. JOHNSON, VINNIE A. PEASE; Assistant LOIS CLARK.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1a,b.	General Botany.....	3	All	None
2a,b.	General Botany.....	3	All	1 or equivalent

No.	Title	Credits	Offered to	Prereq. courses
5a,b.	Morphology of Land Plants.....	3	All	2
8.	Taxonomy	3	All	2
9-10.	Physiology and Ecology.....	6	Soph., jr., sr.	2
17.	Anatomy and Histology.....	3	Soph., jr., sr.	2
<i>Advanced Courses</i>				
107.	Mosses and Liverworts.....	3	Jr., sr.	5
108.	Pteridophytes	3	Jr., sr.	5, 17
111-112.	Advanced Taxonomy.....	6	Jr., sr.	9 credits incl. 8
113.	Field Ecology.....	3	Jr., sr.	9-10
114.	Forest Geography of N. America	3	Jr., sr.	9-10
115-116.	Advanced Plant Physiology.....	6	Jr., sr.	9-10
117-118.	Cytology	6	Jr., sr.	12 credits
119-120.	Advanced Industrial Botany.....	6	Jr., sr.	11-12
123.	Taxonomy and Morphology of Freshwater Algae.....	3	Jr., sr.	9 credits

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

INTRODUCTORY COURSES

- 1a,b. GENERAL BOTANY. A study of the external form, microscopic structure, and functions of the organs of flowering plants., BUTTERS, COOPER, HUFF.
- 2a,b. GENERAL BOTANY. A comparative study of selected types of plants, illustrating the evolution of plants from the simplest forms to the flowering plants., BUTTERS, COOPER, HUFF.
- 5a,b. MORPHOLOGY OF LAND PLANTS. A comparative study of the form, structure, and life history of liverworts, mosses, ferns, and seed plants. BUTTERS, HUFF.
8. TAXONOMY. A general study of the classification and relationships of flowering plants. Laboratory and field practice in the determination of species, together with lectures and quizzes. ROSENDAHL.
- 9-10. PHYSIOLOGY AND ECOLOGY. Greenhouse study of the growth and behavior of plants, and field study of plant communities and their environment in fall and spring. COOPER.
17. ANATOMY AND HISTOLOGY OF VASCULAR PLANTS. A study of the microscopic structure of vascular plants, the cell, tissues, and tissue systems with particular attention to the development and evolution of the vascular system in the root, stem, and leaf. BUTTERS.
- 51-52. MORPHOLOGY AND HISTOLOGY OF ECONOMIC PLANTS. A study of plants yielding products of economic value. Not given in 1918-19. TILDEN.

ADVANCED COURSES

107. COMPARATIVE MORPHOLOGY OF LIVERWORTS AND MOSSES. Designed for students who wish to pay special attention to the morphology and

taxonomy of bryophytes. Lectures, laboratory, and field work. BUTTERS.

108. MORPHOLOGY AND TAXONOMY OF PTERIDOPHYTES. A comparative study of lycopods, ferns, and their allies, their structure and history with special attention to the classification of living forms. Lectures, reference reading, and laboratory work. BUTTERS.
110. MORPHOLOGY AND TAXONOMY OF GYMNOSPERMS. A comparative study of cycads, conifers, and their allies, their structure and history with special attention to the classification of living forms. Lectures, reference reading, and laboratory work. Not given in 1918-19. BUTTERS.
- 111-112. ADVANCED TAXONOMY. An advanced course in which special attention is given to the taxonomy of difficult natural groups involving systematic principles and practice, rules of nomenclature, systems of classification, etc. ROSENDAHL.
113. FIELD ECOLOGY. Field study of the plant communities and successions of the Minneapolis region, followed by a detailed written report, and by a study of the general principles of plant association and succession. COOPER.
114. FOREST GEOGRAPHY OF NORTH AMERICA. Preliminary discussion of the principles of plant distribution, followed by a detailed study of the forest regions of North America, by means of reading, discussion, lantern slides, distribution maps, microscopic work, written reports. Should be preceded by Field Ecology, but not necessarily. COOPER.
- 115-116. ADVANCED PLANT PHYSIOLOGY. The interrelations of factor, function, and structure with special reference to the food cycle (photosynthesis, respiration, and growth). Discussions, quizzes, and greenhouse work.
- 117-118. CYTOLOGY. A survey of cell structure and the various phenomena of division, fusion, and metamorphosis, together with a review of the history of cytological investigation. Methods of cytological research indicated in the laboratory. ROSENDAHL.
- 119-120. ADVANCED INDUSTRIAL BOTANY. A study of the origin, distribution, and cultivation of plants yielding products of economic value; the nature and uses of these products and the processes by which they are obtained from the plants. TILDEN.
123. TAXONOMY AND MORPHOLOGY OF FRESH-WATER ALGAE. A study of living forms, based on collections made by the class. TILDEN.

CHEMISTRY

SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

Professors GEORGE B. FRANKFORTER,* EDWARD E. NICHOLSON, CHARLES F. SIDENER; Associate Professor STERLING TEMPLE;* Assistant Professors ROSS A. BAKER,* FRANK H. MACDOUGALL; Instructors ISAAC W. GEIGER, CARL L. SCHUMANN, WOLDEMAR M. STERNBERG, H. LEE WARD.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
3a-4b, 3b-4a.	Adv. General Chem. and Qualitative Analysis.....	6*	Fr., soph., jr.	Entrance cred. in Chem.
11-12.	Quantitative Analysis.....	8*	Soph., jr., sr.	3-4
33.	General Chem. and Qualitative Analysis.....	5†	Fr., soph., jr.	None
35-36.	Organic Chemistry.....	8	Soph., jr., sr.	3-4
<i>Advanced Courses</i>				
121-122.	Physical Chemistry.....	4*	Jr., sr.	36, Phys. 2 and 4
123-124.	Physico-Chemical Laboratory..	2*	Jr., sr.	See statement

For additional courses see the bulletin of the School of Chemistry.

* Both semesters must be completed before credit is given for the first semester.

† Course 4b must be completed before credit is given.

INTRODUCTORY COURSES

- 3a-4b, 3b-4a. **ADVANCED GENERAL CHEMISTRY AND QUALITATIVE ANALYSIS.** Lectures, recitations, and laboratory work. General descriptive chemistry, including the fundamental theories and laws, and qualitative analysis. NICHOLSON, BAKER, WARD.
- 11-12. **QUANTITATIVE ANALYSIS.** General discussion of quantitative methods, with laboratory work in gravimetric analysis, first semester, followed by a discussion of standard solutions and the necessary stoichiometric calculations, with laboratory work in volumetric analysis, second semester. SIDENER, GEIGER, STERNBERG.
33. **GENERAL CHEMISTRY AND QUALITATIVE ANALYSIS.** Designed for those who have had no high-school chemistry; in preparation for Course 4b. See statement under 3a-4b. BAKER.
- 35-36. **ORGANIC CHEMISTRY.** This course includes the aliphatic and the aromatic series with the preparation of the more important compounds. FRANKFORTER, SCHUMANN.

* On leave of absence, 1918-19.

ADVANCED COURSES

121-122. PHYSICAL CHEMISTRY. A consideration of the theories and laws, phenomena and processes which form the basis of chemical science. Charts, models, and experiments are employed to supplement and illustrate the discussions. MACDOUGALL.

123-124. PHYSICO-CHEMICAL LABORATORY PRACTICE. Open only to students pursuing Course 121-122 or who have had it or its equivalent. Physico-chemical methods and measurements. MACDOUGALL.

DAIRY HUSBANDRY

ANIMAL INDUSTRY GROUP

Professors HENRY H. KILDEE, ROBERT M. WASHBURN; Assistant Professor G. EARL WEAVER; Instructors EDWIN O. HANSON, HAROLD R. SEARLES; Assistants DAVID C. BERG, LESLIE V. WILSON;* Extension Specialists ARTHUR J. MCGUIRE, WILLIAM A. MCKERROW.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
2.	Dairy Stock Feeding and Management	3	Jr., sr.	Nutr. 1
4.	Dairy Stock Judging.....	1½	Soph.	7
5.	Factory Management.....	3	Jr., sr.	11
6.	Factory Butter Making.....	3	Jr., sr.	11
7a,b.	Elements of Dairy Husbandry.....	3	Fr.	None
9.	Cheese Making Practice.....	3	Jr., sr.	11
10.	Creamery Practice.....	2	Jr., sr.	11
11.	Milk and Its Products.....	3	Soph., jr.	7
12.	Dairy Cattle Feeding.....	1	Jr., sr.	Nutr. 1, or parallel
<i>Advanced Courses</i>				
101.	Seminar	2	Sr.	2, 4, 11
102.	Advanced Study of Dairy Breeds...	3	Jr., sr.	4
104.	Special Problems.....	3	Jr., sr.	2, 4, 11

INTRODUCTORY COURSES

2. DAIRY STOCK FEEDING AND MANAGEMENT. Characteristics and values of concentrates, roughages, and succulent feeds for efficient and economical milk production. Also shelter, care, and management of different classes of dairy stock. Barn plan. Only two credits allowed to those who have completed Course 12 or An. Husb. 13. KILDEE.
4. DAIRY STOCK JUDGING. Relation of form to function. Practice work in comparative judging of dairy cattle of different breeds and ages. Herds in the vicinity of the Twin Cities are visited. KILDEE, SEARLES.

* On leave of absence, 1918-19.

5. **FACTORY MANAGEMENT.** Organization of Creamery Associations, the construction and equipment of factories, with lectures on calculating dividends, sinking fund, locating financial leaks, and marketing. WASHBURN.
6. **FACTORY BUTTER MAKING.** The separation of milk, preparation of pure culture starters, cream ripening, churning, controlling composition of butter, market requirements, and scoring of butter. WASHBURN, HANSON.
- 7a,b. **ELEMENTS OF DAIRY HUSBANDRY.** Origin, characteristics and adaptations of the dairy breeds of cattle. Beginning judging. Milk, its composition and testing. Cream separation and buttermaking. WASHBURN, HANSON, WEAVER.
9. **CHEESE MAKING PRACTICE.** A minimum of one month's experience in an approved practical cheese factory is required of all students specializing in dairy manufacture. Records are kept and reports made of work. WASHBURN.
10. **CREAMERY PRACTICE.** One month's experience in an approved practical creamery is required of all students specializing in dairy manufacture. Records are kept and reports made of the work. WASHBURN.
11. **MILK AND ITS PRODUCTS.** Milk secretion, composition, properties, variation, and testing. Cream separation, testing, care, methods of marketing. Butter, cheese, and ice cream making. Market milk handling, standardizing, clarifying, pasteurizing, bottling, and marketing. WASHBURN, HANSON.
12. **DAIRY CATTLE FEEDING.** Characteristics and relative merits of concentrates, roughages, and succulent feeds for efficient and economical production. Not open to those who have completed Course 2 or An. Husb. 13. WEAVER.

ADVANCED COURSES

101. **SEMINAR.** Survey of the recent developments in the field of dairy husbandry. Papers and discussion. KILDEE.
102. **ADVANCED STUDY OF DAIRY BREEDS.** Origin, history, and characteristics of the more important strains and families of the leading breeds of dairy cattle. Judging and pedigree work. Herds near the Twin Cities are visited. KILDEE.
104. **SPECIAL PROBLEMS.** Individual studies and reports upon definite problems connected with dairy husbandry either in the field of production or manufacture. KILDEE, WASHBURN.

ECONOMICS

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professor WILLARD E. HOTCHKISS; Assistant Professors JOHN D. BLACK, ROY G. BLAKEY, WILLIAM W. CUMBERLAND, J. FRANKLIN EBERSOLE, EDWIN CLYDE ROBBINS; Instructors ALBERT C. HODGE, ALBERT C. JAMES, J. WARREN STEHMAN.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
†2a,b.	Industries and Commerce of the United States.....	3	Fr., soph.	None
†3a,b.	Principles of Economics.....	3	Soph., jr., sr.	None
4.	Economic Problems.....	3	Soph., jr., sr.	3
†18.	Problems in Agr. Economics...	3	Soph., jr., sr.	3
†19.	Marketing of Farm Products...	3	Jr., sr.	3
35-36.	Accounting Principles.....	6*	Soph., jr., sr.	None
41.	Financial History.....	3	Soph., jr., sr.	3
43.	Banking	3	Soph., jr., sr.	3
52.	Corporation Finance.....	3	Jr., sr.	6 credits incl. 3
59.	Insurance	3	Jr., sr.	3-4
76.	Commercial Policies.....	3	Jr., sr.	6 credits incl. 3
85.	Marketing	3	Jr., sr.	3-4
86.	Advertising and Selling.....	3	Jr., sr.	3-4 with 85 suggested
88.	Retail Marketing.....	3	Jr., sr.	6 credits incl. 85
<i>Advanced Courses</i>				
101.	Statistics	3	Jr., sr.	6 credits incl. 3
102.	Advanced Statistics.....	3	Jr., sr.	101
†107.	Land Tenure.....	3	Jr., sr.	18 or 4
†108.	Agricultural Statistics.....	3	Jr., sr.	101
†118.	Advanced Problems in Agricultural Economics.....	3	Jr., sr.	18 or 4
†119-120.	Seminar in Agr. Economics...	6*	Sr.	†9 cr. in Agr. Econ.
123.	Business Organization and Management	3	Jr., sr.	3-4
124.	Business and Government.....	3	Jr., sr.	3-4
131.	Cost Accounting.....	3	Jr., sr.	35-36
133-134.	Auditing	6*	Jr., sr.	135-136
135-136.	Accounting Problems.....	6*	Jr., sr.	35-36
139.	Bank Administration.....	3	Jr., sr.	43
142.	Investments	3	Jr., sr.	6 credits
143.	Money and Prices.....	3	Jr., sr.	3, 41 or 43
144.	Business Cycles.....	3	Jr., sr.	43
151-152.	Seminar in Business Policy....	6*	Sr.	†123, 3 cr. in courses above 50
161.	Labor Problems.....	3	Jr., sr.	6 credits incl. 3
173.	Railway Problems.....	3	Jr., sr.	6 credits incl. 3
191.	Public Finance.....	3	Jr., sr.	6 credits incl. 3
192.	State and Local Taxation.....	3	Jr., sr.	191
195-196.	Seminar in Finance.....	6*	Sr.	†123 credits

* Both semesters must be completed before credit is given for the first semester.

† Given at University Farm.

†† Admission conditioned also on approval of instructor.

INTRODUCTORY COURSES

- 2a,b. **INDUSTRIES AND COMMERCE OF THE UNITED STATES.** An introductory study of modern industry as a foundation for the further study of economics. Land, labor, capital, enterprise, as divisions of the productive process. Exchange. Ways in which society influences production. **ROBBINS.**
- 3a,b. **PRINCIPLES OF ECONOMICS.** Fundamentals of economic theory with special reference to agriculture. **BLACK.**
4. **ECONOMIC PROBLEMS.** A survey of the fundamentals in the problems of labor, social insurance, socialism, government ownership, corporations, trusts, monopolies, transportation, banking, protection, free trade, public revenues and expenditures. **BLAKEY, CUMBERLAND, STEHMAN.**
18. **PROBLEMS IN AGRICULTURAL ECONOMICS.** The economic facts and principles underlying the practical problems confronting the farmer as producer, consumer and citizen, such as what to produce, intensity of cultivation, farm labor, tenancy, land settlement, farm credit, marketing, taxation. **BLACK.**
19. **MARKETING OF FARM PRODUCTS.** The organization and methods of marketing; the functions of middlemen; the costs of marketing various products; coöperative marketing. **CUMBERLAND.**
- 35-36. **ACCOUNTING PRINCIPLES.** Purposes of accounts and principles of account classification; capital and revenue; accruals; principles of valuation; depreciation; preparation and interpretation of balance sheets, income accounts, and other business statements; corporation accounts. Laboratory course with supplementary lectures. **HODGE.**
41. **FINANCIAL HISTORY OF THE UNITED STATES.** American monetary and fiscal legislation from colonial times with especial emphasis upon the distinction between maintaining a standard of value and the providing of a revenue for the needs of government. **BLAKEY.**
43. **PRINCIPLES AND PRACTICE OF BANKING.** Contemporary banking institutions, both national and state; their incorporation, organization, administration; reserves, note issues, clearing houses, domestic and foreign exchange; the banking systems of foreign countries; and the Federal Reserve Banks of the United States. **STEHMAN.**
52. **CORPORATION FINANCE.** The organizing, financing, and managing of corporations. The relation of the government to the corporation. The operations of the stock exchange and a study of corporate securities for purposes of investment and speculation. **STEHMAN.**
59. **INSURANCE.** Principles of insurance with special reference to fire, life, and accident insurance. Critical examination of policy contracts, the premium, reserve, and rights and obligations of policy holders. Public regulation of insurance companies. **JAMES.**

76. **COMMERCIAL POLICIES.** Theory of international commerce; free trade, reciprocity, and protection, with special emphasis on the tariff history and policy of the United States; commercial treaties and foreign politics. Lectures, assigned readings, and reports. **BLAKEY.**
85. **MARKETING.** Domestic merchandising methods of manufacturers. Problems of wholesalers and commission men; distributing system and market organizations; price policies. **JAMES.**
86. **ADVERTISING AND SELLING.** Functions and principles of advertising; advertising media; planning and executing an advertising campaign. Copy. Sales management and personal salesmanship. **JAMES.**
88. **RETAIL MARKETING.** Problems and methods of the so-called regular retailer, department stores, and chain stores. Development of retail trade centers. Coöperation between the retailer and the local board of trade. The retailer and the consumer. **JAMES.**

ADVANCED COURSES

101. **STATISTICS.** Principles of collection, tabulation, and interpretation of statistical material, illustrated by present-day statistical data. Lectures, assigned readings, and special investigations by individual members of the class.
102. **ADVANCED STATISTICS.** A continuation of Course 101, dealing with more advanced problems connected with assembling, tabulating, interpreting, and using statistical information. As far as practicable the data used in this course will be drawn from business.
107. **LAND TENURE.** A study of several problems arising out of the land basis of civilization, such as property in land, land utilization, land classification, land settlement, status of the agricultural classes, farm labor, farm ownership, and tenancy. **BLACK.**
108. **AGRICULTURAL STATISTICS.** Study and practice of the special methods of statistical investigation, analysis and presentation which have been developed for agriculture, together with descriptive statistics of agriculture. **BLACK.**
118. **ADVANCED PROBLEMS IN AGRICULTURAL ECONOMICS.** A close study of the fundamental principles of consumption, production and value and distribution as pertaining to agriculture. **CUMBERLAND.**
- 119-120. **SEMINAR IN AGRICULTURAL ECONOMICS.** An advanced research course in which certain topics in agricultural economics will be taken up for intensive individual study. **BLACK, CUMBERLAND.**
123. **BUSINESS ORGANIZATION AND MANAGEMENT.** Organization: Principles applying to business in general and to particular concerns; evolution, objects, adjustments, limits, functional division. Specialization: functional and other forms. Standardization. Management: coördi-

- nation of functions, handling of men, employment, external vs. internal factors. HOTCHKISS.
124. BUSINESS AND GOVERNMENT. Business expansion, diversification, and conflicting interests. Laissez faire vs. regulation. Enforcement of minimum standards. Administration of business legislation. Coöperation between government and business. Public coördination of business forces. Reaction of emergency measures on permanent policy. HOTCHKISS.
131. COST ACCOUNTING. Elements and classification of production cost; methods of recording materials, labor and machine costs, and apportioning indirect expenses; relation of cost to general accounts; use of cost data to enforce efficiency of operation. HODGE.
- 133-134. AUDITING. Preparation for, and conduct of, an audit; the auditor's report and certification, and legal responsibilities. Textbook, assigned readings, class discussions, and lectures.
- 135-136. ACCOUNTING PROBLEMS. A study of the preparation of business and financial statements, chiefly from the standpoint of administrative statistics; based on problems from C. P. A. examinations and other sources. HODGE.
139. BANK ADMINISTRATION. The modern commercial bank from the manager's point of view. Legal problems, department functions, profit-making methods, credits. Adjustment of bank policy to prospective business conditions. Lectures, and laboratory work in local banks. EBERSOLE.
142. INVESTMENT AND SPECULATION. The social process of saving and investment; government, municipal, corporation, and real estate loans; stock exchange operations and money market influences as they affect the prices and net yield of prime securities. EBERSOLE.
143. MONEY AND PRICES. The functions of money; the nature of credit; changes in general prices, their causes and effects; international movements of gold; monetary standards and currency systems; the problem of securing an ideal money. EBERSOLE.
144. BUSINESS CYCLES. American business conditions since 1890 with regard to the great cycles of alternate prosperity and depression and financial panics. Critical examination of all the available business barometers designed to forecast similar conditions. EBERSOLE.
- 151-152. SEMINAR IN BUSINESS POLICY.
161. LABOR PROBLEMS. Modern labor problems; woman and child labor, industrial education, unemployment, poverty, industrial hygiene, welfare work, profit sharing, coöperation, labor unions, strikes, boycotts, conciliation and arbitration; economic causes and effects of immigration. ROBBINS.

173. RAILWAY PROBLEMS. The theory and practice of railway rate making. Railway organization and finance viewed historically and scientifically. Government regulation, the conflict between state and federal authorities and suggested improvements in railway control. STEHMAN.
191. PUBLIC FINANCE. Public expenditures; public debt; budgetary legislation; tax systems. BLAKEY.
192. STATE AND LOCAL TAXATION. Problems of state and local taxation. Historic survey of various taxes and examination of present procedure in taxing different kinds of property; tax reforms. Particular attention given to conditions in Minnesota. BLAKEY.
- 195-196. SEMINAR IN FINANCE.

EDUCATION

COLLEGE OF EDUCATION

Professors LOTUS D. COFFMAN, FLETCHER H. SWIFT; Assistant Professor MARVIN J. VAN WAGENEN; Instructor JEAN H. ALEXANDER.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1a,b.	Brief Course in the Hist. of Educ..	3	Jr., sr.	Psychol. 1-2
*5.	The American School.....	3	Jr., sr.	Psychol. 1
11a,b.	Technique of Teaching.....	3	Jr., sr.	Psychol. 1-2
<i>Advanced Courses</i>				
101.	Historical Foundations of Modern Education	3	Jr., sr.	Psychol. 1-2, Hist. 6 cred.
102.	History of Educ. since Reformation	3	Jr., sr.	1 or Psychol. 1-2, Hist. 6 cred.
105.	Educational Psychology	3	Sr.	Psychol. 1-2
106.	Educational Psychology	3	Sr.	Psychol. 1-2
109.	Educational Diagnosis	2	Sr.	1 or 101-102, 3
125.	Methods in Educational Research..	3	Sr.	1 or 101-102, 3

* Given at the University Farm.

For additional courses see the bulletin of the College of Education.

INTRODUCTORY COURSES

- 1a,b. A BRIEF COURSE IN THE HISTORY OF EDUCATION. Current school problems and educational theories in the light of their history. Emphasis upon secondary education and those aspects of education of most immediate concern to high-school teachers. Not open to those who have credit in Course 5. SWIFT, ALEXANDER.
5. AMERICAN SCHOOL. A brief survey of the factors determining the problem of public education in America, followed by a brief account of

the development and organization of typical state school systems. Not open to those who have credit in Course I. SWIFT.

- 11a,b. **TECHNIQUE OF TEACHING.** Types of classroom exercises; preparation of teaching plans; hygiene of instruction; classroom management; the professional ethics of teaching; observation of high-school work.

ADVANCED COURSES

101. **FOUNDATIONS OF MODERN EDUCATION.** Interpretative historical study of elements in modern education derived from Hebrews, Greeks, Romans, Middle Ages, Renaissance. Emphasis upon secondary and higher education and origin and results of monopoly of cultural conception of education and cultural studies. SWIFT.
102. **HISTORY OF EDUCATION SINCE THE REFORMATION.** Modern educational institutions, theories, and problems in the light of their history. Special emphasis upon elementary education. SWIFT.
105. **EDUCATIONAL PSYCHOLOGY.** Advanced work in genetic psychology, the origin and nature of the human organism, the origin, development, and control of instincts, the relation of instincts to the formation of habits, introductory to the psychology of learning. VAN WAGENEN.
106. **EDUCATIONAL PSYCHOLOGY.** Psychology of learning. Methods of measuring rate of learning; study of typical learning experiments and examination of the conditions of the most economic learning, study of individual differences, and psychology of the school subjects. VAN WAGENEN.
109. **EDUCATIONAL DIAGNOSIS.** A study of educational scales and standard tests for measurement of efficiency in school subjects. The course will deal with the nature of the tests, methods of their use, and an analysis of results obtained.
125. **METHODS IN EDUCATIONAL RESEARCH.** A study of statistical and other methods as applied to educational investigation. This course is ordinarily required of all candidates for advanced degrees. COFFMAN.

ENTOMOLOGY AND ECONOMIC ZOOLOGY

Professors WILLIAM A. RILEY, FREDERIC L. WASHBURN; Associate Professors WILLIAM MOORE, ARTHUR G. RUGGLES; Assistant Professors OSCAR W. OESTLUND, ROYAL N. CHAPMAN; Assistants SAMUEL A. GRAHAM, WARREN WILLIAMSON.

General statement.—For specialization in this department see Course of Study. Courses in this department are closely correlated with those offered by the Department of Animal Biology of the College of Science, Literature, and the Arts. Courses 23-24, 35, 36, 101-102, 103, 105-106,

107-108, of this Division are also offered under these numbers by the Department of Animal Biology.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1-2.	Introductory Entomology	6	Soph., jr., sr.	An. Biol. 3-4 or equivalent
3.	Elementary Econ. Entomology	3	Soph., jr.	An. Biol. 3-4
4.	Econ. Vertebrate Zoology	3	Jr., sr.	1-2 or 23-24
5.	Elementary Forest Entomology	3	Jr.	An. Biol. 3-4
9.	Animal Parasites	3	Jr., sr.	An. Biol. 3-4
12.	Forest Zoology	2	Jr., sr.	3, An. Biol. 3-4
14.	Insects and Public Health	2	Jr., sr.	An. Biol. 3-4
16.	Plant Pest Control	3	Jr., sr.	1 or 3, Pl. Path. 1
23-24.	General Entomology	6	Soph., jr., sr.	An. Biol. 1-2 or 3-4
35.	Animal Parasites and Parasitism	3	Soph., jr., sr.	An. Biol. 1-2 or 3-4
36.	Relation of Insects to Disease	3	Soph., jr., sr.	1 or 23, 35
<i>Advanced Courses</i>				
101-102.	Advanced General Entomology	6	Jr., sr.	1-2 or 23-24
103.	Biology and Taxonomy of Aphididae	3	Sr.	1-2 or 23-24
105-106.	Histology and Development of Insects	6	Jr., sr.	1-2 or 23-24; An. Biol. 7-8 advised
107-108.	General Ecology of Insects	6	Jr., sr.	1-2 or 23-24
111-112.	Insecticides and Their Action	3 or 6	Jr., sr.	1-2 or 23-24; Agr. Bioch. 7-8 or equiv.
117.	Methods of Economic Entomology	3	Jr., sr.	101-102
119-120.	Introduction to Research	6 or more	Sr.	1-2 or 23-24 and additional requirements, according to line of specialization

INTRODUCTORY COURSES

- 1-2. **INTRODUCTORY ENTOMOLOGY.** Lectures and laboratory work on the characteristics and habits of insects. The more important insect pests and methods of control are especially emphasized in the second semester. OESTLUND, RUGGLES.
3. **ELEMENTARY ECONOMIC ENTOMOLOGY.** A brief course dealing with the characteristics and habits of insect pests and beneficial insects and methods of control. Not open to students planning to specialize in entomology. RUGGLES, GRAHAM, WILLIAMSON.
4. **ECONOMIC VERTEBRATE ZOOLOGY.** Relation of birds and other wild animals to agriculture. Lectures, laboratory, field work. Identification and studies of Minnesota birds and wild animals affecting the horticulturist and agriculturist, methods of combating injurious and conserving useful forms. WASHBURN.
5. **ELEMENTARY FOREST ENTOMOLOGY.** A study of the life histories and methods of controlling insects affecting shade and forest trees. Not

open for credit to students specializing in entomology. Given in alternate years. Not offered in 1918-19. RUGGLES, GRAHAM.

9. ANIMAL PARASITES. A study of the more common animal parasites of man and domestic animals, and of methods of avoidance and control. Not open to students specializing in entomology. (See Course 35.) RILEY.
12. FOREST ZOOLOGY. Forest Animals. Relation of birds and of various four-footed animals to forest protection. Habits, range, usefulness; the manner of protecting the important large and small game, fish, and birds; fish culture. WASHBURN.
14. INSECTS AND PUBLIC HEALTH. The agency of insects and related forms in the transmission of disease; methods of sanitation related to their control and disease transmission. Not open for credit to students specializing in entomology. (See Courses 35-36.) RILEY.
16. PLANT PEST CONTROL. Same as Pl. Path. 6. The theory and practice of control of insect and fungous pests of crop plants. Practical applications. Not open to those who have completed Pl. Path. 14. RUGGLES, BISBY, STAKMAN.
- 23-24. GENERAL ENTOMOLOGY. A more extended course than I, leading up to discussion of the principles of taxonomy and their application to the classification of insects. Textbook, lectures, quizzes, and laboratory. OESTLUND.
35. ANIMAL PARASITES AND PARASITISM. Lectures and laboratory work. A consideration of the origin and biological significance of parasitism, and of the structure, life history, and economic relations of representative animal parasites. Methods of control and prevention will be emphasized. RILEY.
36. RELATIONS OF INSECTS TO DISEASE. The causation and transmission of disease by insects and other arthropods. Life history, habits, and methods of control of hominnoxious species. RILEY.

ADVANCED COURSES

- 101-102. ADVANCED GENERAL ENTOMOLOGY. Advanced work in the lines of morphology and classification of insects with lectures on the history of entomology. Lectures and laboratory. OESTLUND.
103. BIOLOGY AND TAXONOMY OF THE APHIDIDAE. Intensive study of the natural history, bibliography, and classification of the Aphididae. OESTLUND.
- 105-106. HISTOLOGY AND DEVELOPMENT OF INSECTS. Lectures and laboratory work on the histology, embryonic and postembryonic development of insects. RILEY.

- 107-108. GENERAL ECOLOGY OF INSECTS. General ecology with special reference to the insects of Minnesota. Frequent field trips. Lectures, laboratory, and field work. CHAPMAN.
- 111-112. INSECTICIDES AND THEIR ACTION. A study of the chemical composition, the physical properties, and the physiological action of standard, of little known, and of new insecticides. MOORE.
117. METHODS IN ECONOMIC ENTOMOLOGY. Identification of immature stages of insects; methods of breeding; insect photography; insecticides; bibliographic aids and sources of literature. RUGGLES, MOORE.
- 119-120. INTRODUCTION TO RESEARCH. Preparation for investigational work in lines of entomology, parasitology, or economic zoology. Advanced laboratory, field and library work; training in the preparation of bibliographies and manuscripts; special problems. Summer work should be planned when possible. Oestlund, Systematic Entomology; Ruggles, General Economic Entomology; Chapman, Insect Ecology; Moore, Insecticides; Riley, Parasitology; Insect Morphology; Washburn, Economic Vertebrate Zoology.

FARM ENGINEERING

Professors JOHN T. STEWART,* IRVING D. CHARLTON (Acting Chief); Associate Professor JASON L. MOWRY; Assistant Professors HARRY B. ROE, ARTHUR G. TYLER; Instructors ALLEN D. JOHNSTON, JAMES B. TORRANCE, HALL B. WHITE.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
3a,b.	Mechanical Drawing	3	All	None
4.	Blacksmithing	3	All	None
5.	Carpentry	3	All	None
7.	Farm Structures	3	Jr., sr.	3
10.	Farm Engineering	3	Soph., jr., sr.	21-22 or H. S. Physics (1 unit)
11a,b.	Applied Mathematics	3	All	None
13a,b.	Farm Motors	3	All	None
15.	Farm Repairs	2	All	None
17.	Advanced Blacksmithing	3	All	4
18.	Surveying	3	Soph., jr., sr.	3, 11
19.	Materials of Construction	2	Soph., jr., sr.	None
21-22.	Agricultural Physics	6	All	None
24.	Advanced Farm Motors	3	Jr., sr.	13
26.	Farm Drainage	3	Jr., sr.	18
28.	Land Clearing	1	Soph., jr., sr.	None

INTRODUCTORY COURSES

3a,b. MECHANICAL DRAWING. Mechanics of drawing. Exercises in the

* On leave of absence, 1918-19.

- use of drawing instruments, lettering, and water colors. The mechanics of working drawings with their practical value. TYLER.
4. BLACKSMITHING. The management of forge and fire in bending, shaping, and welding iron. JOHNSTON.
 5. CARPENTRY. The use of carpentry tools and methods of farm building construction. WHITE.
 7. FARM STRUCTURES. The planning, designing, and location of farm buildings including specifications and estimates of cost. TYLER.
 10. FARM ENGINEERING. A general course in farm engineering. Lectures on farm measurements, drainage, irrigation, sanitation, buildings, roads, power, and machinery. CHARLTON.
 - 11a,b. APPLIED MATHEMATICS. Rules of practical mathematics with special attention to formulas and problems directly related to agricultural work; e.g., areas, volumes, percentages, proportions, variations, investments, cost problems, etc. ROE.
 - 13a,b. FARM MOTORS. Theory, operation, care, and repair of gasoline engines. TORRANCE.
 15. FARM REPAIRS. Exercises in harness repair, knots and rope splicing, belt lacing, soldering, babbitting, pipe fitting, drilling, and work with cold metals.
 17. ADVANCED BLACKSMITHING. Bending, shaping, welding, and tempering of steel. JOHNSTON.
 18. SURVEYING. Plain surveying as applied to farm problems. Mensuration, leveling, simple grade determination, elements of topography, and farm mapping. ROE.
 19. MATERIALS OF CONSTRUCTION. Wood, concrete, clay and metal products—their physical properties and preparation for farm buildings and equipment.
 - 21-22. AGRICULTURAL PHYSICS. Mechanics of solids and fluids, sound and heat, light, electricity, and magnetism, and their application to farm problems.
 24. ADVANCED FARM MOTORS. Farm tractors, trucks, and automobiles, their care, repair, and operation. MOWRY.
 26. FARM DRAINAGE. Principles and practice of farm drainage. Field technique of drainage construction by hand and machine. This course is for students wishing to do special work in drainage. ROE.
 28. LAND CLEARING. A study of land clearing methods, explosives, and machinery. CHARLTON.

FORESTRY

Professor EDWARD G. CHEYNEY; Associate Professor JOHN P. WENTLING.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1.	General Forestry	3	All	None
21.	Farm Forestry	3	Jr.	None

For additional courses see the bulletin of the Courses in Forestry.

INTRODUCTORY COURSES

1. GENERAL FORESTRY. A brief history of the development of forestry in Europe and America; description of the United States forests. Lectures and collateral reading. CHEYNEY.
21. FARM FORESTRY. A study of the establishment, care, maintenance, and utilization of the farm woodlot and windbreaks. A sketch of the forestry work in Minnesota and the United States. CHEYNEY, WENTLING.

GEOLOGY AND MINERALOGY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS .

Professor WILLIAM H. EMMONS; Associate Professor FRANK F. GROUT; Assistant Professors A. WALFRED JOHNSTON, CHESLEY J. POSEY, TERENCE T. QUIRKE; Instructor THOMAS M. BRODERICK.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1.	General Geology	3	Soph., jr., sr.	None
3.	Laboratory Work	1	Soph., jr., sr.	Supports 1
4.	Geology of Minnesota.....	3	Soph., jr., sr.	1
5.	Economic Geology	3	Soph., jr., sr.	1
21.	Elements of Mineralogy.....	3	Soph., jr., sr.	See statement
29.	General Physiography	3	Soph., jr., sr.	None
34.	Meteorology	3	Soph., jr., sr.	None
35.	Laboratory Work	1	Soph., jr., sr.	Supports 29

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

INTRODUCTORY COURSES

1. GENERAL GEOLOGY. A synoptical treatment of materials of the earth and of geologic processes. Physiographic, dynamic, and structural geology, with a brief introduction to historical geology. Lectures, laboratory work, field excursions, map study, and conferences. EMMONS, JOHNSTON.
3. LABORATORY WORK. Open only to students taking Course 1. Supplements Course 1 with study of rocks and ores, topographic and geologic maps, and reference reading. JOHNSTON.

4. GEOLOGY OF MINNESOTA. The physical geography and geologic history of Minnesota. The relations of industrial development to geological features. The principles of pre-Cambrian geology as exemplified in Minnesota. JOHNSTON.
5. ECONOMIC GEOLOGY. The mineral resources of the United States. The origin, occurrence, distribution, and uses of the more important minerals and mineral fuels of economic value. Lectures, map work, conferences, and field excursions. QUIRKE.
21. ELEMENTS OF MINERALOGY. Open to students taking Chemistry. The crystal systems; morphological, physical, and chemical character of minerals; occurrence, genesis, and uses of minerals; classification and description of common minerals. Determinative work in laboratory, blowpipe analysis, sight identification. GROUT, BRODERICK.
29. GENERAL PHYSIOGRAPHY. Principles of earth sculpture; physiographic changes in progress, and agencies causing them; hydrography and oceanography; planetary relations; climatology; field excursions. POSEY.
35. LABORATORY WORK. A course in the interpretation of topographic maps. Supplements and should accompany Course 29, tho not required in connection with it. Should be taken by those who expect to teach Physiography. POSEY.

GERMAN

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professor CARL SCHLENKER; Assistant Professors OSCAR C. BURKHARD, JAMES DAVIES, ALFRED E. KOENIG, SAMUEL KROESCH, WALTER R. MYERS; Instructors ELISE F. DEXTER, ARTHUR R. GRAVES, RICHARD JENTE, EDWIN H. ZEYDEL.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1a,b.	Beginning	6	All	None
3a,b.	Intermediate	6	All	1
5-6.	Prose and Poetry	*6	All	2 yrs. preparatory
7-8.	Drama	*6	All	5-6 or 4 yrs. preparatory
11-12.	Rapid Reading	*6	All	3
14.	Rapid Reading	6	Soph., jr., sr.	3
16.	Prose and Poetry	6	All	2 yrs. preparatory
21-22.	Scientific Intermediate	*6	All	3
23-24.	Scientific Advanced	*6	All	5-6 or 4 yrs. preparatory

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

* Both semesters must be completed before credit is given for the first semester.

INTRODUCTORY COURSES

- 1a,b. BEGINNING. Pronunciation, grammar, conversation, and composition; selected reading in easy prose and verse. KOENIG, DEXTER, JENTE, KROESCH, MYERS.
- 3a,b. INTERMEDIATE. Selected texts in modern narrative and descriptive prose; selected lyrics and ballads; a drama of Lessing, Goethe, or Schiller. Assigned readings of texts outside of class. KOENIG, DEXTER, JENTE, KROESCH, MYERS.
- 5-6. PROSE AND POETRY. Geography, history, and legend. Review of German grammar throughout the year. BURKHARD, DAVIES, DEXTER, GRAVES, JENTE, ZEYDEL.
- 7-8. DRAMA. First semester: classic drama; plays of Lessing, Goethe, Schiller. Second semester: modern drama; plays of Hebbel, Sudermann, Hauptmann and others. Assigned readings and reports throughout the year. SCHLENKER, BURKHARD, DAVIES, KROESCH.
- 11-12. RAPID READING. First semester: narrative prose; Hauff, Storm, Sudermann, Goethe's *Hermann und Dorothea*. Second semester: plays of Lessing, Goethe, Schiller, Hebbel. Assigned readings and reports. DAVIES, GRAVES.
- 14. RAPID READING. Same as Course 11-12. ZEYDEL.
- 16. PROSE AND POETRY. Same as Course 5-6. DEXTER.
- 21-22. SCIENTIFIC INTERMEDIATE. This course aims to give students a reading knowledge of German for use in scientific studies. Not open to those who have obtained credit for either Course 3 or 5-6. KROESCH, GRAVES.
- 23-24. SCIENTIFIC ADVANCED. Reading of monographs and periodicals. Not open to those who have obtained credit for Course 7-8. JENTE.

HOME ECONOMICS

Professor JOSEPHINE T. BERRY; Assistant Professor FRANCES V. WARD.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
			<i>Introductory Course</i>	
24.	Camp Cookery	3	Fr.	None

For additional courses see the bulletin of the Courses in Home Economics.

INTRODUCTORY COURSE

- 24. CAMP COOKERY. Designed to give prospective foresters, engineers, and others a knowledge of the simpler cookery processes, and of such adaptations as are practicable in the several types of out-of-doors camps. Given in alternate years. Not offered in 1918-19. WARD.

HORTICULTURE

Associate Professors WILFRID G. BRIERLEY, LE ROY CADY, MAXWELL J. DORSEY; Assistant Professor RICHARD WELLINGTON; Extension Specialist ROGER S. MACKINTOSH.

General statement.—For specialization in this department, see special requirements in Course of Study.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
6.	Principles of Fruit Growing....	3	Soph., jr., sr.	Bot. 1 yr.
13.	Fruit Handling	3	Jr., sr.	See course description
21.	Small Fruit Culture.....	3	Soph., jr., sr.	Bot. 1 yr.
32.	Market Gardening	3	Soph., jr., sr.	Bot. 1 yr.
33.	Vegetable Forcing	3	Jr., sr.	32
50.	Floriculture	3	Soph., jr., sr.	None
54.	Greenhouse Construction and Management	1½	Jr., sr.	None
56.	Plant Propagation	1	Soph., jr., sr.	None
71.	Landscape Gardening	3	Soph., jr., sr.	None
73.	Nursery Practice	1½	Soph., jr., sr.	None
90a,b.	General Horticulture	3	All	None
94.	Home and School Gardening....	3	*Jr., sr.	None
<i>Advanced Courses</i>				
107.	Orchard Management	3	Jr., sr.	90 or 6
109.	Principles of Genetics.....	3	Jr., sr.	Bot. 1 yr., An. Biol. 1 yr.
110.	Plant Breeding	3	Jr., sr.	109
111.	Fruit Variety Studies.....	3	Jr., sr.	90 or 6
131.	Advanced Market Gardening....	3	Sr.	32
151-152.	Advanced Floriculture	6	Sr.	50, 54
192.	Special Problems	3	Sr.	107 or 131
193-194.	Hort. Seminar	2	Sr.	9 cred. excl. of 90 and 94

* Open only to those intending to teach.

INTRODUCTORY COURSES

6. PRINCIPLES OF FRUIT GROWING. The fundamental principles of fruit-growing. Sites, soils, nursery stock, planting and planting plans, tillage, fertilization, cover crops, pollination, frost avoidance, pruning, and thinning. Lectures, recitations, references, and laboratory work. BRIERLEY.
13. FRUIT HANDLING. Lectures on early development, packages, harvesting, packing, by-products, coöperation, marketing, and storage. Laboratory and reference work. BRIERLEY.
21. SMALL FRUIT CULTURE. Lectures, references, and field trips. Botanical relationship, important species, origin, commercial development, importance, climatic range, sites, soils, propagation, planting plans,

- planting, pruning, cultivation, irrigation, cover-crops and mulching, inter-cropping and varieties. BRIERLEY.
32. MARKET GARDENING. The principles of vegetable growing for market, including all important vegetable crops from seed to harvest. Lectures, recitations, references, laboratory work, and excursions.
33. VEGETABLE FORCING. The growing and handling of the vegetable forcing crops; types and management of houses. Lectures, reference reading, field trips, and laboratory.
50. FLORICULTURE. Designed to give the student a working knowledge of the culture and uses of common house plants, annuals, perennials, and greenhouse plants. Lectures, reference reading, and laboratory. CADY.
54. GREENHOUSE CONSTRUCTION AND MANAGEMENT. The evolution of the greenhouse, types of houses, materials, and methods of construction. Lectures, field trips, and laboratory work. CADY.
56. PLANT PROPAGATION. Methods of propagation of plants by seed, cuttings, layers, grafting, and budding. The principles of greenhouse management, transplanting, watering, and ventilation. Lectures, reference reading, field and laboratory work. CADY.
71. LANDSCAPE GARDENING. The practice and principles of landscape gardening as applied to the home and community. Lectures and field trips to parks and private grounds. CADY.
73. NURSERY PRACTICE. Lectures and practice work in management of nursery stock, seeds, bulbs, and plants, particular attention being given to ornamental stock propagation, planting, and storage. CADY.
- *90a,b. GENERAL HORTICULTURE. Lectures and laboratory. A general study of the elementary principles of plant propagation, fruit growing, vegetable gardening, and the planting and care of home grounds. BRIERLEY.
94. HOME AND SCHOOL GARDENING. Same as Agr. Educ. 68. Lectures and laboratory. The elements of horticulture as applied to high-school instruction, plant propagation, fruit growing, home gardening, school gardening, and the planning of home and school grounds. BRIERLEY, CADY, WELLINGTON.

ADVANCED COURSES

107. ORCHARD MANAGEMENT. Lectures, references, laboratory, and special problems. The principal problems connected with the management of orchard and small fruit tracts. BRIERLEY.

* Students specializing in Horticulture may substitute for Hort. 90 any course in Horticulture for which they are eligible. Students majoring in other divisions who desire to take more specialized work in Horticulture may substitute Hort. 6, 21, 32, 50, or 71, provided that a second course from the same group be elected later. Students majoring in Agricultural Education will take Hort. 94 in the junior year.

109. PRINCIPLES OF GENETICS. Given jointly by the Division of Horticulture and the Division of Agronomy and Farm Management. Same as Agron. 103. Lectures and laboratory work designed to familiarize the student with the underlying principles of breeding. Heredity, variation, biometry, and evolution are emphasized. DORSEY, HAYES.
110. PLANT BREEDING. Given jointly by the Division of Horticulture and the Division of Agronomy and Farm Management. Same as Agron. 106. Applied genetics is emphasized. The method of breeding each of the important agricultural and horticultural crops, with special attention to experiment station investigations and to the methods used by plant breeders. DORSEY, HAYES.
111. FRUIT VARIETY STUDIES. The classification and distribution of temperate, sub-tropical, and tropical fruits; technical description, identification, and general study of the more important varieties; judging of fruits; fruit literature. Lectures, laboratory work, references. WELLINGTON.
131. ADVANCED MARKET GARDENING. Lectures, references, and special problems. A study in detail of the various vegetables. WELLINGTON.
- 151-152. ADVANCED FLORICULTURE. Lectures, assigned readings, laboratory, and special problems dealing with the culture, botany, and history of florists' plants and methods of greenhouse management. CADY.
192. SPECIAL PROBLEMS. A study of problems based upon the work given in Courses 107 or 131. BRIERLEY, WELLINGTON.
- 193-194. HORTICULTURAL SEMINAR. Required of all graduate students and of seniors electing special problem work. Reports and discussion of problems and investigational work. Horticulture Staff.

MILITARY SCIENCE AND TACTICS

Professor STARKEY Y. BRITT; Instructors RAY CUNNINGHAM, JOSEPH HAVLICEK; Band Instructor BERT A. ROSE.

Required work.—All physically fit male students are required to take military training during their freshman and sophomore years. All students, registered for military drill, freshmen, sophomore, junior, and senior, are members of the Reserve Officers Training Corps.

After the sophomore year students may discontinue military work, if they wish. Freshmen and sophomores receive their uniforms from the United States Government. This course is a prerequisite for graduation from the University.

Elective work.—Juniors who have completed two years of drill, and who are selected for advanced work by the Professor of Military Science and Tactics, and who sign an agreement with the Government, to continue the work for two more years, are eligible for the advanced course in

military training, which is prescribed in General Orders 49, and requires five hours work per week—three practical as commissioned officers in the R. O. T. C., and two hours lectures in theoretical subjects. Three credits for each semester are allowed for this work.

All students who complete the advanced course in the Military Department, and who graduate from the University are eligible to be commissioned by the President of the United States, in the Officers Reserve Corps. The men in the advanced course receive their uniforms, and thirty cents per day for rations from the Government.

The old cadet corps has been merged into an Officers Reserve Training Corps, the object being to have 50,000 trained officers as a reserve to be called to active duty when necessary.

MUSIC

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professor CARLYLE SCOTT; Assistant Professor DONALD N. FERGUSON; Instructors MAXIMILIAN DICK, ABE PEPINSKY, GERTRUDE REEVES.

General statement.—Credit is offered to seniors and juniors in the College of Agriculture, Forestry, and Home Economics, who may wish to elect work in the Department of Music. Six credits may be obtained. The following courses are recommended:

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
9-10.	History of Music.....	6	Soph., jr., sr.	None
11-12.	Appreciation of Music.....	2	Jr., sr.	None
*15-16.	Violin	2	Jr., sr.	None
*25-26.	Orchestra	4	Jr., sr.	See statement

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

* Given at the University Farm.

INTRODUCTORY COURSES

9-10. HISTORY OF MUSIC. Some account of primitive systems and of the early Christian modal and harmonic developments, leading to a general survey of musical literature from Bach to the present time. FERGUSON.

11-12. APPRECIATION OF MUSIC. A non-technical course. REEVES.

15-16. VIOLIN. Candidate must be able to play the first ten of Kreutzer's forty etudes, and the easier Handel and Mozart sonatas. DICK, PEPINSKY.

25-26. ORCHESTRA. FERGUSON, PEPINSKY.

PATHOLOGY, BACTERIOLOGY, AND PUBLIC HEALTH

MEDICAL SCHOOL

Professor HAROLD E. ROBERTSON; Associate Professor WINFORD P. LARSON; Instructors ANNE H. BENTON, HAROLD S. DIEHL, SIEGFRIED F. HERMANN, JOHN C. MCKINLEY.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Course</i>				
6a,b.	Elementary Bacteriology	3	Soph.	None
For additional courses see the bulletin of the Medical School.				

INTRODUCTORY COURSE

6a,b. ELEMENTARY BACTERIOLOGY. Lecture and laboratory course. The principles and technique of general bacteriology. Studies in the morphologic and biologic characters of the common bacteria. Preparation of culture media. Disinfectants and disinfection. Bacteriology of water and food products. LARSON, BENTON, DIEHL, HERRMANN, MCKINLEY.

PHYSICAL EDUCATION

FOR MEN

Director LOUIS J. COOKE; Assistant Director WILLIAM K. FOSTER; Instructors D. C. MITCHELL, JOHN C. WEST.

The purpose of the department is to provide all men of the University opportunity for exercise in order to maintain and build up their general health. It also provides special training for the correction of physical defects and functional derangements.

A physical examination is required of all new matriculants, and of all others using the department privileges, at the beginning of the year, and as often during their college course as their physical condition may indicate. Students taking the required work in physical education are examined also at the close of the year. A study of these records shows a marked improvement in the standard of health of the average student during his college course.

The gymnasium, swimming pool, and baths are open to all students of the University, who are free to use the apparatus and to pursue a course in physical training under the supervision of the director and his assistants.

Those students, taking the required course in physical education, who can not swim, must make a reasonable effort, as determined by the department, to pass the swimming and life-saving requirements, and will be assigned special hours for instruction.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1.	Personal Hygiene	None	Fr.	None
*3a,b.	Gymnasium	None	Fr.	None
5-6.	Intermediate Gymnastics	None	Fr.	None
†7-8.	Advanced Leaders	2	Soph., jr., sr.	1, 3-4, 5-6
9-10.	Corrective Gymnastics	None	All	None
11-12.	Wrestling	None	Soph., jr., sr.	None
13-14.	Advanced Gymnastics	None	Soph., jr., sr.	None
15-16.	Intermediate Swimming	None	All	None
17-18.	Advanced Swimming	None	All	15-16

* Given at the University Farm.

† Both semesters must be completed before credit is given for the first semester.

1. PERSONAL HYGIENE. Two hours per week; first six weeks of first semester. Examination at close of course. COOKE.

A special lecture on sex hygiene is given sometime during the first ten days of the autumn semester, with required attendance on the part of all new matriculants.

3a,b. GYMNASTICS. Two hours a week, last twelve weeks of first semester or first twelve weeks of second semester. Required qualifications in swimming, life-saving, bar-vaulting, jumping, sprinting, running, and on heavy apparatus. MITCHELL.

5-6. INTERMEDIATE GYMNASTICS. Elective for freshmen showing exceptional ability in elementary apparatus work. FOSTER, WEST.

7-8. CLASS LEADERS (ADVANCED). Three hours a week. FOSTER, WEST.

9-10. CORRECTIVE GYMNASTICS. Three hours a week. Special individual courses for students physically defective. FOSTER, WEST.

11-12. WRESTLING. Course in competitive wrestling. Most promising candidates chosen to represent Minnesota at the Western Intercollegiate Gymnastic and Wrestling Meet. (Optional.) FOSTER.

13-14. ADVANCED GYMNASTICS. Same as Course 11 and 12 except that it is in gymnastics instead of wrestling. Includes course in ground tumbling, horizontal bar, parallel bars, side horse, and flying rings. FOSTER, WEST.

15-16, 17-18. SWIMMING, INTERMEDIATE AND ADVANCED. Life saving, efficiency swimming, and fancy diving. Instruction is given in rescuing and restoring the apparently drowned and other useful swimming accomplishments. FOSTER.

PHYSICS

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professors HENRY A. ERIKSON, ANTHONY ZELENY; Associate Professor LOUIS W. MCKEEHAN;* Assistant Professor PAUL E. KLOPSTEG;* Instructor ERNEST O. DIETERICH.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1.	General Physics	3	Soph., jr., sr.	Math. 2 or 4 or parallel
2.	General Physics	3	Soph., jr., sr.	1
3.	General Laboratory Practice.....	1	Soph., jr., sr.	See statement
4.	General Laboratory Practice.....	1	Soph., jr., sr.	See statement

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

* Both semesters must be completed before credit is given.

INTRODUCTORY COURSES

1. GENERAL PHYSICS. Mechanics of solids and fluids, sound, heat. Treatment experimental rather than mathematical; the fundamental principles. First part of a general Course 1-2. Should be taken in conjunction with Course 3. ZELENY, KLOPSTEG, DIETERICH.
2. GENERAL PHYSICS. Light, electricity, magnetism. Treatment experimental; fundamental principles, including radioactivity, ionization, X-radiation, and electrical constitution of matter. Second part of general Course 1-2. Should be taken in conjunction with Course 4. ZELENY, KLOPSTEG, DIETERICH.
3. GENERAL LABORATORY PRACTICE. Physical measurements in the mechanics of solids, fluids, sound, heat, giving students knowledge of experimental methods, and acquaintance with the fundamental facts. Open to all who have completed or are taking Course 1. MCKEEHAN, DIETERICH.
4. GENERAL LABORATORY PRACTICE. Physical measurements in light, electricity, and magnetism. Open to all who have completed or are taking Course 2, and have completed Course 3. MCKEEHAN, DIETERICH.

PLANT PATHOLOGY AND BOTANY

Professor EDWARD M. FREEMAN; Associate Professor ELVIN C. STAKMAN; Assistant Professor WIELAND L. OSWALD; Instructors GUY R. BISBY, ROBERT C. DAHLBERG, GODFREY R. HOERNER, F. JEAN MACINNES; Assistants JULIAN G. LEACH, ALLAN G. NEWHALL; Extension Specialist ARNE G. TOLAAS.

* On leave of absence, 1918-19.

General statement.—For specialization in this department, see special requirements in Course of Study.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1.	Plant Pathology	3	Jr.	Bot. 1 yr.
6.	Plant Pest Control.....	3	Jr., sr.	1, Econ. Zool. 3
7.	Weeds and Grasses.....	3	Soph., jr., sr.	Bot. 1 yr.
9.	Weeds and Seed Testing.....	3	Soph., jr., sr.	Bot. 1 yr.
10.	Forest Pathology	3	Soph.	Bot. 1 yr.
12.	Seed Problems	3	Jr., sr.	9
14.	Plant Disease Control.....	3	Jr., sr.	1, Econ. Zool. 3
15.	Diseases of Field Crops.....	3	Jr., sr.	1
16.	Diseases of Fruit and Vegetable Crops	3	Jr., sr.	1
<i>Advanced Courses</i>				
104.	Principles of Pathology.....	3	Jr., sr.	1, Path. 6
105-106.	Mycology	6	Jr., sr.	1, Path. 6
107.	Methods	3	Jr., sr.	1, Path. 6

INTRODUCTORY COURSES

1. PLANT PATHOLOGY. Elementary study of plant diseases due to fungi, bacteria and slime molds; life histories and preventive methods. Lecture, laboratory, and reference. Not open to those who have completed Course 10. FREEMAN, MACINNES.
6. PLANT PEST CONTROL. Same as Ent. 16. The theory and practice of control of insect and fungous pests of crop plants. Practical applications. Not open to those who have completed Course 14. STAKMAN, BISBY, HOERNER.
7. WEEDS AND GRASSES. Agricultural and applied botanical study of weeds and grasses with special reference to agricultural importance. OSWALD.
9. WEEDS AND SEED TESTING. Detailed study of seed testing methods and seed legislation. Weed and crop seeds and weed plants studied with special reference to identification. OSWALD, DAHLBERG.
10. FOREST PATHOLOGY. Elementary study of plant diseases due to fungi, bacteria, and slime molds; life histories and preventive methods. Lectures, laboratory, and reference. Not open to those who have completed Course 1. Offered in alternate years. Given in 1918-19. FREEMAN, STAKMAN.
12. SEED PROBLEMS. Special seed problems are assigned. Advanced work in seed testing methods. OSWALD, DAHLBERG.
14. PLANT DISEASE CONTROL. A detailed study of methods of controlling diseases of plants of parasitic origin. Spray materials and spray machinery. Practical applications. Not open to those who have completed Course 6. Given in alternate years; offered in 1918-19. BISBY, HOERNER.

15. DISEASES OF FIELD CROPS. Special detailed study of diseases of cereal and forage crops, including symptomology, etiology, and practical methods of control. Laboratory, lecture, and field work. STAKMAN, LEACH.
16. DISEASES OF FRUIT AND VEGETABLE CROPS. Special study of diseases of fruit and vegetable crops, especially of Minnesota crops including diseases of crops raised under glass. Laboratory, lecture, and greenhouse work. BISBY, NEWHALL.

ADVANCED COURSES

104. PRINCIPLES OF PATHOLOGY. Comparative biology of plant pathogens; pathological plant anatomy, parasitism, biologic specialization, resistance, and immunity. Will be given in close cooperation with Agricultural Biochemistry Division and divisions offering work in Plant Breeding. STAKMAN.
- 105-106. MYCOLOGY. Study of taxonomy and physiology of fungi with special emphasis on groups of plant pathological interest. STAKMAN, BISBY, MACINNES.
107. METHODS. Plant pathological methods including mycological and bacteriological technique, laboratory, field, and inoculation investigational technique. Laboratory and lecture. Special problems. STAKMAN, BISBY.

POLITICAL SCIENCE

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professors JEREMIAH S. YOUNG, CEPHAS D. ALLIN; Assistant Professor WILLIAM ANDERSON.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1a,b.	American Government	3	Soph., jr., sr.	None
6.	American Municipal Administration.	3	Soph., jr., sr.	1
7a,b.	State and Local Government.....	3	Soph., jr., sr.	1
*28.	Business Law	3	Jr., sr.	1 or Econ. 6 cred.
51.	Business Law, Part I.....	3	Jr., sr.	1 or Econ. 6 cred.
52.	Business Law, Part II.....	3	Jr., sr.	51

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

* Given at the University Farm.

INTRODUCTORY COURSES

- 1a,b. AMERICAN GOVERNMENT. Organization and actual workings of the national government; nature and origin of the American governmental system. YOUNG, ALLIN, ANDERSON.

- 6. AMERICAN MUNICIPAL ADMINISTRATION. A study of the organization and chief functions of American cities; their growth, relation to the state, forms of charters, inefficiency, and corruption, reform measures; and the administration of finance, police, health, and other activities. ANDERSON.
- 7a,b. STATE AND LOCAL GOVERNMENT. Comparison of American state governments, especially Minnesota; relation of states to the United States and to local units of government; recent experiments such as initiative and referendum, the recall and primaries; social and economic legislation. YOUNG, ANDERSON.
- 28. BUSINESS LAW. A course in Business Law (arranged for students in Agriculture) including contracts, agency, mortgages, conveyances, and negotiable instruments.
- 51. BUSINESS LAW, PART I. The principles of law governing ordinary business transactions, including the general law of contracts, sales, mortgages, bankruptcy, and agency. YOUNG.
- 52. BUSINESS LAW, PART II. The law of partnerships, corporations, and negotiable instruments. YOUNG.

POULTRY HUSBANDRY

ANIMAL INDUSTRY GROUP

Professor ARTHUR C. SMITH; Extension Specialist NORTON F. CHAPMAN.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1.	Poultry	3	All	None
2.	Poultry Judging	3	All	1
4.	Incubating and Brooding.....	3	All	None

INTRODUCTORY COURSES

- 1. POULTRY. The poultry industry; best methods of care and management of fowls, turkeys, ducks, and geese, and the most important breeds of same. SMITH.
- 2. POULTRY JUDGING. The history, standard-requirements, and common defects of the leading commercial, standard breeds and varieties and determination and standard values by the score card and comparison methods. SMITH.
- 4. INCUBATING AND BROODING. Instruction and practice in incubation and brooding, selection of breeding stock and eggs for hatching, and feeding young chicks. Of practical value to teachers of agriculture and poultry raisers. SMITH.

PSYCHOLOGY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professor ROBERT M. YERKES;* Associate Professor HERBERT WOODROW;
Assistant Professors JOSEPH PETERSON, HENRY T. MOORE; Instructor
KARL S. LASHLEY; Teaching Fellow JOHN D. DODSON; Assistant ALICE
H. SULLIVAN.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Course</i>				
1a,b.	General Psychology	3	Soph., jr., sr.	None
<i>Advanced Courses</i>				
101a,b.	Experimental Psychology	3	Jr., sr.	1-2
103-104.	Comparative and Genetic Psychology	6	Jr., sr.	1-2
105.	Mental Retardation	6	Jr., sr.	1-2
107.	Social Psychology	3	Jr., sr.	1-2
110.	Abnormal Psychology	3	Jr., sr.	1-2
115-116.	Psychology Seminar	6	Sr.	12 credits

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

INTRODUCTORY COURSE

1a,b. GENERAL PSYCHOLOGY. The aims and methods of psychology; the facts, laws, and functions of mental life; development and learning in relation to training and instinct. Required for teacher's certificate. DODSON, LASHLEY, MOORE, PETERSON, WOODROW.

ADVANCED COURSES

101a,b. EXPERIMENTAL PSYCHOLOGY. Training course in mental measurements. WOODROW.

103-104. COMPARATIVE AND GENETIC PSYCHOLOGY. Mental evolution and development. The application of the comparative method to conscious behavior. LASHLEY.

105. MENTAL RETARDATION. A study of retarded mental development, its causes and treatment. WOODROW.

107. SOCIAL PSYCHOLOGY. A study of the mental interactions of individuals in society with especial reference to the instinctive emotional basis of human association. MOORE.

110. ABNORMAL PSYCHOLOGY. Unusual and pathological phenomena; the subconscious, dreams, suggestibility, mental disorders, secondary personalities. PETERSON.

115-116. SEMINAR IN PSYCHOLOGY. WOODROW.

* On leave of absence, 1918-19.

RHETORIC

Assistant Professor ROBERT C. LANSING; Instructors ESTELLE COOK, GEORGE G. GLICK, RUTH MOHL.

General statement.—Rhetoric credits will not be granted officially until the close of the first semester of the senior year.

At least one quiz paper will be selected at random each semester from other than rhetoric classes and read by the Rhetoric section. In addition any instructor may nominate and submit papers for any junior or senior who in his opinion requires special consideration.

The Rhetoric section may require upper-class students to take, without credit, additional courses in rhetoric in order to validate their freshman and sophomore rhetoric credits.

Students whose work in Rhetoric I shows at any time an inadequate knowledge of the conventions of English will be required to drop the course and enter Rhet. 3. These students will be required to complete fifteen credit hours of work in rhetoric.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1a,b.	Rhetoric	3	Fr.	None
2a,b.	Rhetoric	3	Fr.	1
3.	Elementary Rhetoric	3	Fr.	None
11a,b.	Argumentation	3	Soph., jr.	2
22a,b.	Public Speaking	3	Soph., jr.	11
24a,b.	Adv. Public Speaking.....	3	Soph., jr., sr.	22 or 25
*25a,b.	Fundamentals of Effective Speaking	2	Soph., jr., sr.	2

* Not offered second semester, 1918-19.

INTRODUCTORY COURSES

- 1a,b. RHETORIC. Note taking, thesis writing, oral and written exposition, sentence and paragraph structure, analysis of prose models, book reviews. LANSING, GLICK, MOHL.
- 2a,b. RHETORIC. Description, narration, diction, argumentation, oral composition, book reviews. LANSING, GLICK, MOHL.
- 3. ELEMENTARY RHETORIC. Elementary grammatical and rhetorical principles. MOHL.
- 11a,b. ARGUMENTATION. Evidence, reasoning, briefing, debating. LANSING, GLICK, MOHL.
- 22a,b. ELEMENTARY PUBLIC SPEAKING. The fundamentals of effective speaking; organization and delivery of occasional addresses, and practice in parliamentary drill. GLICK.

- 24a,b. **ADVANCED PUBLIC SPEAKING.** A practical course in the preparation and delivery of the informal lecture, including a study of modern eloquence. Practice in conducting assemblies. GLICK.
- 25a,b.* **FUNDAMENTALS OF EFFECTIVE SPEAKING.** The fundamental principles of voice production, articulation, gesture, platform deportment and expression. COOK.

ROMANCE LANGUAGES

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professors EVERETT W. OLNSTED, IRVILLE C. LE COMPTE, COLBERT SEARLES; Assistant Professors FRANCIS B. BARTON, JULES T. FRELIN, RUTH S. PHELPS; Professorial Lecturer BALBINO DÁVALOS; Instructors PEDRO HENRÍQUEZ UREÑA, ENRIQUE JIMÉNEZ, GUSTAAF VAN ROOSBROECK, SOLOMON M. DELSON; Assistants CLEMENT J. DEBÈRE, JOSEPHINE M. DEBOER; Teaching Fellows HERBERT E. CLEFTON, AMELIA M. DOYLE, ANTONIO GERVAZI.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1a,b.	Beginning French.....	6	All	None
3a,b.	Intermediate French.....	6	All	1 or equiv.
4.	Survey of French Literature.....	6	All	1 or equiv.
5-6.	Survey of French Literature.....	6	All	3 or equiv.
7-8.	Elemen. French Conversation.....	2	All	3 or equiv.
9-10.	Elemen. French Composition.....	1	All	3 or equiv.
31a,b.	Beginning Spanish.....	6	All	None
33-34.	Beginning Spanish.....	6	All	None
35b.	Intermediate Spanish.....	6	All	31 or equiv.
37-38.	Intermediate Spanish.....	6	All	31 or equiv.
39-40.	Survey of Spanish Literature....	6	All	35 or equiv.
41-42.	Elementary Spanish Conversation..	2	All	35 or equiv.
43-44.	Elementary Spanish Composition...	2	All	35 or equiv.

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

INTRODUCTORY COURSES

- 1a,b. **BEGINNING FRENCH.** Pronunciation, grammar, drill, oral exercises and translation. SEARLES, BARTON, CLEFTON, DEBÈRE, DEBOER, DELSON, DOYLE, FRELIN, GERVAZI, VAN ROOSBROECK.
- 3a,b. **INTERMEDIATE FRENCH.** Review of grammar, composition, conversation, and reading, representative authors of the Nineteenth Century. LECOMPTE, VAN ROOSBROECK.
4. **SURVEY OF FRENCH LITERATURE.** Double course. Same as 5-6. SEARLES.

* Not offered second semester, 1918-19.

- 5-6. GENERAL SURVEY OF FRENCH LITERATURE. 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. Selections from representative authors. LECOMPTE, BARTON, PHELPS, VAN ROOSBROECK.
- 7-8. ELEMENTARY FRENCH CONVERSATION. Small amount of outside preparation will be required. The section meeting at nine o'clock on Monday, Wednesday, and Friday is limited to students taking Course 5-6 and is based on the work of that course. FRELIN, BARTON, DEBÈRE.
- 9-10. ELEMENTARY FRENCH COMPOSITION. FRELIN, BARTON, DEBÈRE.
- 31a,b. BEGINNING SPANISH. Pronunciation, grammar drill, oral exercises, and translation. DÁVALOS, DELSON, HENRÍQUEZ, JIMÉNEZ.
- 33-34. BEGINNING SPANISH. This course is the same as Course 31 except that it is a year course. OLMSTED, DÁVALOS, HENRÍQUEZ, JIMÉNEZ, PHELPS.
- 35b. INTERMEDIATE SPANISH. Review of grammar, composition, conversation, and readings. HENRÍQUEZ, JIMÉNEZ.
- 37-38. INTERMEDIATE SPANISH. This course is the same as Course 35a,b, except that it is a year course. DÁVALOS, JIMÉNEZ.
- 39-40. SURVEY OF SPANISH LITERATURE. Lectures, recitations, and assigned readings. HENRÍQUEZ.
- 41-42. ELEMENTARY SPANISH CONVERSATION. A small amount of outside preparation required. The life and customs of modern Spain; accompanied by illustrative material. JIMÉNEZ.
- 43-44. ELEMENTARY SPANISH COMPOSITION. Special attention given to social and commercial correspondence. JIMÉNEZ.

RURAL AND AGRICULTURAL JOURNALISM

Associate Professor WILLIAM P. KIRKWOOD; Assistant Professor PHIL C. BING.

General statement.—The aim of this Division is to give practical training in rural and in agricultural journalism. The work in rural journalism includes the editing and managing of the country newspaper. The work in agricultural journalism covers writing for the rural press, for the agricultural press, bulletin writing, and agricultural publicity.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1.	Rural Press and Rural Life.....	1	Soph., jr., sr.	None
6.	Business Administration.....	3	Sr.	16

COURSES IN AGRICULTURE

No.	Title	Credits	Offered to	Prereq. courses
7.	Editorial Administration.....	3	Sr.	16
11-12.	Agricultural Journalism.....	6	Jr., sr.	†Rhet. 2 yrs. or Rhet. 1 yr., Eng. 1 yr.
*13-14.	Reporting	6	Soph., jr., sr.	Rhet. 1 yr.
*16.	Copy Reading.....	3	Jr., sr.	13-14
*17.	News Editing.....	3	Jr., sr.	16
18.	Bulletin Writing and Agricultural Publicity	3	Sr.	11-12

* Courses 13-14, 16, and 17 will be given by this Division in case they are not offered in the College of Science, Literature, and the Arts.

† Rur. and Agr. Jour. 13 also advised.

INTRODUCTORY COURSES

1. RURAL PRESS AND RURAL LIFE. The relations of the rural press to rural and community life; rural problems and how the rural press may assist in their solution. KIRKWOOD.
- *6. BUSINESS ADMINISTRATION. The business problems of the rural weekly including general accounting, job cost finding, circulation building, and advertising problems.
7. EDITORIAL ADMINISTRATION. The editor in his capacity as editor; formulation of policy; organization of news-gathering staff; presentation of the news to the public. KIRKWOOD.
- 11-12. AGRICULTURAL JOURNALISM. Gathering and writing agricultural news and the writing of articles for the agricultural press and other class papers. Lectures and practical work on Agricultural College publications. KIRKWOOD.
- 13-14. REPORTING. Organization, methods, and material in newspaper production; forms of newspaper stories; methods of gathering and writing news; laboratory practice by assignments on University publications. BING.
16. COPY READING. Study and practice in editing copy for the newspaper and in writing headlines. Laboratory practice. BING.
17. NEWS EDITING. Continuation of Course 16 with special attention to type, make up, and printing. Laboratory practice on University publications. BING.
18. BULLETIN WRITING AND AGRICULTURAL PUBLICITY. The application of the rules of writing for the press to preparation of popular and technical bulletins. Mediums and methods through which information may be brought to attention of communities and people of the open country. KIRKWOOD.

* Special courses in advertising will be provided as soon as demanded.

SOCIOLOGY AND ANTHROPOLOGY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professors ALBERT ERNEST JENKS, ARTHUR J. TODD; Associate Professor LUTHER L. BERNARD.

General statement.—Modern university education is not complete unless the graduate has obtained the social point of view. To this end the department offers elementary courses dealing with peoples, with social forces, institutions, and movements. Its more advanced courses are designed especially for students majoring in the social sciences, namely: sociology and anthropology, economics, history, and political science.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1a,b.	General Introduction.....	3	Soph., jr., sr.	None
6.	Social Reform Movements.....	3	Soph., jr., sr.	1
14.	Rural Sociology.....	3	Jr., sr.	None
<i>Advanced Courses</i>				
113.	The American People.....	3	Jr., sr.	3 courses, incl. 1
114.	The American People (continued)..	3	Jr., sr.	113
119.	The Family.....	3	Jr., sr.	9 cred.

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

INTRODUCTORY COURSES

- 1a,b. GENERAL INTRODUCTION. Elemental activities, institutions, laws, and theories. Especial emphasis is placed on descriptive data. Textbook and lectures. JENKS,* BERNARD, TODD.*
- 6. MODERN SOCIAL REFORM MOVEMENTS. A survey of the attempts to overcome certain social maladjustments: child labor, the city, the tenement, poverty, degeneracy; movements for public health, old age pensions, social insurance, protection of infancy and youth, public recreation, etc. TODD.
- 14. RURAL SOCIOLOGY. A survey of the field of Rural Sociology; description of rural social interests; analysis of fundamental problems of rural life; nature and influence of rural environment; characteristics of rural mind. BERNARD.

ADVANCED COURSES

- 113. THE AMERICAN PEOPLE. Dominant characteristics of the diverse foreign peoples now in the United States; their modification in America; the importance of these peoples to the American nation. Lectures, readings, and essay. JENKS.

* First semester only.

114. **THE AMERICAN PEOPLE** (continued). A continuation of Course 113. Essential and unique historical Americanisms, and their value and virility for the future; facts and forces of amalgamation and assimilation in America; America's ethnic problems. Lectures, readings, and essay. JENKS.
119. **THE FAMILY**. A study of the historical development of forms of the family, and their relation to other social institutions. The modern family, its functions, and its problems. TODD.

SOILS

Professor FREDERICK J. ALWAY; Instructors PAUL R. McMILLER, CLAYTON O. ROST; Extension Specialist GEORGE H. NESOM.

General statement.—For specialization in this department see special requirements in Course of Study.

COURSES

No.	Title	Credits Offered to	Prereq. courses
<i>Introductory Course</i>			
2.	Soils	4 Jr., sr.	Chem. 1 yr.
<i>Advanced Courses</i>			
104a.	Chemical Analysis of Soils.....	5 Sr.	2, Quant. Anal.
105-106.	Special Problems in Soils.....	† Sr.	104, 107
107.	Mechanical Analysis of Soils....	2 Jr., sr.	2
110.	Minnesota Soils.....	2 Sr.	2

† Credit according to the amount of work.

INTRODUCTORY COURSE

2. **SOILS**. Formation, physical properties, and chemical composition of soils; micro-organisms of the soil; farm manures, green manures, commercial fertilizers, and soil amendments; causes of unproductivity. Lectures, recitations, and laboratory work. McMILLER.

ADVANCED COURSES

104. **CHEMICAL ANALYSIS OF SOILS**. A laboratory course on the chemical examination of soils, fertilizers, and soil amendments. ROST.
- 105-106. **SPECIAL PROBLEMS IN SOILS**. Individual laboratory or field work upon some special soil problem in soil physics, soil chemistry, or soil management. Arrangement must be made in advance. ALWAY.
107. **MECHANICAL ANALYSIS OF SOILS**. A laboratory course on the beaker, and centrifuge methods of mechanical analysis. McMILLER.
110. **MINNESOTA SOILS**. Detailed study of the soils of Minnesota. Origin, formation, and classification; physical and chemical characteristics; moisture relations; response to manures, fertilizers, and soil amendments; naturally unproductive types and their reclamation. Lectures, laboratory, and field work. ALWAY.

VETERINARY MEDICINE

ANIMAL INDUSTRY GROUP

Professors CLIFFORD P. FITCH, MYRON H. REYNOLDS; Assistant Professors WILLARD L. BOYD, HOWARD C. H. KERNKAMP; Instructor WILLIAM A. BILLINGS; Assistant CLARENCE B. LORD.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
2.	Anatomy of Domestic Animals.....	3	Soph., jr.,sr.	None
3-4.	Comparative Physiology.....	6	Jr., sr.	2
5.	Veterinary Bacteriology.....	1	Soph., jr., sr.	Path. 6
6.	Physiology and Hygiene of Breeding	2	Jr., sr.	2
8.	Veterinary Studies.....	3	Jr., sr.	None
12.	Common Diseases of Domestic Animals	3	Sr.	3-4

INTRODUCTORY COURSES

2. ANATOMY OF DOMESTIC ANIMALS. Anatomy of the common farm animals with special reference to bones, muscles, and viscera. Lectures and demonstrations. KERNKAMP.
- 3-4. COMPARATIVE PHYSIOLOGY. A recitation and lecture course in physiology with special reference to the physiology of domesticated animals. Special emphasis is given to digestion and metabolism. FITCH.
5. VETERINARY BACTERIOLOGY. Lecture and demonstration course in Veterinary Bacteriology. Special emphasis being given to causes of infectious diseases of animals, also instruction in disease control measures and in preparation and use of vaccines, bacterins, serums, antitoxins. FITCH.
6. PHYSIOLOGY AND HYGIENE OF BREEDING. Anatomy and physiology of reproduction. Embryology, obstetrics, sterility, hygiene, and common diseases of breeding animals. BOYD.
8. VETERINARY STUDIES. Preparatory work for study of diseases; causes, prevention, etc., of common diseases including lameness and unsoundness; common medicines. For students taking only one semester of veterinary work. Not open to those who have completed Course 12. REYNOLDS.
12. COMMON DISEASES OF DOMESTIC ANIMALS. General principles of diagnosis, causes, morbid anatomy, symptomatology, prevention, and the basis of treatment of the ordinary diseases of the domestic animals. Those who have completed Course 8 can obtain only half credit for this course. BOYD.

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The Bulletin
of the University of
Minnesota

The College of Agriculture, Forestry,
and Home Economics
Announcement of
Courses in Home Economics for
the Year
1918 - 1919

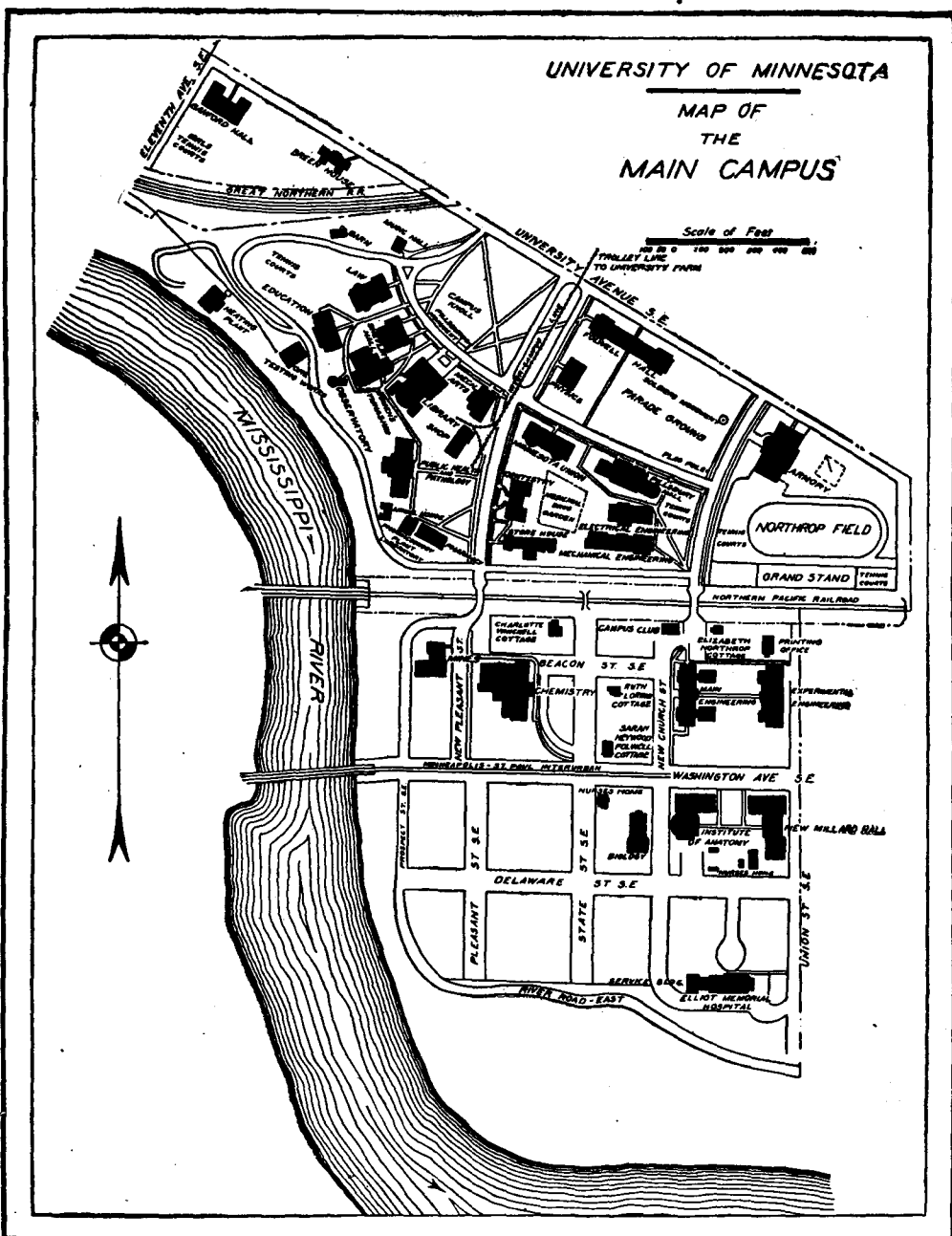


Vol. XXI No. 18 July 22 1918

Entered at the post-office
in Minneapolis as second-class matter
Minneapolis, Minnesota

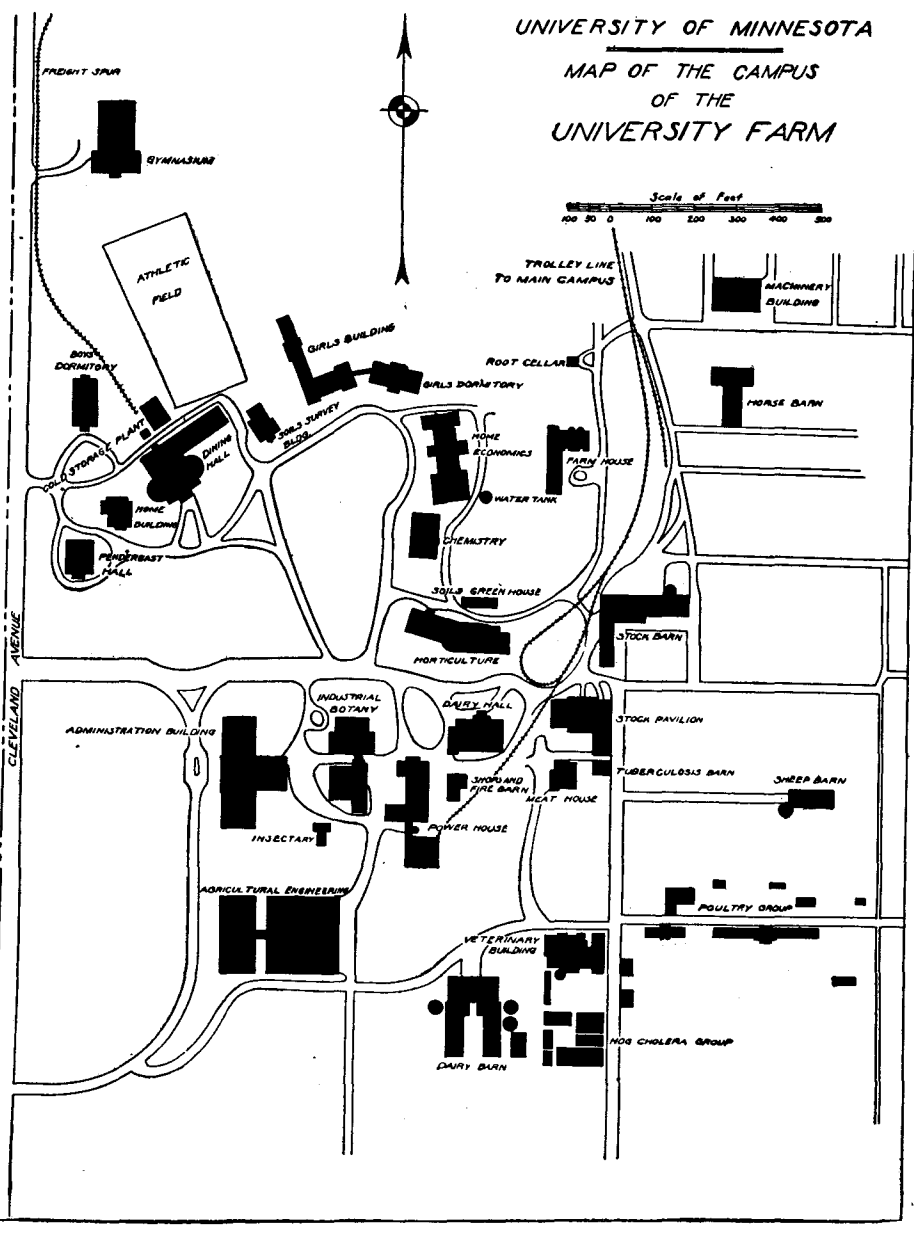
UNIVERSITY OF MINNESOTA

MAP OF
THE
MAIN CAMPUS



Area of Main Campus, 108.5 acres

UNIVERSITY OF MINNESOTA
 MAP OF THE CAMPUS
 OF THE
 UNIVERSITY FARM



Area of University Farm, 422.56 acres

1918							1919													
JULY							JANUARY							JULY						
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	..	..
..
AUGUST							FEBRUARY							AUGUST						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	..	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	..	..	..	..	..	..
SEPTEMBER							MARCH							SEPTEMBER						
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	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	..	..	..	..	..	..	..	..	..	..	..	..
OCTOBER							APRIL							OCTOBER						
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	..	..	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	..
..
NOVEMBER							MAY							NOVEMBER						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	..	..	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	..	..	..	..	..	..
DECEMBER							JUNE							DECEMBER						
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	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	..	..	..
..

CALENDAR

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

1918-1919

1918			
September	11	Wednesday	Registration closes except for new students
September	17-24	Week	Entrance examinations, registration of new students, and payment of fees
September	25	Wednesday	First semester begins
September	30	Monday	Farm experience examinations
October	11	Friday	Half holiday. Annual freshman-sophomore contest
October	17	Thursday	Senate meeting, 4:00 p.m.
October	19	Saturday	Last day for removal of second semester incompletes
October	28	Monday	School of Agriculture, first term begins
November	5	Tuesday	General Election Day; a holiday
November	27	Wednesday	Thanksgiving recess begins 9:00 p.m.
December	2	Monday	Thanksgiving recess ends 8:00 a.m.
December	2-7	Week	Second semester condition examinations
December	3	Tuesday	Creamery Butter Makers' Short Course (10-days' session), and Cheese Makers' Short Course (three-weeks' session) begin
December	16-20	Week	Ice Cream Makers' Short Course
December	20	Friday	School of Agriculture, first term closes
December	21	Saturday	Christmas vacation begins 12 m.
1919			
December	30	} Week	Farmers' and Home-Makers' Week Short Course
January	4		
January	2	Thursday	Christmas vacation ends 8:00 a.m. Senior field work in forestry begins
January	6	Monday	School of Agriculture, second term begins
January	6	Monday	Dairy Short Course begins
January	20	Monday	Second semester registration closes except for new students
January	27	Monday	Final examinations begin
January	31	} Monday	Registration of new students and payment of fees
February	1		
February	3		
February	3	Monday	Second semester begins. Senior field work in forestry closes
February	12	Wednesday	Lincoln's Birthday; a holiday
February	20	Thursday	Senate meeting, 4:00 p.m.

COURSES IN HOME ECONOMICS

February	22	Saturday	Washington's Birthday; a holiday
February	29	Saturday	Last day for removal of first semester incompletes
March	26	Wednesday	School of Agriculture closes
March	31	} Week	Boys' and Girls' Week
April	5		
April	17	Thursday	Easter recess begins 9:00 p.m.
April	22	Tuesday	Easter recess ends 8:00 a.m.
April	22-26	Week	First semester condition examinations
May	15	Thursday	Senate meeting, 4:00 p.m.
May	23	Friday	Final examinations begin 2:00 p.m.
May	30	Friday	Memorial Day; a holiday
May	31	Saturday	Second semester closes
June	1	Sunday	Baccalaureate service
June	2	Monday	Senior Class Day exercises
June	4	Wednesday	Alumni Day
June	5	Thursday	Forty-seventh Annual Commencement
June	6	Friday	Summer vacation begins
June	11	Wednesday	Freshman work in forestry at Itasca Park begins
June	16	Monday	Summer Session and Teachers' Training School begin
August	16	Saturday	Freshman forestry work at Itasca Park closes

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* On leave of absence, 1918-19.

COURSES IN HOME ECONOMICS

- LUTHER L. BERNARD, Ph.D., Associate Professor of Sociology
509 S. E. 6th St., Minneapolis
- CARLETON BROWN, Ph.D., Professor of English
416 8th Ave. S. E., Minneapolis
- OSCAR C. BURKHARD, Ph.D., Assistant Professor of German
719 E. River Road, Minneapolis
- †RICHARD BURTON, Ph.D., Professor of English Literature
116 Oak Grove, Minneapolis
- LOTUS D. COFFMAN, Ph.D., Professor of Education
1115 E. River Road, Minneapolis
- *HARDIN CRAIG, Ph.D., Professor of English
- BALBINO DÁVALOS, LL.D., Professorial Lecturer in Romance Languages
316 12th Ave. S. E., Minneapolis
- JAMES DAVIES, Ph.D., Assistant Professor of German
3230 3rd Ave. S., Minneapolis
- DONALD FERGUSON, B.A., Assistant Professor of Pianoforte
4912 Penn Ave. S., Minneapolis
- OSCAR W. FIRKINS, M.A., Professor of English
1528 S. E. 4th St., Minneapolis
- JULES T. FRELIN, B.A., Assistant Professor of French
310 12th Ave. S. E., Minneapolis
- WILLARD E. HOTCHKISS, Ph.D., Professor of Economics
214 S. E. Walnut St., Minneapolis
- ALBERT E. JENKS, Ph.D., Professor of Anthropology
819 University Ave. S. E., Minneapolis
- ALFRED E. KOENIG, M.A., Assistant Professor of German
602 S. E. 7th St., Minneapolis
- SAMUEL KROESCH, Ph.D., Assistant Professor of German
611 S. E. Oak St., Minneapolis
- WINFORD P. LARSON, M.D., Associate Professor of Bacteriology
516 9th Ave. S. E., Minneapolis
- IRVILLE C. Lecompte, Ph.D., Professor of Romance Languages
827 University Ave. S. E., Minneapolis
- ELIAS P. LYON, Ph.D., Professor of Physiology
421 S. E. Union St., Minneapolis
- CECIL A. MOORE, Ph.D., Professorial Lecturer in English
827 University Ave. S. E., Minneapolis
- HENRY T. MOORE, Ph.D., Assistant Professor of Psychology
803 S. E. Huron St., Minneapolis
- WALTER R. MYERS, Ph.D., Assistant Professor of German
608 S. E. Oak St., Minneapolis
- HENRY F. NACHTRIEB, B.S., Professor of Animal Biology
905 S. E. 6th St., Minneapolis
- *GEORGE N. NORTHROP, M.A., Assistant Professor of English

* On leave of absence, 1918-19.

† On leave of absence, second semester, 1918-19.

FACULTY

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- EDWARD E. NICHOLSON, M.A., Professor of Chemistry
508 5th Ave. S. E., Minneapolis
- EVERETT WARD OLMSTED, Ph.D., Professor of Romance Languages
2727 Lake of Isles Blvd., Minneapolis
- JOSEPH PETERSON, Ph.D., Assistant Professor of Psychology
311 9th Ave. S. E., Minneapolis
- RUTH S. PHELPS, M.A., Assistant Professor of Romance Languages
East Sanford Hall, Minneapolis
- ALBERT W. RANKIN, B.A., Professor of Education
916 S. E. 5th St., Minneapolis
- EDWIN CLYDE ROBBINS, Ph.D., Assistant Professor of Economics
741 14th Ave. S. E., Minneapolis
- *HAROLD E. ROBERTSON, B.A., M.D., Professor of Pathology
- CARL SCHLENKER, B.A., Professor of German
514 11th Ave. S. E., Minneapolis
- CARLYLE SCOTT, Professor of Music 3322 Lyndale Ave. S., Minneapolis
- COLBERT SEARLES, Ph.D., Professor of Romance Languages
1941 Fremont Ave. S., Minneapolis
- ELMER E. STOLL, Ph.D., Professor of English
504 S. E. 5th St., Minneapolis
- FLETCHER H. SWIFT, Ph.D., Professor of Education
819 S. E. Superior St., Minneapolis
- ARTHUR J. TODD, Ph.D., Professor of Sociology
721 S. E. 7th St., Minneapolis
- MARVIN J. VAN WAGENEN, B.S., M.A., Assistant Professor of Education
629 S. E. 6th St., Minneapolis
- HERBERT WOODROW, Ph.D., Associate Professor of Psychology
215 S. E. Walnut St., Minneapolis
- *ROBERT M. YERKES, Ph.D., Professor of Psychology
- JEREMIAH S. YOUNG, Ph.D., Professor of Political Science
1120 S. E. 6th St., Minneapolis
- JEAN H. ALEXANDER, M.A., Instructor in Education
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- GEORGE D. ALLEN, M.S., Instructor in Animal Biology
1203 S. E. 7th St., Minneapolis
- CAROL ARONOVICI, Ph.D., Director Wilder Foundation, Lecturer on Social
Work
1465 Raymond Ave., St. Paul
- ANNE BENTON, B.A., Instructor in Bacteriology
2024 Queen Ave. S., Minneapolis
- FRANK J. BRUNO, B.A., B.S., Secretary Minneapolis Associated Charities,
Lecturer on Social Work
3647 Lyndale Ave. S., Minneapolis
- HENRY F. BURT, B.A., B.D., Supervisor of Settlement Practice Work
250 17th Ave. N., Minneapolis
- OTTO W. DAVIS, Lecturer on Social and Civic Work
1120 Vincent Ave. N., Minneapolis

* On leave of absence, 1918-19.

- SOLOMON M. DELSON, Ph.B., Instructor in Romance Languages
517 9th Ave. S. E., Minneapolis
- ELISE F. DEXTER, M.A., Instructor in German
314 10th Ave. S. E., Minneapolis
- MAXIMILIAN DICK, Instructor in Music
961 Laurel Ave., St. Paul
- HAROLD S. DIEHL, B.A., Instructor in Bacteriology
429 S. E. Union St., Minneapolis
- THADDEUS P. GIDDINGS, Instructor in Public School Music
Court House, Minneapolis
- ARTHUR R. GRAVES, M.A., Instructor in German
407 S. E. 4th St., Minneapolis
- PEDRO HENRÍQUEZ UREÑA, Bachiller en Ciencias y Letras, Abogado, Instructor in Romance Languages
1213 S. E. 7th St., Minneapolis
- SIEGFRIED F. HERRMANN, B.S., Instructor in Bacteriology
329 S. E. Union St., Minneapolis
- ALBERT C. JAMES, B.A., M.B.A., Instructor in Economics
Maryland Hotel, Minneapolis
- RICHARD JENTE, M.A., Instructor in German
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- ENRIQUE JIMÉNEZ, M.A., Instructor in Romance Languages
1120 S. E. 4th St., Minneapolis
- KARL S. LASHLEY, B.A., Instructor in Psychology
1827 S. E. 4th St., Minneapolis
- JOHN C. MCKINLEY, M.A., Instructor in Bacteriology
2423 Irving Ave. S., Minneapolis
- GERTRUDE REEVES, Instructor in Pianoforte
5526 Pillsbury Ave., Minneapolis
- ADOLPH R. RINGOEN, M.A., Instructor in Animal Biology
1203 S. E. 7th St., Minneapolis
- ARTHUR H. TAYLOR, M.A., Lecturer on Social and Civic Work
4121 Garfield Ave. S., Minneapolis
- MARION E. TEBBETTS, B.A., Supervisor of Hospital Social Service Work
University Hospital, Minneapolis
- GUSTAAF VAN ROOSBROECK, B.A., Instructor in Romance Languages
404½ 14th Ave. S. E., Minneapolis
- EDWARD F. WAITE, B.A., LL.M., Lecturer on Social and Civic Work
2009 Queen Ave. S., Minneapolis
- H. LEE WARD, Ph.D., Instructor in Chemistry
2176 Scudder St., St. Paul
- ELIZABETH YERXA, B.A., Supervisor of Hospital Social Service Work
City Hospital, Minneapolis
- EDWIN H. ZEYDEL, M.A., Instructor in German
1312 S. E. 7th St., Minneapolis
- HERBERT E. CLEFTON, B.A., Teaching Fellow in Romance Languages
310 12th Ave. S. E., Minneapolis
- CLEMENT J. DEBÈRE, Bachelier en Philosophie et en droit, Assistant in Romance Languages
319 14th Ave. S. E., Minneapolis

FACULTY

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- JOSEPHINE M. DEBOER, B.A., Assistant in Romance Languages
800 S. E. 4th St., Minneapolis
- JOHN D. DODSON, M.A., Teaching Fellow in Psychology
15 Florence Court S. E., Minneapolis
- AMELIA M. DOYLE, B.A., Teaching Fellow in Romance Languages
2118 Marshall Ave., St. Paul
- ANTONIO GERVASI, B.A., Teaching Fellow in Romance Languages
1321 S. E. 7th St., Minneapolis
- ALICE H. SULLIVAN, B.A., Assistant in Psychology
1202 S. E. 4th St., Minneapolis

FACULTY COMMITTEES

1918-1919

Executive.—Executive Committee of the Department of Agriculture.

Enrollment.—WEST, BIESTER, DUTCHER, MOWRY, PIERCE, WENTLING.

Curriculum and Catalog

Agricultural Courses.—BOSS, BRIERLEY, GAY, HAYES, STORM, WEST.

Forestry Courses.—CHEYNEY, ALLISON, KENETY, WENTLING.

• *Home Economics Courses.*—BERRY, H. GOLDSTEIN, VERMILYE, WEIGLEY, WELLER.

Students' Work.—FREEMAN, BEGGS, BERRY, CHEYNEY, NICHOLSON, WEST.

Student Organizations.—LANSING, FITCH, FREEMAN, WEIGLEY, WELLER.

Faculty Business.—GORTNER, RUGGLES, STAKMAN, VERMILYE.

Appointment.—STORM, ARNY, BERRY, WEIGLEY.

Farm Experience.—BOSS, BRIERLEY, KILDEE, PATERSON.

GENERAL INFORMATION

ADMISSION

New students are admitted at the opening of the first semester in September and the second semester in February.

All students entering for the first time must submit their credentials to the Enrollment Committee.

Admission is either by certificate or by examination. Candidates must have completed the equivalent of a four-year high school course and must present:

1. Four units of English; or three units of English and four units of a foreign language; or three units of English and two units in each of two foreign languages.
2. One unit of algebra and one unit of plane geometry.
3. Enough additional work to make in all fifteen units, of which not more than four may be in subjects not listed in the admission groups.

Graduates of the School of Agriculture of the University of Minnesota who have completed the two summers of supervised work offered in the School course, one additional School year, and one additional summer's work, or the equivalent thereof, will be admitted to the College of Agriculture, Forestry, and Home Economics.

For details of admission requirements and definition of "unit," see the Bulletin of General Information.

Applicants for admission are urged to present Physics (1 unit), and Chemistry (1 unit), for entrance credits. If these subjects are not completed in the high school, they will have to be taken in the University, thus postponing some of the vocational courses.

FEEES

Incidental semester fee,	
Residents of Minnesota.....	\$20.00
Non-residents	40.00
Deposit (first semester only).....	5.00
Health fee (per semester).....	3.00
Physical Training:	
Suit	4.05
Shower bath (semester).....	1.50
Special fees:	
Examination for removal of conditions.....	1.00
Examinations for credit (after the first semester in residence).....	5.00
Special examinations	5.00
Change of registration.....	2.50

Late registration.—Old students must indicate their registration not later than two weeks before the day set for classes to begin. All students must complete their registration (including payment of fees) before the day set for classes to begin. Penalty for delay in either indicating or completing registration, one dollar. An additional twenty-five cents is charged for each day of delay after the last day set for the completion of

registration and a similar charge for each day of delay after the last day set for payment of fees.

Important.—The regulations require that no student be allowed to register after the semester opens except by special committee action.

FACULTY REGULATIONS

Students are held responsible for compliance with all faculty regulations. These regulations are published in a booklet issued to students at the time of registration.

REQUIREMENTS FOR GRADUATION AND DEGREES

After the completion of one of the prescribed courses of study, including all of the required work and the requisite amount of elective work equivalent to a total of 132 credit hours (134 for those graduating in 1919), candidates will be recommended for graduation with the degree of Bachelor of Science.

PROFESSIONAL CERTIFICATES

The University State Teachers' Certificate in Home Economics Education will be granted in 1918-19 to graduates of the College of Agriculture, Forestry, and Home Economics who have completed fifteen credit hours in approved professional courses, and to graduates of the College of Education who have completed the prescribed course leading to such a certificate.

The Industrial Certificate, the special state certificate for high school teachers of home economics, will be granted in 1918-19 by the State Department of Education to graduates of the College of Agriculture, Forestry, and Home Economics who are recommended by the College and who have the professional training required by the regulations of the State Department of Education for special teachers of home economics, and to graduates of the College of Education who have completed the course leading to such a certificate.

BOARD AND ROOM

Sanford Hall.—The one dormitory for university women, is located near the Minneapolis Campus. It accommodates ninety women, about one half of whom may be freshmen. The charge for room and board is \$250 for the university year. Applications should be sent to the Director of Sanford Hall, University of Minnesota.

Home management houses.—Two residences for women, located near the Agricultural College campus, are maintained by the Division of Home Economics, furnishing accommodations for a small number of students. The charge is \$250 for the university year, payable in monthly installments. Applications should be sent to the Chief of the Division of Home Economics, University Farm, St. Paul. A deposit fee of \$10 is required when a room is reserved.

Private houses.—After June 1 the Registrar will supply a list of approved boarding and rooming places.

COURSES OF STUDY

The following courses of study are designed (a) to prepare women for the responsibilities of citizenship, and of home-making; (b) to prepare teachers for the extension of home economics education; (c) to prepare women for vocations which have as their foundation work of the home economics group. They are planned to meet the needs of six groups of young women:

1. Students electing to major in Home Economics as a type of General Arts education for women.
2. Students preparing for teaching in the general field of Home Economics.
3. Students preparing for teaching in the special field of Home Economics, viz., Foods Management.
4. Students preparing for teaching in the special field of Home Economics, viz., Textiles and Clothing.
5. Students preparing for positions as dietitians.
6. Students preparing for positions as institutional managers.

The College of Agriculture, Forestry, and Home Economics, and the College of Education coöperate in the preparation of teachers of home economics as outlined in the Teachers' Course in Home Economics, Teachers' Course in Foods Management, and the Teachers' Course in Textiles and Clothing.

The required work of the freshman and sophomore years is the same in each course of study. Specialization is provided for in the junior and senior years.

HOME PRACTICE

Home practice in garment-making is required of students who have completed H.E. 11, as a prerequisite to H.E. 13. The character and amount of the home practice work will be arranged with the head of the section of Textiles and Clothing.

Home practice in foods and cookery is required of students who have completed H.E. 21 or 23, and 22, as prerequisites to H.E. 35. The character and amount of the home practice work will be arranged with the head of the section of Foods and Cookery.

GENERAL REQUIREMENTS FOR ALL STUDENTS IN HOME ECONOMICS

EXPLANATION OF COURSE NUMBERS

Odd numbers indicate first-semester courses; even numbers, second-semester courses. A combination of the two (e.g., 5-6) indicates courses continuing through the year. In the case of courses repeated the second semester, the suffix *a* indicates first semester; the suffix *b*, second semester.

All undergraduate courses are numbered from 1 to 100. All courses open to undergraduates and graduates are numbered from 101 to 200.

Numbers following the descriptive name of a course indicate the number of credit hours.

One credit hour is equivalent to (1) one lecture or recitation period requiring two hours of preparation, (2) two periods of laboratory work requiring one hour of preparation, or (3) three periods of laboratory work with no preparation, each week for one semester.

FRESHMAN YEAR

All students must register for Group A and enough additional work from Group B to make a total of not more than 15 credit hours and not less than 12 credit hours each semester. Courses in Group B not completed in the freshman year must be taken in the sophomore year, except as otherwise indicated.

GROUP A

First Semester

*Rhet. 1, Rhetoric, 3
An. Biol. 9, General Zoology, 3
Phys. Ed. 1, Elementary Physical Training
Phys. Ed. 11, Preliminary Hygiene
‡Freshman Lectures

Second Semester

Rhet. 2, Rhetoric, 3
An. Biol. 10, General Zoology, 3
Chem. 4b, Advanced General Chemistry and Qualitative Analysis, 3
Phys. Ed. 2, Elementary Physical Training

GROUP B

Chem. 3a,b, Advanced General Chemistry and Qualitative Analysis, 3 or Chem. 33, General Chemistry and Qualitative Analysis, 5. The five credit course is offered the first semester only and must be taken by those who do not present a unit of chemistry for admission. Students may be required to change from 3 to 33 at any time during the course. Those presenting a unit of high-school chemistry can obtain not more than three credits for the completion of Course 33.
Farm Eng. 30, Household Physics, 3. Required of all who enter without a unit in high-school physics.
H.E. 3a,b, Textiles, 3.
H.E. 51a,b, Drawing and Design, 3.
H.E. 11a,b, Garment Making, 3. Those offering approved domestic art for entrance may omit this course.
Econ. 2a,b, Industries and Commerce of the United States, 3.
Farm Eng. 3a,b, Mechanical Drawing, 3. This course may be omitted if Farm Eng. 30 is registered for.

SOPHOMORE YEAR

All of the following are single semester courses and may be taken either semester. Foods and Cookery, however, must precede Food Economics, Argumentation must precede Public Speaking, and Physiology must precede or accompany Foods and Cookery.

Students offering domestic science (one unit) for entrance should register for H.E. 21, Foods and Cookery, 3, and Elective, 2, instead of H.E. 23.

Students intending to specialize in Textiles and Clothing may substitute Elective, 3, for Agr. Biochem. 3, Types of Carbon Compounds, 3.

* Special attention is called to rules on delayed credit and to regulations for students with insufficient preparation in English on page 47.

‡ A course of lectures intended primarily to familiarize the new student with the college, college customs, and methods of procedure is required of all freshmen.

COURSES IN HOME ECONOMICS

First Semester

H.E. 23a, Foods and Cookery, 5
 Rhet. 11a, Argumentation, 3
 Physiol. 3a, Elementary Human Physiology, 3
 Sociol. 1a, General Introduction, 3
 Elective, 3

Second Semester

H.E. 22b, Food Economics, 3
 Rhet. 22b, Public Speaking, 3
 Path. 6b, Elementary Bacteriology, 3
 Psychol. 1b, General Psychology, 3
 Agr. Biochem. 3b, Types of Carbon Compounds, 3
 H.E. 13b, Dressmaking, 3

SOPHOMORE ELECTIVES

The following courses, open to sophomores, are recommended as electives. For fuller statement and prerequisites consult course descriptions.

First Semester

Rur. and Agr. Jour. 13, Reporting, 3
 Ent. 1, Introductory Entomology, 3
 German, see department statement
 Scandinavian, see department statement
 Romance Languages, see department statement
 Music 9, History of Music, 3
 Pol. Sci. 1a, American Government, 3
 Hort. 71, Landscape Gardening, 3
 Hort. 90a, General Horticulture, 3
 Phys. Tr. 3, Intermediate Physical Training, 1½
 Engl. 1, General Survey, 3

Second Semester

Rur. and Agr. Jour. 14, Reporting, 3
 German, see department statement
 Scandinavian, see department statement
 Romance Languages, see department statement
 Music 10, History of Music, 3
 Pol. Sci. 1b, American Government, 3
 Pol. Sci. 6, American Municipal Administration, 3
 Ent. 2, Introductory Entomology, 3
 Hort. 50, Floriculture, 3
 Hort. 90b, General Horticulture
 Phys. Tr. 4, Intermediate Physical Training, 1½
 Engl. 2, General Survey, 3
 Sociol. 6, Social Reform Movement, 3

SPECIAL REQUIREMENTS FOR THE DIFFERENT COURSES OF STUDY

GENERAL COURSE IN HOME ECONOMICS

JUNIOR YEAR

Any of the following courses except H.E. 37, Home Care of the Sick, may be taken either semester except that H.E. 107 must precede H.E. 108.

First Semester

H.E. 107a, Nutrition, 6
 H.E. 37, Home Care of the Sick, 2
 H.E. 53a, Historic Ornament and Advanced Design, 3
 Elective, 6

Second Semester

H.E. 108b, Nutrition, 6
 Econ. 3b, Principles of Economics, 3
 Elective, 8

SENIOR YEAR

All of the following are single semester courses and may be taken either semester.

First Semester

H.E. 103a, Dietetics, 3
 H.E. 32a, Home Management: House Planning and Equipment, 3
 Elective, 11

Second Semester

H.E. 17b, Clothing Economics, 3
 H.E. 34b, Home Management: Operation and Maintenance, Lectures, 2
 H.E. 35b, Home Management: Operation and Maintenance, Laboratory, 3
 Elective, 8

COURSES OF STUDY

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TEACHERS' COURSE IN HOME ECONOMICS

JUNIOR YEAR

H.E. 53a,b, Historic Ornament and Advanced Design; 107a,b and 108a,b, Nutrition; Agr. Educ. 11a,b, Principles of Industrial Education; and Econ. 3a,b, Principles of Economics, may be taken either semester, except that H.E. 107 must precede H.E. 108.

First Semester

H.E. 107a, Nutrition, 6
H.E. 37, Home Care of the Sick, 2
Agr. Educ. 11a, Principles of Vocational Education, 3
Educ. 5, The American School, 3
Elective, 3

Second Semester

H.E. 108b, Nutrition, 6
Econ. 3b, Principles of Economics, 3
H.E. 42, Home Economics Education, 3
H.E. 53b, Historic Ornament and Advanced Design, 3
Elective, 2

SENIOR YEAR

All of the following, with the exception of H.E. 45-46 and H.E. 40 are single semester courses and may be taken either semester, except that H.E. 34 should be registered for the same semester as H.E. 40.

Special attention is called to the prerequisites for H.E. 49. See page 37.

First Semester

H.E. 103a, Dietetics, 3
H.E. 32a, Home Management: House Planning and Equipment, 3
H.E. 49a, Observation and Teaching, 5
H.E. 45, Home Economics Education, 1
Elective, 5

Second Semester

H.E. 17b, Clothing Economics, 3
H.E. 34b, Home Management: Operation and Maintenance, Lectures, 2
H.E. 40, Child Training, 2
H.E. 35b, Home Management: Operation and Maintenance, Laboratory, 3
H.E. 46, Home Economics Education, 1
Elective, 5

TEACHERS' COURSE IN TEXTILES AND CLOTHING

JUNIOR YEAR

H.E. 53a,b, Historic Ornament and Advanced Design; Agr. Educ. 11a,b, Principles of Industrial Education; Econ. 3a,b, Principles of Economics; H.E. 55a,b, Decorative Needlework and Crafts; and H.E. 17a,b, Clothing Economics, may be taken either semester.

First Semester

H.E. 53a, Historic Ornament and Advanced Design, 3
H.E. 37, Home Care of the Sick, 2
Agr. Educ. 11a, Principles of Vocational Education, 3
H.E. 16a, Tailoring, 2
Educ. 5, The American School, 3
Elective, 4

Second Semester

H.E. 17b, Clothing Economics, 3
Econ. 3b, Principles of Economics, 3
H.E. 55b, Decorative Needlework and Crafts, 2
H.E. 44, Organization and Methods for Textiles and Clothing, 3
Elective, 6

SENIOR YEAR

H.E. 4a,b, Advanced Textiles, H.E. 19a,b, Millinery, and H.E. 32a,b, Home Management: House Planning and Equipment; may be taken either semester.

Special attention is called to the prerequisites for H.E. 48. See page 37.

COURSES IN HOME ECONOMICS

First Semester

- H.E. 18a, Commercial Clothing Manu-
facture, 5
H.E. 45, Home Economics Education, 1
H.E. 48a, Observation and Teaching, 3
Elective, 8

Second Semester

- H.E. 32b, Home Management: House
Planning and Equipment, 3
H.E. 19b, Millinery, 1
H.E. 4b, Advanced Textiles, 3
Elective, 9

TEACHERS' COURSE IN FOODS MANAGEMENT

JUNIOR YEAR

H.E. 53a,b, Historic Ornament and Advanced Design; H.E. 107a,b and 108a,b, Nutrition; Agr. Educ. 11a,b, Principles of Industrial Education; and Econ. 3a,b, Principles of Economics, may be taken either semester.

First Semester

- H.E. 107a, Nutrition, 6
H.E. 37, Home Care of the Sick, 2
Educ. 5, The American School, 3
Agr. Educ. 11a, Principles of Vocational Education, 3
Elective, 3

Second Semester

- H.E. 108b, Nutrition, 6
Econ. 3b, Principles of Economics, 3
H.E. 53b, Historic Ornament and Advanced Design, 3
H.E. 42, Home Economics Education, -3
Elective, 2

SENIOR YEAR

All of the following, with the exception of H.E. 45-46 are single semester courses and may be taken either semester.

Special attention is called to the prerequisites for H.E. 47. See page 37.

First Semester

- H.E. 103a, Dietetics, 3
H.E. 32a, Home Management: House
Planning and Equipment, 3
H.E. 47, Observation and Teaching, 5
H.E. 45, Home Economics Education, 1
Elective, 5

Second Semester

- H.E. 34b, Home Management: Operation
and Maintenance, Lectures, 2
H.E. 35b, Home Management: Operation
and Maintenance, Laboratory, 3
H.E. 46, Home Economics Education, 1
105b, Experimental Cookery, 3
Elective, 7

COURSE FOR DIETITIANS

JUNIOR YEAR

H.E. 53a,b, Historic Ornament and Advanced Design; H.E. 107a,b and 108a,b, Nutrition; Agr. Educ. 11a,b, Principles of Vocational Education; and Econ. 3a,b, Principles of Economics, may be taken either semester, except that H.E. 107 must precede H.E. 108.

First Semester

- H.E. 107a, Nutrition, 6
H.E. 37, Home Care of the Sick, 2
H.E. 53a, Historic Ornament and Advanced Design, 3
Agr. Educ. 11a, Principles of Vocational Education, 3
Elective, 3

Second Semester

- H.E. 108b, Nutrition, 6
Econ. 3b, Principles of Economics, 3
H.E. 42, Home Economics Education, 3
Elective, 5

SENIOR YEAR

All of the following, with the exception of H.E. 45-46 are single semester courses and may be taken either semester.

First Semester

- H.E. 103a, Dietetics, 3
- H.E. 32a, Home Management: House Planning and Equipment, 3
- H.E. 45, Home Economics Education, 1 Elective, 10

Second Semester

- H.E. 34b, Home Management: Operation and Maintenance, Lectures, 2
- H.E. 35b, Home Management: Operation and Maintenance, Laboratory, 3
- H.E. 46, Home Economics Education, 1
- H.E. 105b, Experimental Cookery, 3 Elective, 7

COURSE IN INSTITUTIONAL MANAGEMENT

JUNIOR YEAR

All of the following courses with the exception of H.E. 37, Home Care of the Sick, may be taken either semester.

First Semester

- H.E. 107a, Nutrition, 6
- H.E. 37, Home Care of the Sick, 2
- Econ. 3a, Principles of Economics, 3
- H.E. 53a, Historic Ornament and Advanced Design, 3 Elective, 3

Second Semester

- H.E. 108b, Nutrition, 6
- H.E. 61b, Large Quantity Cookery, 2
- H.E. 63b, Institutional Experience I, 2
- H.E. 34b, Home Management: Operation and Maintenance, Lectures, 2
- H.E. 35b, Home Management: Operation and Maintenance, Laboratory, 3 Elective, 2

SENIOR YEAR

All of the following courses except Econ. 85, Marketing; H.E. 67, Institutional Management; and Econ. 88, Retail Marketing, may be taken either semester.

First Semester

- H.E. 103a, Dietetics, 3
- Econ. 85, Marketing, 3
- H.E. 65a, Institutional Marketing, 1
- H.E. 67, Institutional Management, 3 Elective, 7

Second Semester

- H.E. 105, Experimental Cookery, 3
- Econ. 88, Retail Marketing, 3
- H.E. 69b, Institutional Experience II, 5 Elective, 5

COURSES OF STUDY FOR TEACHERS OF VOCATIONAL COURSES IN HOME ECONOMICS

Courses of study, designed to prepare for the teaching of vocational courses in home economics, will be arranged in accordance with the provisions of the Smith-Hughes act, and will be offered in 1918-19.

COURSES OF STUDY FOR EXTENSION TEACHERS

Students desiring to prepare for extension teaching in home economics may pursue the Teachers' Course in Home Economics, or the Teachers' Course in Textiles and Clothing, and may substitute for Observation and Teaching, of the senior year, field work under the supervision of home economics extension specialists.

ELECTIVES

Students should consult with the division in which they are specializing with reference to the elective courses which must be chosen to make up the 134 credit hours required for graduation.

Only a limited number of elective courses are open to freshmen. First-year students, who for any reason are unable to follow the regular curriculum, are advised to fill their program with a required course from the sophomore schedule, if possible, and postpone the choice of electives until the sophomore year. This plan will enable the student to obtain a better view-point from which to select electives and allow a wider range of subjects from which to choose.

COURSES IN HOME ECONOMICS

FRESHMAN ELECTIVES

The following divisions and departments offer elective work to freshmen. For the descriptions of available courses see pages 27 to 53, and, for departments marked S., L., and A., see the bulletin of the College of Science, Literature, and the Arts.

Agricultural Education	Mathematics (S., L., and A.)
Botany (S., L., and A.)	Poultry Husbandry
German	Romance Languages
History (S., L., and A.)	

SOPHOMORE, JUNIOR, AND SENIOR ELECTIVES

Nearly all of the divisions offer elective work to sophomores, juniors, and seniors. In selecting courses special attention should be paid to prerequisites, the classes to which the courses are offered, and, in the case of courses offered by departments of other schools and colleges of the University, to the rules of the school or college concerned.

Elective courses in the College of Science, Literature, and the Arts, are separated into Junior College courses, open to freshmen and sophomores, and Senior College courses, open to juniors and seniors. In addition to satisfying other prerequisites an average grade of C (81-87) must be maintained for the first two years in order to register for a Senior College elective.

DESCRIPTION OF COURSES

For explanation of course numbers and credits see page 20.

AGRICULTURAL BIOCHEMISTRY

Professor ROSS AIKEN GORTNER; Associate Professor CLYDE H. BAILEY;
Assistant Professors R. ADAMS DUTCHER, CLARENCE A. MORROW, JOHN
J. WILLAMAN.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Course</i>				
3a,b.	Types of Carbon Compounds.....	3	Soph., jr.	Chem. 1 yr.
<i>Advanced Courses</i>				
108.	Chem. of Wheat and Its Products..	2	Sr.	3
111.	Phytochemistry	3	Sr.	Biol. 2 yrs., Org. Chem.
113.	Biochemical Lab. Methods.....	2	Sr.	10, Biol. 2 yrs., Org. Chem.
114.	Laboratory Problems	3 or 5	Sr.	111, 113

For additional courses see the bulletin of the Courses in Agriculture.

INTRODUCTORY COURSE

3a,b. TYPES OF CARBON COMPOUNDS. An elementary study of the different groups of carbon compounds, with special reference to their relationships and their occurrence in plant and animal materials used as food. MORROW.

ADVANCED COURSES

108. CHEMISTRY OF WHEAT AND WHEAT PRODUCTS. A lecture course, with collateral library reference work, on the chemical technology of the production and milling of wheat and the conversion of its products into human food. BAILEY.
111. PHYTOCHEMISTRY. An advanced course in the chemistry of fats, carbohydrates, tannins, proteins, enzymes, and colloids and their relation to the vital processes involved in plant and animal growth and nutrition. MORROW.
113. BIOCHEMICAL LABORATORY METHODS. Special methods of examination of plant and animal tissues for particular fats, carbohydrates, proteins, and enzymes. MORROW.
114. LABORATORY PROBLEMS IN BIOCHEMISTRY. Special laboratory work in the preparation or isolation of pure compounds which occur in living cells, in the study of biochemical reactions, or in special methods of identification or determination of biochemical products. GORTNER, BAILEY, DUTCHER, MORROW, WILLAMAN.

COURSES IN HOME ECONOMICS

AGRICULTURAL EDUCATION

Professors ASHLEY V. STORM, DEXTER D. MAYNE; Assistant Professor BUEFORD M. GILE; Instructor WILLIAM P. DYER.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
11a,b.	Principles of Vocational Education.	3	*All	None
21.	Industrial Education	3	*All	None

For additional courses see the bulletin of the Courses in Agriculture.

* Offered only to those intending to teach.

INTRODUCTORY COURSES

- 11a,b. PRINCIPLES OF VOCATIONAL EDUCATION. A study of the fundamental principles upon which education is based. Throughout the course emphasis is placed on those phases which are most closely related to industrial education. GILE, DYER.
21. INDUSTRIAL EDUCATION. A short history of industrial education; the present status in Europe and United States; manual training and home arts in an educational system; the place of agriculture in the public schools; trade and vocational schools. MAYNE.

ANIMAL BIOLOGY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professor HENRY F. NACHTRIEB; Instructors GEORGE D. ALLEN, ADOLPH RINGOEN.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Course</i>				
9-10.	General Zoology	6*	Fr.	None

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

* Both semesters must be completed before credit is given.

INTRODUCTORY COURSE

- 9-10. GENERAL ZOOLOGY. A course in general zoology for the students in Home Economics. Emphasis will be given to the classes having a more direct bearing on home economics. Lectures, quizzes, and laboratory work. NACHTRIEB, ALLEN, RINGOEN.

BEE CULTURE

Professor FRANCIS JAGER; Instructor LLOYD V. FRANCE.

General statement.—Theoretical and practical instruction on bees, honey, and wax production. At least one year of botany should be com-

DESCRIPTION OF COURSES

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pleted before electing these courses. General zoology and economic entomology are also desirable. If not already completed they should be taken at same time as the courses in bee culture.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
6.	Elements of Beekeeping.....	3	Jr., sr.	None
7.	Advanced Beekeeping	3	Jr., sr.	6

INTRODUCTORY COURSES

6. **ELEMENTS OF BEEKEEPING.** Elementary study of queens, drones, and workers, hives and appliances, handling of bees, spring, summer, winter management, swarming and increase, honey and wax production, feeding, and bee diseases. JAGER, FRANCE.
7. **ADVANCED BEEKEEPING.** Anatomy of the bee, queen rearing, commercial production of honey, out-apiaries, accounting, and marketing. JAGER, FRANCE.

CHEMISTRY

SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

Professor EDWARD E. NICHOLSON; Assistant Professor ROSS A. BAKER;
Instructor H. LEE WARD.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
3a-4b, 3b-4a.	Adv. General Chemistry and Qualitative Analysis	6*	Fr., soph., jr.	Entrance cred. in Chem.
33.	General Chem. and Qual. Analysis	5†	Fr., soph., jr.	None

For additional courses see the bulletin of the School of Chemistry.

* Both semesters must be completed before credit is given for the first semester.

† Course 4b must be completed before credit is given.

INTRODUCTORY COURSES

- 3a-4b, 3b-4a. **ADVANCED GENERAL CHEMISTRY AND QUALITATIVE ANALYSIS.** Lectures, recitations, and laboratory work. General descriptive chemistry, including the fundamental theories and laws, and qualitative analysis. NICHOLSON, BAKER, WARD.
33. **GENERAL CHEMISTRY AND QUALITATIVE ANALYSIS.** Designed for those who have had no high-school chemistry; in preparation for Course 4b. See statement under 3a-4b. BAKER.

COURSES IN HOME ECONOMICS

DAIRY HUSBANDRY

ANIMAL INDUSTRY GROUP

Professors HENRY H. KILDEE, ROBERT M. WASHBURN; Instructor EDWIN O. HANSON.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
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Introductory Course

11.	Milk and Its Products.....	3	Jr., sr.	None
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For additional courses see the bulletin of the Courses in Agriculture.

INTRODUCTORY COURSE

11. MILK AND ITS PRODUCTS. Milk secretion, composition, properties, variation, and testing. Cream separation, testing, care, methods of marketing. Butter, cheese, and ice cream making. Market milk handling, standardizing, clarifying, pasteurizing, bottling, and marketing. WASHBURN, HANSON.

ECONOMICS

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professor WILLARD E. HOTCHKISS; Assistant Professors JOHN D. BLACK, EDWIN CLYDE ROBBINS; Instructor ALBERT C. JAMES.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
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Introductory Courses

†2a,b.	Indust. and Commerce of U. S.....	3	All	None
†3a,b.	Principles of Economics.....	3	Soph., jr., sr.	None
85.	Marketing	3	Jr., sr.	2, 3
88.	Retail Marketing	3	Jr., sr.	6 incl. 85

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

† Given at University Farm.

INTRODUCTORY COURSES

2a,b. INDUSTRIES AND COMMERCE OF THE UNITED STATES. An introductory study of modern industry as a foundation for the further study of economics. Land, labor, capital, enterprise, as divisions of the productive process. Exchange. Ways in which society influences production. ROBBINS.

3a,b. PRINCIPLES OF ECONOMICS. Fundamentals of economic theory with special reference to agriculture. BLACK.

85. MARKETING. Domestic merchandising methods of manufacturers. Problems of wholesalers and commission men; distributing system and market organization; price policies. JAMES.

88. **RETAIL MARKETING.** Problems and methods of the so-called regular retailer, department stores, and chain stores. Development of retail trade centers. Coöperation between the retailer and the local board of trade. The retailer and the consumer. JAMES.

EDUCATION

COLLEGE OF EDUCATION

Professors LOTUS D. COFFMAN, ALBERT W. RANKIN, FLETCHER H. SWIFT;
Assistant Professor MARVIN J. VAN WAGENEN; Instructors JEAN H.
ALEXANDER.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1a,b.	Brief Course in the Hist. of Educ..	3	Jr., sr.	Psychol. 1-2
3a,b.	Social Aspects of Education.....	3	Jr., sr.	Psychol. 1-2
*5b.	The American School.....	3	Jr., sr.	Psychol. 1
11.	Technique of Teaching.....	3	Jr., sr.	Psychol. 1-2
<i>Advanced Courses</i>				
101.	Historical Foundations of Modern Education	3	Jr., sr.	Psychol. 1-2, Hist. 6 cred.
102.	History of Educ. since Reformation	3	Jr., sr.	1 or Psychol. 1-2, Hist. 6 cred.
105.	Educational Psychology	3	Sr.	Psychol. 1-2
106.	Educational Psychology	3	Sr.	Psychol. 1-2
109.	Educational Diagnosis	2	Sr.	1 or 101-102, 3
119.	School Curricula	3	Sr.	1 or 101-102, 3
141.	School Sanitation and Public Health	3	Sr.	1 or 101-102, 3

For additional courses see the bulletin of the College of Education.

* Given at the University Farm.

INTRODUCTORY COURSES

- 1a,b. **A BRIEF COURSE IN THE HISTORY OF EDUCATION.** Current school problems and educational theories in the light of their history. Emphasis upon secondary education and those aspects of education of most immediate concern to high-school teachers. Not open to those who have credit in Course 5. SWIFT, ALEXANDER.
- 3a,b. **SOCIAL ASPECTS OF EDUCATION.** The school as a community factor; the present peculiar relation of the school to social problems; the function of the school in these relations. RANKIN.
5. **AMERICAN SCHOOL.** A brief survey of the factors determining the problem of public education in America, followed by a brief account of the development and organization of typical state school systems. Not open to those who have credit in Course 1. SWIFT.
- 11a,b. **TECHNIQUE OF TEACHING.** Types of classroom exercises; preparation of teaching plans; hygiene of instruction; classroom manage-

ment; the professional ethics of teaching; observation of high-school work.

ADVANCED COURSES

101. FOUNDATIONS OF MODERN EDUCATION. Interpretative historical study of elements in modern education derived from Hebrews, Greeks, Romans, Middle Ages, etc. Emphasis on secondary and higher education and origin and results of monopoly of cultural conception of education and cultural studies. SWIFT.
102. HISTORY OF EDUCATION SINCE THE REFORMATION. Modern educational institutions, theories, and problems in the light of their history. Special emphasis upon elementary education. SWIFT.
105. EDUCATIONAL PSYCHOLOGY. Advanced work in genetic psychology, the origin and nature of the human organism, the origin, development and control of instincts, the relation of instincts to the formation of habits, introductory to the psychology of learning. VAN WAGENEN.
106. EDUCATIONAL PSYCHOLOGY. Psychology of learning. Methods of measuring rate of learning; study of typical learning experiments and examination of the conditions of the most economic learning, study of individual differences, and psychology of the school subjects. VAN WAGENEN.
109. EDUCATIONAL DIAGNOSIS. A study of educational scales and standard tests for the measurement of efficiency in school subjects. The course will deal with the nature of the tests, the methods of their use, and an analysis of results obtained.
119. SCHOOL CURRICULA. The curriculum as related to social, industrial, and economic conditions; a survey of the grammar grades and of the high school. Consideration of the possibilities of developing a curriculum better adapted to the community needs. RANKIN.
141. SCHOOL SANITATION AND PUBLIC HEALTH. A course in school hygiene in its broader aspects. Designed for all teachers and supervisors who are responsible for the health of school children. Treats of medical supervision and other problems arising from school environment. RANKIN.

ENGLISH

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professors RICHARD BURTON,† CARLETON BROWN, HARDIN CRAIG,* OSCAR W. FIRKINS, ELMER E. STOLL; Professorial Lecturer CECIL A. MOORE; Associate Professor JOSEPH W. BEACH; Assistant Professor GEORGE W. NORTHRUP.*

† Absent on leave during second semester, 1918-19.

* Absent on leave, 1918-19.

General statement.—The following courses are recommended for election by the students of the College of Agriculture, Forestry, and Home Economics.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1-2.	General Survey English Literature	6	Soph., jr., sr.	Rhet. 1-2
5a,b.	Chaucer	3	Soph., jr., sr.	1 or parallel
7.	Shakespeare	3	Soph., jr., sr.	1 or parallel
51.	Spenser	3	Jr., sr.	1-2
54.	American Literature	3	Jr., sr.	1-2
67.	English Novel	3	Jr., sr.	1-2
<i>Advanced Courses</i>				
107.	Eighteenth Century Prose.....	3	Jr., sr.	1-2 and 6 credits in courses below 10
119-120.	Principles of Literary Criticism..	6	Jr., sr.	1-2 and 6 credits in courses below 18
136.	Advanced Shakespeare	3	Jr., sr.	1-2, 7 and 3 credits in courses below 10
140.	Advanced Chaucer	2	Jr., sr.	1-2, 5 and 3 credits in courses below 10
143b.	Recent English Poetry.....	3	Jr., sr.	1-2 and 6 credits in courses below 10

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

INTRODUCTORY COURSES

- 1-2. GENERAL SURVEY OF ENGLISH LITERATURE. Lectures, recitations, and assigned readings. Designed to prepare for more minute study of special periods. These courses may be taken in either order and credited independently of each other. BROWN, STOLL, MOORE, BEACH.
- 5a,b. CHAUCER. The grammar and literary forms of fourteenth century English, with selected readings from Chaucer's works. Special attention to *The Canterbury Tales*. First semester, BROWN; second semester, FIRKINS.
7. SHAKESPEARE. An introductory study of Shakespeare's development as a poet and dramatist up to *King Lear*, with reading of representative plays. The work is continued the second semester in Course 136. STOLL.
51. SPENSER. The forms and literary influences in the Elizabethan period illustrated in the poetry of Edmund Spenser, with brief readings from the minor poems and extended study of *The Faerie Queene*. FIRKINS.
54. AMERICAN LITERATURE. Lectures on American Literature, with extensive readings from the principal poets and prose writers of the United States. MOORE.

67. THE ENGLISH NOVEL. Principles and personalities in the evolution of the English novel. Written reports on selected novels. BURTON.

ADVANCED COURSES

107. EIGHTEENTH CENTURY PROSE. Lectures on eighteenth century prose and prose writers; readings by the students and essays on approved topics; special study of fiction and the essay. MOORE.
- 119-120. PRINCIPLES OF LITERARY CRITICISM. Elements in literature, e.g., clearness, vigor, beauty, etc.; exposition of literary types, e.g., the lyric, epic, short story, etc., in relation to standards of judgment. Before registering, consult instructor. FIRKINS.
136. ADVANCED SHAKESPEARE. Shakespeare's development traced to the end. A careful analysis of four plays. Problems in the interpretation of Shakespeare's dramatic methods. STOLL.
140. ADVANCED STUDY OF CHAUCER. Further study of *The Canterbury Tales* and of the Minor Poems. BROWN.
143. RECENT ENGLISH POETRY. Poetry in England and America since 1870. The main poetic traditions, and tendencies now prevailing. BEACH.

ENTOMOLOGY AND ECONOMIC ZOOLOGY

Professor WILLIAM A. RILEY; Associate Professor ARTHUR G. RUGGLES;
Assistant Professor OSCAR W. OESTLUND.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1-2.	Introductory Entomology	6	Soph., jr., sr.	An. Biol. 9-10 or equivalent
14.	Insects and Public Health.....	2	Jr., sr.	An. Biol. 9-10

For additional courses see the bulletin of Agricultural Courses.

INTRODUCTORY COURSES

- 1-2. INTRODUCTORY ENTOMOLOGY. Lectures and laboratory work on the characteristics and habits of insects. The more important insect pests and methods of control are especially emphasized in the second semester. RUGGLES, OESTLUND.
14. INSECTS AND PUBLIC HEALTH. The agency of insects and related forms in the transmission of disease; methods of sanitation related to their control and disease transmission. Not open for credit to students specializing in entomology. RILEY.

FARM ENGINEERING

Professor IRVING D. CHARLTON; Assistant Professor ARTHUR G. TYLER;
Instructor

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
3a,b.	Mechanical Drawing	3	Fr., soph.	None
30.	Household Physics	3	All	None

For additional courses see the bulletin of the Courses in Agriculture.

INTRODUCTORY COURSES

- 3a,b. MECHANICAL DRAWING. Lectures on drawing, exercise in the use of drawing instruments, lettering, and water colors. The making of working drawings with their practical value. TYLER.
30. HOUSEHOLD PHYSICS. Mechanics of solids and fluids; heat, light, sound, electricity, and magnetism. Application of physics to household problems.

GERMAN

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professor CARL SCHLENKER; Assistant Professors OSCAR C. BURKHARD, JAMES DAVIES, ALFRED E. KOENIG, SAMUEL KROESCH, WALTER R. MYERS; Instructors ELISE F. DEXTER, ARTHUR R. GRAVES, RICHARD JENTE, EDWIN H. ZEYDEL.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1a,b.	Beginning	6	All	None
3a,b.	Intermediate	6	All	1
5-6.	Prose and Poetry.....	6*	All	2 yrs. preparatory
7-8.	Drama	6*	All	5-6 or 4 yrs. preparatory
11-12.	Rapid Reading	6*	All	3
14.	Rapid Reading	6	Soph., jr., sr.	3
16.	Prose and Poetry.....	6	All	2 yrs. preparatory
21-22.	Scientific Intermediate	6*	All	3
23-24.	Scientific Advanced	6*	All	5-6 or 4 yrs. preparatory

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

* Both semesters must be completed before credit is given for the first semester.

INTRODUCTORY COURSES

- 1a,b. BEGINNING. Pronunciation, grammar, conversation, and composition; selected reading in easy prose and verse. KOENIG, KROESCH, MYERS, DEXTER, JENTE.

- 3a,b. INTERMEDIATE. Selected texts in modern narrative and descriptive prose; selected lyrics and ballads; a drama of Lessing, Goethe, or Schiller. Assigned readings of texts outside of class. KOENIG, KROESCH, MYERS, DEXTER, JENTE.
- 5-6. PROSE AND POETRY. Geography, history, and legend. Review of German grammar throughout the year. BURKHARD, DAVIES, DEXTER, GRAVES, JENTE, ZEYDEL.
- 7-8. DRAMA. First semester: classic drama; plays of Lessing, Goethe, Schiller. Second semester: modern drama; plays of Hebbel, Sudermann, Hauptmann and others. Assigned readings and reports throughout the year. SCHLENKER, BURKHARD, DAVIES, KROESCH.
- 11-12. RAPID READING. First semester: narrative prose; Hauff, Storm, Sudermann, Goethe's *Hermann und Dorothea*. Second semester: plays of Lessing, Goethe, Schiller, Hebbel. Assigned readings and reports. DAVIES, GRAVES.
14. RAPID READING. Same as Course 11-12. ZEYDEL.
16. PROSE AND POETRY. Same as Course 5-6. DEXTER.
- 21-22. SCIENTIFIC INTERMEDIATE. This course aims to give students a reading knowledge of German for use in scientific studies. Not open to those who have obtained credit for either Course 3-4 or 5-6. KROESCH, GRAVES.
- 23-24. SCIENTIFIC ADVANCED. Reading of monographs and periodicals. Not open to those who have obtained credit for Course 7-8. JENTE.

HOME ECONOMICS

Professor JOSEPHINE T. BERRY; Assistant Professors ALICE BIESTER, SYLVIA CAMPIGLIA, HARRIET I. GOLDSTEIN, AMY P. MORSE, STELLA PALMER, FRANCES V. WARD, MILDRED WEIGLEY, MARION WELLMER, GRACE I. WILLIAMS; Instructors CARLOTTA BROWN, CLARA M. BROWN, JEAN MUIR DORSEY, HALLY J. FISHER, VETTA GOLDSTEIN, OLIVE B. MACCOMBER, MABEL MCDOWELL, MAUDE MILLER, HARRIET NILES, ETHEL L. PHELPS, ELIZABETH VERMILYE; Lecturer MARTHA B. MOORHEAD; Extension Specialists MARY L. BULL, LUCY CORDINER, JOSEPHINE CREELMAN, MAY SECREST, JUNIATA L. SHEPPERD.

General statement.—The following courses are planned primarily for students majoring in home economics, and are required in the courses of study in home economics, see schedule, pages 21 to 25. They are open for election to students in other courses who offer the prerequisites as stated below.

Requirements for the Industrial Certificate.—The Industrial Certificate is granted to graduates of the Teachers' Course in Home Economics, Textiles and Clothing, and Foods Management who have completed the prescribed professional courses, and who are recommended for the certificate by the Division of Home Economics and the College of Education.

Special attention is called to the prerequisites for Courses 47, 48, and 49 required for the professional certificate. No student is admitted to Course 47 who has a grade below C (81-87) in Courses 21, 23, 22, 42, or 101. No student is admitted to Course 48 who has a grade below C in Courses 11, 13, 42, or 44. In order to enter Course 49 the prerequisites for both 47 and 48 must be satisfied.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
3a,b.	Textiles	3	Fr.	None
4a,b.	Advanced Textiles	3	Jr.	3, 5†
11a,b.	Garment Making	3	Fr.	None
13a,b.	Dressmaking	3	Jr.	3, 11, Home Practice in Garment Making
16a.	Tailoring	2	Jr.	13
17a,b.	Clothing Economics	3	Sr.	13, 53
18a.	Commercial Clothing Manufacture	5	Sr.	17
19a,b.	Millinery	1	Soph., jr., sr.	11, 51
21a,b.	Foods and Cookery.....	3	Soph.	H. S. Do. Sci. 1 unit; Chem. 3 or 33; Physiol. 3, parallel
22a,b.	Food Economics	3	Soph.	21
23a,b.	Foods and Cookery.....	5	Soph.	Chem. 3 or 33; Physiol. 3, parallel
24.	Camp Cookery	3‡	Fr.	None
32a,b.	Home Management: House Plan- ning and Equipment.....	3	Sr.	53
34a,b.	Home Management: Operation and Maintenance, Lectures.....	2	Sr.	22
35a,b.	Home Management: Operation and Maintenance, Laboratory...	3	Sr.	22, Home Practice in Foods and Cookery
37.	Home Care of the Sick.....	2	Jr.	Chem. 3 or 33; Path. 6
40.	Child Training	2	Jr., sr.	37, Agr. Educ. 11, Educ. 5
†42.	Home Economics Education.....	3	Jr.	22, Psychol. 1
†44.	Organization and Methods for Textiles and Clothing.....	3	Jr.	13, Psychol. 1
†45.	Home Economics Education.....	1	Sr.	42
†46.	Home Economics Education.....	1	Sr.	45
†47a,b.	Observation and Teaching.....	5	Sr.	42; see general statement above
†48a,b.	Observation and Teaching.....	5	Sr.	44; see general statement above
†49a,b.	Observation and Teaching.....	5	Sr.	42; see general statement above

† College of Education.

‡ Two credits are allowed for the completion of the first 12 weeks of the course.

No.	Title	Credits	Offered to	Prereq. courses
51a,b.	Drawing and Design.....	3	Fr.	None
53a,b.	Historic Ornament and Advanced Design	3	Jr.	51
55a,b.	Decorative Needlework and Crafts	2	Jr.	3, 11, 51, 53 parallel
61a,b.	Large Quantity Cookery.....	2	Jr., sr.	22
63a,b.	Institutional Experience I.....	2	Jr., sr.	22
65a,b.	Institutional Marketing	1	Sr.	61
67.	Institutional Management	3	Sr.	61, 63
69a,b.	Institutional Experience II.....	5	Sr.	67
<i>Advanced Courses</i>				
103a,b.	Dietetics	3	Sr.	108
105a,b.	Experimental Cookery	3	Jr., sr.	107
107a,b.	Nutrition	6	Jr.	22, Path. 6; parallel Agr. Biochem. 3
108a,b.	Nutrition	6	Jr.	107

INTRODUCTORY COURSES

- 3a,b. **TEXTILES.** A study of textile fibers, their structure, properties, and chemical reactions; of fabrics, their structure and processes of manufacture; of art and economic considerations in selection and purchase of materials for clothing and household furnishing. WELER, PHELPS.
- 4a,b. **ADVANCED TEXTILES.** A more intensive study of textile fibers and fabrics; organization of laboratory problems leading to the establishment of a basis for standardization by the general consumer and for a demand for pure textiles. WELER.
- 11a,b. **GARMENT MAKING.** Instruction and laboratory practice in hand sewing; in the reading and adaptation of commercial patterns; in the construction and use of the sewing machine; in designing, cutting, and making simple outer garments from washable materials. PHELPS.
- 13a,b. **DRESSMAKING.** Consideration of quality, suitability, and cost of materials adapted to technique involved in construction of simple wool and silk dresses; adaptation of art principles in selection of designs; instruction and practice in methods of construction. CAMPIGLIA, PHELPS.
- 16a. **TAILORING.** The technique and methods of construction employed in the making of tailored suits and wraps. Not offered in 1918-1919.
- 17a,b. **CLOTHING ECONOMICS.** General consideration of economic function of woman; history of woman's place in home and industry with reference to clothing and textiles; study of clothing budgets, hygiene and standardization of dress. Laboratory problem in costume modeling. WELER.
- 18a. **COMMERCIAL CLOTHING MANUFACTURE.** A study of the organization of the clothing trades and industries; of wages and standards of effi-

- ciency in workmanship. Laboratory practice upon a commercial basis, measured by trade standards.
- 19a,b. **MILLINERY.** A study of the processes and materials used in millinery; designing, making, and trimming hats. BROWN.
- 21a,b. **FOODS AND COOKERY.** (a) Production, manufacture, chemical composition of typical foods; their classification into food principles; changes in digestion; function in nutrition. (b) Fundamental science principles from chemistry, physics, biology, bacteriology, and their application in typical cookery processes. PALMER, WARD, VERMILYE, WILLIAMS.
- 22a,b. **FOOD ECONOMICS.** Cost and nutritive value of typical foods; the study of dietaries; preparation and serving of meals, the cost bearing a definite relation to the family budget. WARD, WILLIAMS, VERMILYE.
- 23a,b. **FOODS AND COOKERY.** A course following the same general outline as 21a, but including a more detailed study of each topic. WHEELER, WILLIAMS, VERMILYE.
24. **CAMP COOKERY.** This course is designed to give prospective foresters, engineers, and others a knowledge of the simpler cookery processes; and of such adaptations as are practicable in the several types of out-of-doors camps. Given in alternate years. Not offered in 1918-19. WARD.
- 32a,b. **HOME MANAGEMENT: HOUSE PLANNING AND EQUIPMENT.** Problems in house planning, house furnishing and equipment for various sums. Types of domestic architecture; choice of site; floor-plans; building materials; details of construction; heating; ventilating; lighting; plumbing; walls; rugs; furniture; color; hangings; pictures; gardens. MORSE.
- 34a,b. **HOME MANAGEMENT: OPERATION AND MAINTENANCE, LECTURES.** The family budget for varying incomes, and for the "Home Management House"; household accounts. BERRY, WILLIAMS, VERMILYE.
- 35a,b. **HOME MANAGEMENT: OPERATION AND MAINTENANCE, LABORATORY PRACTICE.** (a) Nine weeks' experience as manager and helper in a household of twenty members. (b) A dietary study covering a period of one month in the above household. BERRY, WILLIAMS, VERMILYE.
37. **HOME CARE OF THE SICK.** (a) First aid; communicable diseases; their transmission and prevention; hygiene of infancy, maidenhood, maturity. (b) The care of the sick room; observation and care of the patient; elementary symptomatology. MOORHEAD, FISHER.
40. **CHILD TRAINING.** A course dealing with the development of the child from infancy through the early school years, including discussions of mental development, the function of play, appropriate literature, toys, etc.

42. HOME ECONOMICS EDUCATION. Curricula, equipment, methods of teaching for Home Economics. Not intended for students specializing in textiles and clothing. Those who have completed Course 44 may register for this course and receive one credit. BERRY.
44. ORGANIZATION AND METHODS. Organization of subject content, and methods of teaching for textiles and clothing. Students who have completed Course 42 may register for this course and receive one credit. BERRY, WELLER.
45. HOME ECONOMICS EDUCATION. Continuation of Course 42. BERRY.
46. HOME ECONOMICS EDUCATION. Continuation of Course 45. BERRY.
- 47a,b. OBSERVATION AND TEACHING. Observation of teaching in regular classes; criticism and discussion of class practice, lesson plans, methods, results, and examinations; preparation of lesson plans, and directed teaching of foods and cookery, and home management. Those who have completed Courses 48 or 49 may register and receive two credits. WEIGLEY.
- 48a,b. OBSERVATION AND TEACHING. A course similar to Course 47, but dealing with the teaching of textiles and clothing. Those who have completed Course 47 or 49 may register and receive two credits. WELLER.
- 49a,b. OBSERVATION AND TEACHING. A combination of Courses 47 and 48 giving the student experience in teaching both fields of work. Required of students in the general teaching course. Not open to those with credit in Courses 47 or 48. WEIGLEY, WELLER.
- 51a,b. DRAWING AND DESIGN. Composition, perspective, color theory, and color harmonies applied to costume design and interiors; harmony, balance, rhythm, in line and area design. V. GOLDSTEIN.
- 53a,b. HISTORIC ORNAMENT AND ADVANCED DESIGN. The historical development of art, architecture, ornament, and furniture, studied with reference to their influence upon modern styles. Problems in decorative design for articles of clothing and for house furnishing. H. GOLDSTEIN, MORSE.
- 55a,b. DECORATIVE NEEDLEWORK AND CRAFTS. Applied design in embroidery, lace, stencils, block-printing, applique, as adapted to materials for articles of dress and house furnishings. MORSE.
- 61a,b. LARGE QUANTITY COOKERY. Preparation of food in large amounts such as are required in cafeteria and dining hall service; the calculation of cost of individual servings.
- 63a,b. INSTITUTIONAL EXPERIENCE I. Actual experience in the cafeteria and dining hall under direction.

- 65a,b. INSTITUTIONAL MARKETING. A consideration of the problems involved and methods employed in the purchasing of supplies.
67. INSTITUTIONAL MANAGEMENT. Lectures and discussions of the problems involved in cafeteria and dining hall management, such as employment of help, organization of work, and so forth.
- 69a,b. INSTITUTIONAL EXPERIENCE II. A continuation of Course 63 with added management responsibilities.

ADVANCED COURSES

- 103a,b. DIETETICS. The fundamental principles of human nutrition as applied to the feeding of individuals and groups under conditions of health, and under such pathological conditions as are chiefly dependent upon dietetic treatment. WILLIAMS.
- 105a,b. EXPERIMENTAL COOKERY. An experimental study of special problems in foods and food preparation. WEIGLEY.
- 107a,b. NUTRITION. A study of the chemistry and physiology of metabolism, involving a qualitative examination of the food principles; of the body tissues; of salivary, gastric, and pancreatic digestion. BERRY, BIESTER.
- 108a,b. NUTRITION. A continuation of Course 101, including the qualitative examination of blood, bile, milk; urine analysis; metabolism experiments. BERRY, BIESTER.

HORTICULTURE

Associate Professors WILFRED G. BRIERLEY, LeROY CADY.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
50.	Floriculture	3	Soph., jr., sr.	None
71.	Landscape Gardening	3	Soph., jr., sr.	None
90a,b.	General Horticulture	3	All	None

For additional courses see the bulletin of the Courses in Agriculture.

INTRODUCTORY COURSES

50. FLORICULTURE. Instruction is given in a variety of subjects designed to give the student a working knowledge of the culture and uses of common house plants, annuals, perennials, and greenhouse plants. Lectures, reference reading, and laboratory. CADY.
71. LANDSCAPE GARDENING. A general course in the practice and principles of landscape gardening as applied to the home and community. Lectures and field trips to parks and private grounds. CADY.

- 90a,b. GENERAL HORTICULTURE. A general survey of horticulture with a consideration of the elementary principles of fruit growing, vegetable gardening, floriculture, landscape gardening, and plant propagation. BRIERLEY.

HUMAN PHYSIOLOGY

MEDICAL SCHOOL

Professor ELIAS P. LYON; Associate Professor RICHARD O. BEARD.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Course</i>				
3a,b.	Elemen. Human Physiology.....	3	All	Chem. 1 yr., Biol. ½ yr.

For additional courses see the bulletins of the Medical School and the College of Science, Literature, and the Arts.

INTRODUCTORY COURSE

- 3a,b. ELEMENTARY HUMAN PHYSIOLOGY. Primarily for Home Economics students and nurses; open to others. Lectures, recitations, and laboratory work. LYON or BEARD.

MUSIC

Professor CARLYLE SCOTT; Assistant Professor DONALD FERGUSON; Instructors MAXIMILIAN DICK, THADDEUS P. GIDDINGS, ABE PEPINSKY, GERTRUDE REEVES.

General statement.—Credit is offered to seniors and juniors in the College of Agriculture, Forestry, and Home Economics who may wish to elect work in the Department of Music. Six credits may be obtained. The following courses are recommended:

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1-2.	Harmony	6	Jr., sr.	None
9-10.	History of Music.....	6	Soph., jr., sr.	None
11-12.	Appreciation of Music.....	2	Jr., sr.	None
13-14.	Pianoforte	4	Jr., sr.	See statement
*15-16.	Violin	4	Jr., sr.	See statement
*25-26.	Orchestra	2	Jr., sr.	None
27-28.	Public School Music.....	6	Jr., sr.	None

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

* Given at the University Farm.

INTRODUCTORY COURSES

- 1-2. HARMONY. The study of chords, their construction, relations, and progressions. Written exercises on basses, the harmonization of given melodies. SCOTT.

- 9-10. HISTORY OF MUSIC. Some account of primitive systems and of the early Christian modal and harmonic developments, leading to a general survey of musical literature from Bach to the present time. FERGUSON.
- 11-12. APPRECIATION OF MUSIC. A non-technical course. REEVES.
- 13-14. PIANOFORTE. Open to juniors who have mastered technical difficulties of the degree of Czerny's *School of Velocity* and the easier Haydn and Mozart sonatas. The fee is thirty-two or sixty-four dollars a semester. SCOTT, FERGUSON, REEVES.
- 15-16. VIOLIN. Candidate must be able to play the first ten of Kreutzer's forty études, and the easier Handel and Mozart sonatas. DICK, PEPINSKY.
- 25-26. ORCHESTRA. FERGUSON, PEPINSKY.
- 27-28. PUBLIC SCHOOL MUSIC. Preparation for teachers and supervisors of music in public, high, and normal schools. Piano playing, singing, and ready reading prerequisite. Four hours in class and one half day weekly in public school visiting. Practice teaching demanded. GIDDINGS.

PATHOLOGY, BACTERIOLOGY, AND PUBLIC HEALTH

MEDICAL SCHOOL

Professor HAROLD E. ROBERTSON;* Associate Professor WINFORD P. LARSON; Instructors ANNE BENTON, HAROLD S. DIEHL, SIEGFRIED F. HERRMANN, JOHN C. MCKINLEY.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Course</i>				
6a,b.	Elementary Bacteriology	3	Soph.	None

For additional courses see the bulletin of the Medical School.

INTRODUCTORY COURSE

- 6a,b. ELEMENTARY BACTERIOLOGY. Lecture and laboratory course. The principles and technique of general bacteriology. Studies in the morphologic and biologic characters of the common bacteria. Preparation of culture media. Disinfectants and disinfection. Bacteriology of water and food products. LARSON, BENTON, DIEHL, HERRMANN, MCKINLEY.

* On leave of absence, 1917-18.

PSYCHOLOGY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professor ROBERT M. YERKES;* Associate Professor HERBERT WOODROW; Assistant Professors HENRY T. MOORE, JOSEPH PETERSON; Instructor KARL S. LASHLEY; Teaching Fellow JOHN D. DODSON; Assistant ALICE H. SULLIVAN.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Course</i>				
1a,b.	General Psychology	3	Soph., jr., sr.	None
<i>Advanced Courses</i>				
101a,b.	Experimental Psychology	3	Jr., sr.	1-2
103-104.	Comparative and Genetic Psychol.	6	Jr., sr.	1-2
105.	Mental Retardation	2	Jr., sr.	1-2
107.	Social Psychology	3	Jr., sr.	1-2
110.	Abnormal Psychology	3	Jr., sr.	1-2
115-116.	Psychology Seminar	6	Sr.	12 credits

INTRODUCTORY COURSE

1a,b. GENERAL PSYCHOLOGY. The aims and methods of psychology; the facts, laws, and functions of mental life; development and learning in relation to training and instinct. Required for teacher's certificate. WOODROW, PETERSON, MOORE, LASHLEY, DODSON.

ADVANCED COURSES

- 101a,b. EXPERIMENTAL PSYCHOLOGY. Training course in mental measurements. WOODROW.
- 103-104. COMPARATIVE AND GENETIC PSYCHOLOGY. Mental evolution and development. The application of the comparative method to conscious behavior. LASHLEY.
105. MENTAL RETARDATION. A study of retarded mental development, its causes and treatment. WOODROW.
107. SOCIAL PSYCHOLOGY. A study of the mental interactions of individuals in society with especial reference to the instinctive emotional basis of human association. MOORE.
110. ABNORMAL PSYCHOLOGY. Unusual and pathological phenomena; the subconscious, dreams, suggestibility, mental disorders, secondary personalities. PETERSON.
- 115-116. SEMINAR IN PSYCHOLOGY. WOODROW.

* On leave of absence, 1918-19.

PHYSICAL EDUCATION FOR WOMEN

Associate Professor J. ANNA NORRIS; Instructors LILLIAN HANSEN, MAY S. KISSOCK, VALERIA LADD, ALICE H. TOLG.

General statement.—This department aims to promote the health of the women students. It gives physical examination and advice to all on entrance; plans systematically to keep in close touch with them during their first year in college; conducts yearly consultations with and examines when necessary, all upper class students; gives courses in hygiene; organizes physical work to meet the varying needs and physical tastes of students; coöperates closely with the Woman's Athletic Association in encouraging and organizing athletic sports; holds regular office hours for the purpose of consultation with all students who desire its advice; and investigates cases of illness which come to its attention.

Work in this department is required of all newly entering students (see Courses I-2 and II), of sophomores who can not pass the swimming examinations, and of all students permitted, for reasons connected with their physical condition, to carry less than the minimum number of credit hours. Physical examinations or consultations required annually of all students.

Elective work without credit arranged in social dancing, gymnastic dancing, swimming, fencing, basket-ball, baseball, and other activities.

For requirements for a teachers' certificate see the bulletin of the College of Education.

A fee of \$4.05 is charged against each newly entering undergraduate woman student to cover the cost of her gymnasium bloomers, blouse, and cap.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1-2.	Elementary Physical Training....	None	Required of all new students*	None
3-4.	Intermediate Physical Training...	3	Soph., jr., sr.	1-2 or equiv.
5-6.	Advanced Physical Training....	3	Jr., sr.	3-4, Permission of director
11.	Preliminary Hygiene	None	Required of all new students	None
13.	Personal Hygiene	3	Soph., jr., sr.	An. Biol. 1-2
14.	Hygiene of the Family.....	3	Jr., sr.	13
15-16.	Principles of Physical Education.	6	Jr., sr.	3-4, 21-22, 31-32, 33-34
21-22.	Elementary Dancing	None	All	None
23-24.	Intermediate Dancing	None	All	21-22 or equiv.
31-32.	Folk Dancing and Org. Games...	None	All	None
33-34.	Hockey, Basket-ball, and Baseball.	None	All	Permission of director
41-42.	Fencing	None	All	None
43a,b.	Elementary Swimming	None	All	None

* Students entering with advanced standing may postpone this course in case of conflict. It must be completed, however, before graduation.

Six credits is the maximum number that can be gained by taking courses in exercise in this department (Courses 3-4, 5-6). Only one of these courses may be taken for credit in a semester.

The natatorium will be open and instruction will be given to beginners or advanced students at 2:30 MTThF, 3:30 MTThF, 4:30 MThF. General swimming (without instruction) at 12 TTh and 5:00 TTh.

INTRODUCTORY COURSES

- 1-2. **ELEMENTARY PHYSICAL TRAINING.** Lighter forms gymnastics; gymnastic dances; indoor and outdoor games; swimming. Study of habits of daily living. Divided into sections according to physical capacity. Shower bath fee, \$1.50 per semester. KISSOCK, LADD, TOLG.
- 3-4. **INTERMEDIATE PHYSICAL TRAINING.** Gymnastics, and election of dancing, fencing, swimming, or a sport. Study of daily habits of living and written abstracts of prescribed reading. If taken for no credit no reading or written work is required. Shower bath fee, \$1.50 per semester. KISSOCK.
- 5-6. **ADVANCED PHYSICAL TRAINING.** Advanced gymnastics and election of dancing, fencing, swimming, or a sport. Study of the daily habits of living, and written abstracts of prescribed reading. If taken for no credit no written work or reading will be required. Shower bath fee, \$1.50 per semester. LADD.
11. **PRELIMINARY HYGIENE.** Twelve lectures. The most essential aspects of the care of the body. NORRIS.
13. **PERSONAL HYGIENE.** The care of the health, including the elements of anatomy and physiology, the prevention of contagious diseases, and first aid to the injured. NORRIS.
14. **HYGIENE OF THE FAMILY.** A study of maternity and infancy; brief consideration of the essentials of home nursing. NORRIS.
- 15-16. **PRINCIPLES OF PHYSICAL EDUCATION.** The character, purpose, arrangement, and progression of developmental and corrective gymnastics, games, and dancing; physical examinations and first aid to the injured. Practice teaching within the class group. For students preparing to teach physical education. KISSOCK, TOLG, LADD.
- 21-22. **ELEMENTARY DANCING.** Two hours a week. LADD.
- 23-24. **INTERMEDIATE DANCING.** Two hours a week. LADD.
- 31-32. **FOLK DANCING AND ORGANIZED GAMES.** Graded games for the school and playground. Two hours a week. KISSOCK.
- 33-34. **HOCKEY, BASKET-BALL, AND BASEBALL.** Hockey in autumn, basketball in winter, baseball in spring. Two hours a week. KISSOCK.
- 41-42. **FENCING.** KISSOCK.

- 43a,b. ELEMENTARY SWIMMING. Two hours a week. Required of all sophomores who can not pass examination. Shower bath fee, \$1.50 per semester. HANSEN.

POLITICAL SCIENCE

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professors JEREMIAH S. YOUNG, CEPHAS D. ALLIN; Assistant Professor WILLIAM ANDERSON.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1a,b.	American Government	3	Soph., jr., sr.	None
6.	American Municipal Administration	3	Soph., jr., sr.	1
*28.	Business Law	3	Jr., sr.	1 or Econ. 6 credits

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

* Given at the University Farm.

INTRODUCTORY COURSES

- 1a,b. AMERICAN GOVERNMENT. Organization and actual workings of the national government; nature and origin of the American governmental system. YOUNG, ALLIN, ANDERSON.
6. AMERICAN MUNICIPAL ADMINISTRATION. A study of the organization and chief functions of American cities; their growth, relation to the state, forms of charters, inefficiency, and corruption, reform measures; and the administration of finance, police, health, and other activities. ANDERSON.
28. BUSINESS LAW. A course in business law (arranged for students in the College of Agriculture, Forestry, and Home Economics) including contracts, agency, mortgages, conveyances, and negotiable instruments.

RHETORIC

Assistant Professor ROBERT C. LANSING; Instructors ESTELLE COOK, GEORGE G. GLICK, RUTH MOHL.

General statement.—Rhetoric credits will not be granted officially until the close of the first semester of the senior year.

At least one quiz paper will be selected at random each semester from other than rhetoric classes and read by the Rhetoric section. In addition any instructor may nominate and submit papers for any junior or senior who in his opinion requires special consideration.

The Rhetoric section may require upper-class students to take, without credit, additional courses in rhetoric in order to validate their freshman and sophomore rhetoric credits.

Students whose work in Rhetoric 1 shows at any time an inadequate knowledge of the conventions of English will be required to drop the course and enter Rhet. 3. These students will be required to complete fifteen credit hours of work in rhetoric.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1a,b.	Rhetoric	3	Fr.	None
2a,b.	Rhetoric	3	Fr.	1
3a,b.	Elementary Rhetoric	3	Fr.	None
11a,b.	Argumentation	3	Soph., jr.	2
22a,b.	Elem. Public Speaking.....	3	Soph., jr.	2
24a,b.	Adv. Public Speaking.....	3	Soph., jr., sr.	22 or 25
25a,b.	*Fundamentals of Effective Speaking	2	Soph., jr., sr.	2

INTRODUCTORY COURSES

- 1a,b. RHETORIC. Note taking, thesis writing, oral and written exposition, sentence and paragraph structure, analysis of prose models, book reviews. LANSING, GLICK, MOHL.
- 2a,b. RHETORIC. Description, narration, diction, argumentation, oral composition, book reviews. LANSING, GLICK, MOHL.
- 3a,b. ELEMENTARY RHETORIC. Elementary grammatical and rhetorical principles. MOHL.
- 11a,b. ARGUMENTATION. Evidence, reasoning, briefing, debating. LANSING, GLICK, MOHL.
- 22a,b. ELEMENTARY PUBLIC SPEAKING. The fundamentals of effective speaking; organization and delivery of occasional addresses, and practice in parliamentary drill. GLICK.
- 24a,b. ADVANCED PUBLIC SPEAKING. A practical course in the preparation and delivery of the informal lecture, including a study of modern eloquence. Practice in conducting assemblies. GLICK.
- 25a,b. *FUNDAMENTALS OF EFFECTIVE SPEAKING. The fundamental principles of voice production, articulation, gesture, platform deportment, and expression. COOK.

ROMANCE LANGUAGES

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professors EVERETT WARD OL MSTED, IRVILLE C. LECOMPTÉ, COLBERT SEARLES; Assistant Professors FRANCIS B. BARTON, JULES T. FRELIN, RUTH S. PHELPS; Professorial Lecturer BALBINO DÁVALOS; Instructors SOLOMON M. DELSON, PEDRO HENRÍQUEZ UREÑA, ENRIQUE

* Not offered second semester, 1918-19.

JIMÉNEZ, GUSTAAF VAN ROOSBROECK; Assistants CLEMENT J. DEBÈRE, JOSEPHINE DEBOER; Teaching Fellows HERBERT CLEFTON, AMELIA M. DOYLE, ANTONIO GERVASI.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1a,b.	Beginning French	6	All	None
3a,b.	Intermediate French	6	All	1 or equiv.
4.	Survey of French Literature.....	6	All	1 or equiv.
5-6.	Survey of French Literature.....	6	All	3 or equiv.
7-8.	Elemen. French Conversation.....	2	All	3 or equiv.
9-10.	Elemen. French Composition.....	1	All	3 or equiv.
31a,b.	Beginning Spanish	6	All	None
33-34.	Beginning Spanish	6	All	None
35a,b.	Intermediate Spanish	6	All	31 or equiv.
37-38.	Intermediate Spanish	6	All	31 or equiv.
39-40.	Survey of Spanish Literature.....	6	All	35 or equiv.
41-42.	Elementary Spanish Conversation.	2	All	35 or equiv.
43-44.	Elementary Spanish Composition...	2	All	35 or equiv.

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

INTRODUCTORY COURSES

- 1a,b. BEGINNING FRENCH. Pronunciation, grammar, drill, oral exercises, and translation. SEARLES, BARTON, FRELIN, DELSON, VAN ROOSBROECK, DEBÈRE, DEBOER, CLEFTON, DOYLE, GERVASI.
- 3a,b. INTERMEDIATE FRENCH. Review of grammar, composition, conversation, and reading, representative authors of the Nineteenth Century. LECOMPTÉ, VAN ROOSBROECK.
4. SURVEY OF FRENCH LITERATURE. Double course. Same as 5-6. SEARLES.
- 5-6. GENERAL SURVEY OF FRENCH LITERATURE. 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. Selections from representative authors. LECOMPTÉ, PHELPS, BARTON, VAN ROOSBROECK.
- 7-8. ELEMENTARY FRENCH CONVERSATION. Small amount of outside preparation will be required. The section meeting at nine o'clock on Monday, Wednesday, and Friday is limited to students taking Course 5-6 and is based on the work of that course. BARTON, FRELIN, DEBÈRE.
- 9-10. ELEMENTARY FRENCH COMPOSITION. BARTON, FRELIN, DEBÈRE.
- 31a,b. BEGINNING SPANISH. Pronunciation, grammar, drill, oral exercises, and translation. DÁVALOS, DELSON, HENRÍQUEZ, JIMÉNEZ.
- 33-34. BEGINNING SPANISH. This course is the same as Course 31 except that it is a year-course. OLMSTED, PHELPS, DÁVALOS, HENRÍQUEZ, JIMÉNEZ.

- 35b. INTERMEDIATE SPANISH. Review of grammar, composition, conversation, and readings. HENRÍQUEZ, JIMÉNEZ.
- 37-38. INTERMEDIATE SPANISH. This course is the same as Course 35a,b, except that it is a year course. DÁVALOS, JIMÉNEZ.
- 39-40. SURVEY OF SPANISH LITERATURE. Lectures, recitations, and assigned readings. HENRÍQUEZ.
- 41-42. ELEMENTARY SPANISH CONVERSATION. A small amount of outside preparation required. The life and customs of modern Spain; accompanied by illustrative material. JIMÉNEZ.
- 43-44. ELEMENTARY SPANISH COMPOSITION. Special attention given to social and commercial correspondence. JIMÉNEZ.

RURAL AND AGRICULTURAL JOURNALISM

Associate Professor WILLIAM P. KIRKWOOD; Assistant Professor PHIL C. BING.

General statement.—The aim of this Division is to give practical training in rural and in agricultural journalism. The work in rural journalism includes the editing and managing of the country newspaper. The work in agricultural journalism covers writing for the rural press, for the agricultural press, bulletin writing, and agricultural publicity.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
*13-14.	Reporting	6	Soph., jr., sr.	Rhet. 1 yr.
*16.	Copy Reading	3	Jr., sr.	13-14

For additional courses see the bulletin of the Courses in Agriculture.

* Courses 13-14 and 16 will be given by this Division in case they are not offered in the College of Science, Literature, and the Arts.

INTRODUCTORY COURSES

- 13-14. REPORTING. Organization, methods, and material in newspaper production; forms of newspaper stories; methods of gathering and writing news; laboratory practice by assignments on University publications. BING.
16. COPY READING. Study and practice in editing copy for the newspaper and in writing headlines. Laboratory practice.

SOCIAL AND CIVIC WORK

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professor ARTHUR J. TODD; Associate Professor LUTHER L. BERNARD;
Lecturers CAROL ARONOVICI, FRANK J. BRUNO, OTTO W. DAVIS, ARTHUR
H. TAYLOR, EDWARD F. WAITE; Supervisors of Practice Field Work
HENRY F. BURT, MARION E. TEBBETS, ELIZABETH YERXA.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
51.	Treatment of Dependents and Defectives	3	Jr., sr.	Sociol. 1
52.	Child Welfare	3	Jr., sr.	51
53.	Treatment of Delinquents.....	3	Jr., sr.	Sociol. 1, Psychol. 1-2
55.	Housing Problems	2	Jr., sr.	Sociol. 1
<i>Advanced Courses</i>				
108.	Methods of Community Org. and Social Work	2	Sr.	2 courses
122.	Social Statistics and Social Surveys	2	Sr.	2 courses
125-126.	Settlement and Social Center Work	4	Sr.	2 courses
128.	Charitable Administration	1	Sr.	2 courses
130.	Technique of Family Treatment.	2	Sr.	51, 52
132.	Juvenile Courts and Probation...	2	Sr.	51 or 52, 53
133-134.	Field Work in Hospital Social Service	2	Sr.	See statement.

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

INTRODUCTORY COURSES

51. TREATMENT OF DEPENDENTS AND DEFECTIVES. The extent and nature of poverty and mental defectiveness; efforts made for their amelioration and prevention. Same as Sociol. 9. BRUNO.
52. CHILD WELFARE. Study of social obligations to the child; development of the child-saving movement in the United States; infant and child mortality, recreation, education; courts, institutions, societies, and other public efforts for the child. Same as Sociol. 10. TAYLOR.
53. TREATMENT OF DELINQUENTS. The causes of crime; nature of the criminal; criminal procedure; methods of treatment (prisons, reformatories, parole, probation); the juvenile offender; juvenile courts; preventive methods. Same as Sociol. 106. TODD.
55. HOUSING PROBLEMS. An examination of housing evils and their causes; the various movements for the prevention or improvement of bad housing; town planning; garden cities. Lectures, readings, field work, and essay. Same as Sociol. 11. DAVIS.

ADVANCED COURSES

108. METHODS OF COMMUNITY ORGANIZATION AND SOCIAL WORK IN SMALL TOWNS AND COUNTRY. TODD, BERNARD.
122. SOCIAL STATISTICS AND SOCIAL SURVEYS. Methods of gathering and presenting community facts. Lectures, problems, and field work. ARONOVICI.
- 125-126. SETTLEMENT AND SOCIAL CENTER WORK. The history and function of leisure. Neighborhood organization, private and public, for meeting neighborhood recreational needs. Lectures and practice work in local settlements. TODD, ARONOVICI, BURT.
128. CHARITABLE ADMINISTRATION, FINANCE AND PUBLICITY. A technical study of methods of organizing charitable agencies, of financing them, and of making the public aware of their work. Lectures and practice work. DAVIS.
130. TECHNIQUE OF FAMILY TREATMENT. An intensive study of case work as the basis of practical dealing with problems of dependency and delinquency. Lectures and conferences. BRUNO.
132. JUVENILE COURTS AND PROBATION. Primarily a course in probation practice work, but prefaced by lectures on the social and legal aspects of the juvenile court. TODD, WAITE.
- 133-134. FIELD WORK IN HOSPITAL SOCIAL SERVICE. A course open to students who are properly grounded in case work and who wish to specialize in this field. TEBBETS, YERXA.

SOCIOLOGY AND ANTHROPOLOGY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professors ALBERT ERNEST JENKS, ARTHUR J. TODD; Associate Professor LUTHER L. BERNARD.

General statement.—Modern university education is not complete unless the graduate has obtained the social point of view. To this end the department offers elementary courses dealing with peoples, with social forces, institutions, and movements. Its more advanced courses are designed especially for students majoring in the social sciences, namely: sociology and anthropology, economics, history, and political science.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
<i>Introductory Courses</i>				
1a,b.	General Introduction	3	Soph., jr., sr.	None
6.	Social Reform Movements.....	3	Soph., jr., sr.	1
14.	Rural Sociology	3	Jr., sr.	None

Advanced Courses

113. The American People.....	3	Jr., sr.	3 courses, incl. 1
114. The American People (continued)..	3	Jr., sr.	113
119. The Family	3	Jr., sr.	9 credits

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

INTRODUCTORY COURSES

- 1a,b. GENERAL INTRODUCTION. Elemental activities, institutions, laws, and theories. Especial emphasis is placed on descriptive data. Textbook and lectures. JENKS, TODD, BERNARD.
6. MODERN SOCIAL REFORM MOVEMENTS. A survey of the attempts to overcome certain social maladjustments: child labor, the city, the tenement, poverty, degeneracy; movements for public health, old age pensions, social insurance, the protection of infancy and youth, public recreation, etc. TODD.
14. RURAL SOCIOLOGY. A survey of the field of Rural Sociology; description of rural social interests; analysis of fundamental problems of rural life; nature and influence of rural environment; characteristics of rural mind. BERNARD.

ADVANCED COURSES

113. THE AMERICAN PEOPLE. Dominant characteristics of the diverse foreign peoples now in the United States; their modification in America; the importance of these peoples to the American nation. Lectures, readings, and essay. JENKS.
114. THE AMERICAN PEOPLE (continued). A continuation of Course 113. Essential and unique historical Americanisms, and their value and virility for the future; facts and forces of amalgamation and assimilation in America; America's ethnic problems. Lectures, readings, and essay. JENKS.
119. THE FAMILY. A study of the historical development of forms of the family, and their relation to other social institutions. The modern family, its functions, and its problems. TODD.

* First semester only.

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The Bulletin of the University of Minnesota

*The Law School
Announcement for the Year
1918 - 1919*



Vol. XXI No. 16 July 16 1918

*Entered at the post-office
in Minneapolis as second-class matter
Minneapolis, Minnesota*

1918							1919														
JULY							JANUARY							JULY							
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	
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UNIVERSITY CALENDAR

1918-1919

1918			
September	11	Wednesday	Registration closes except for new students
September	11-18	Week	Fees payable except for new students
September	17-24	Week	Examinations for removal of conditions and entrance examinations
September	23-24		Registration and payment of fees for new students
September	25	Wednesday	First semester begins
September	30	Monday	First semester evening extension classes begin
October	17	Thursday	Senate meeting, 4:00 p.m.
November	5	Tuesday	General Election Day; a holiday
November	27	Wednesday	Thanksgiving recess begins 9:00 p.m.
December	2	Monday	Thanksgiving recess ends 8:00 a.m.
December	21	Saturday	Christmas vacation begins 12 m.
1919			
January	2	Thursday	Christmas vacation ends 8:00 a.m.
January	20	Monday	Second semester registration closes except for new students
January	24	Friday	First semester evening extension classes close
January	27	Monday	Final examinations begin
January	27	Monday	Payment of second semester fees closes except for new students
January	31	}	Registration and payment of fees for new students
February	1		
February	3	Monday	Second semester begins
February	3	Monday	Second semester evening extension classes begin
February	12	Wednesday	Lincoln's Birthday; a holiday
February	20	Thursday	Senate meeting, 4:00 p.m.
February	22	Saturday	Washington's Birthday; a holiday
April	17	Thursday	Easter recess begins 9:00 p.m.
April	22	Tuesday	Easter recess ends 8:00 a.m.
April	22-28	Week	Condition examinations in certain colleges
May	15	Thursday	Senate meeting, 4:00 p.m.
May	23	Friday	Final examinations begin 2:00 p.m.
May	23	Friday	Second semester evening extension classes close

THE LAW SCHOOL

May	30	Friday	Memorial Day; a holiday
May	31	Saturday	Second semester closes
June	1	Sunday	Baccalaureate service
June	2	Monday	Senior Class Day exercises
June	4	Wednesday	Alumni Day
June	5	Thursday	Forty-seventh Annual Commencement
June	6	Friday	Summer vacation begins
June	16	Monday	Summer Session begins

The University year for 1919-20 will begin Tuesday, September 16.
Classes will begin September 24.

THE LAW SCHOOL

FACULTY

MARION LEROY BURTON, Ph.D., D.D., LL.D., President 1005 S. E. 5th St.
CYRUS NORTHROP, LL.D., President Emeritus 519 10th Ave. S. E.
WILLIAM REYNOLDS VANCE, Ph.D., LL.D., Dean and Professor of Law
525 10th Ave. S. E.
CEPHAS D. ALLIN, M.A., LL.B., Professor of Law 509 S. E. 6th St.
ANDREW A. BRUCE, Professor of Law
WILBUR H. CHERRY, B.A., LL.B., Professor of Law McKnight Building
HENRY J. FLETCHER, LL.M., Professor of Law 317 17th Ave. S. E.
EVERETT FRASER, B.A., LL.B., Professor of Law 911 S. E. 5th St.
JAMES PAIGE, M.A., LL.M., Professor of Law 420 Oak Grove St.
*EDWARD SAMPSON THURSTON, M.A., LL.B., Professor of Law
911 S. E. 5th St.

PROFESSORIAL LECTURERS

HOWARD S. ABBOTT, B.L., Minneapolis
HON. HOMER B. DIBELL, B.A., LL.B., Commissioner of the Supreme Court
of Minnesota
WALDRON M. JEROME, B.S., LL.B., Minneapolis

SPECIAL LECTURERS

HON. CALVIN L. BROWN, Chief Justice of the Supreme Court of Minnesota
ROME G. BROWN, B.A., Minneapolis
CHARLES W. BUNN, B.S., St. Paul
HON. CHARLES S. JELLEY, Judge of the District Court, Hennepin County
HON. FRANK B. KELLOGG, St. Paul, United States Senator
HUGH V. MERCER, LL.M., D.C.L., Minneapolis
HON. THOMAS D. O'BRIEN, St. Paul, formerly Justice of the Supreme
Court of Minnesota

* Absent in military service.

GENERAL INFORMATION

OBJECT AND METHOD OF INSTRUCTION

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

The object of the Law School is to provide a thoro 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 law 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 thoro 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 taught by men experienced in practice at the Minnesota bar. In addition, courses of lectures on special topics are given by distinguished lawyers and judges, selected primarily from the bar of Minnesota.

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 have preliminary education sufficient at least to entitle them to admission to the College of Science, Literature, and the Arts,† may be admitted to the Law School as special students. Such special students are not candidates for a degree, but in case a special student succeeds in maintaining throughout his course an average grade of *B* or better, the Faculty may by special action recommend him for graduation.

* This requirement calls for a minimum of fifty-eight credits.

† These requirements are stated in full in the current bulletin of the College of Science, Literature, and the Arts.

Special students entering with fifty-two academic credits may become regular students by complying with the requirements for admission before the beginning of their second year in the Law School, *provided* they have passed all the subjects required of the first-year law class.

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 at 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 degree of Bachelor of Laws upon satisfactorily completing such courses, aggregating twenty-four 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 ten days 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 90 credits, may take during their senior year, the first-year law course, and upon completion of the same will be given the B.A. degree, provided they have attained a total of one hundred and eighteen honor points. Upon

* See page 10 for the provisions as to penalty for late registration.

completion of the work of the remaining two years 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 take the combined six-year course described above and thus 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 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, economics and political science, and courses aggregating at least one year's work in science, sociology, psychology and logic, and public speaking.

SPECIAL TWO-YEAR PRE-LEGAL COURSE

For those who can not 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 designed to afford approved preparation for the study of law. This course is fully set forth in the bulletin of that College.

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 advises those who enter the College of Science, Literature, and the Arts with the purpose of qualifying for admission to the Law School after two years, to take this special pre-legal course.

REGULATIONS GOVERNING CLASS WORK, EXAMINATIONS, GRADES, AND PROMOTIONS

Every student registered in the Law School is required to attend with regularity all lectures, whether special or in course, that may be prescribed for his class, to prepare all papers and other class exercises that may be assigned, and to perform all services in connection with the practice court that may be required of him. These requirements apply to all special students as well as to candidates for graduation. Gross delinquency in discharging these requirements may be regarded by the Faculty as sufficient reason for requiring the delinquent student to withdraw from the School.

Examinations are held at the end of each semester. The ratings given, *A*, *B*, *C*, and *D*, signify passing grades of varying degrees of merit,

A being the honor mark. *E* signifies a condition and *F* a failure. *I* signifies that the course has not been completed because of illness or a similar reason.

A student who, for any reason, is absent from as many as twenty per cent of the lectures in any course will not receive credit in such course.

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

A student who receives a condition in a subject is entitled to one examination only to remove such condition; and such examination must be taken within one year from the imposition of such condition. On failure to remove a condition, the student must repeat the subject in course.

A student with delinquencies in more than one of the courses required for the preceding year, must register in all subjects in which he is delinquent.

Examinations for the removal of conditions are held during registration week in the fall of each year.

A student having conditions or incompletes in first semester subjects may take an examination in *one* such subject on the day following the Easter recess, *provided* that, prior to the beginning of the Easter recess, he shall have given to the Dean written notice of his intention to take such examination (stating the subject in question); and, subject to the same requirement as to notice, any candidate for graduation in Law or Arts in the following June may take two such examinations. 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 the preceding 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.

Except by special action of the Faculty no student will be allowed to enter upon the work of the second semester of his third year as a candidate for a degree at the forthcoming commencement if he lacks more than sixteen credits of the total amount of work required for graduation.

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.

LIBRARIES

The library of the Law School contains more than twenty-eight thousand volumes, including all the American Reports, State and Federal (excepting a few reports of inferior state courts), nearly all the English, Australian, and Canadian Reports, the English, Federal, and State Statutes (with a few exceptions), the standard digests, encyclopedias, legal periodicals and textbooks. To this collection substantial additions, particularly in foreign law, 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 library located in the Court House. Besides the University and Bar Association libraries, the State Law Library, located at the Capitol in St. Paul, is accessible to students.

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.

TUITION AND OTHER FEES

The tuition fee is sixty-five dollars (\$65.00) a year, payable in two equal installments at the beginning of the first and second semesters, respectively.

All students are required to indicate registration on proper blanks not later than September 11. Fees must be paid in full on or before October 18.

For the second semester, registration must be indicated on or before January 20, and fees must be paid on or before January 27.

A penalty fee of one dollar (\$1.00) will be charged all students who do not register or pay fees within the time specified, and, after one week, a fee of twenty-five cents per day for each day's delay will be added. The Registrar will send proper blanks to all students who were in attendance the previous year, on or before September 1. Students who fail to receive blanks at that date should call for them.

The regular University fee of \$1.00 will be charged to each student taking an examination for the removal of a condition. No other fee will be charged in the Law School for any special examination.

A deposit of five dollars is required of students making use of the case-books belonging to the Law School.

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

Careful estimates of the expenses of a student attending the Law School, together with other general information useful to students, are to be found in the Bulletin of General Information, to be had upon application to the Registrar of the University.

INQUIRIES

Further particulars as to any phase of the work of the Law School not given herein, or in the Bulletin of General Information, 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.

COURSE OF STUDY

The curriculum leading to the degree of Bachelor of Laws covers a period of three academic years. To qualify for graduation, a student must complete the entire work of the first and second years and the required work of the third year, together with a sufficient number of electives to aggregate twelve hours of work during each semester of the third year.

Students, unless they be of exceptional ability and industry, who find it necessary to devote a considerable portion of their time and energy to work not connected with their law studies are strongly advised to limit their work in the Law School to not more than ten hours in the classroom per week, and thus extend the period of their study of law over four years.

Each regular student, unless excused by special action of the Faculty, will be required to take courses aggregating not less than ten nor more than sixteen hours' work a week during each semester.

Attendance upon all special lectures scheduled is required of second- and third-year students; and all students in the Law School may be required to serve as jurors or witnesses in any proceedings before the practice court.

All the courses offered by the Law School are given in the daytime between the hours of 8 a.m. and 5 p.m.

FIRST-YEAR COURSES

- 1-2. **CONTRACTS.** Offer and acceptance; consideration; contracts under seal; the Statute of Frauds; rights of beneficiaries and assignees; joint and several contracts; conditions; illegality; impossibility; and discharge of contracts. Williston, *Cases on Contracts*, Vols. I and II. First semester, three hours; second semester, three hours. CHERRY.
- 3-4. **TORTS.** The general principles underlying the law of civil liability for wrongful conduct, and the specific wrongs of deceit, defamation, malicious prosecution, interference with contracts and trade, etc. Ames and Smith, *Cases on Torts* (edition of 1909-10), Vols. I and II. First semester, three hours; second semester, three hours. PAIGE.
5. **CRIMINAL LAW AND PROCEDURE.** The common and statutory law of crimes; criminal procedure. Mikell, *Cases on Criminal Law and Criminal Procedure*. First semester, three hours. PAIGE.
6. **DOMESTIC RELATIONS.** Marriage and divorce; parent and child; guardian and ward; property law peculiar to the marriage relation; rights and liabilities of persons under the disabilities of coverture, infancy, insanity, etc. Paige, *Cases on Domestic Relations*. First semester, two hours. BRUCE.

- 7-8. I PROPERTY (1). Real and personal property distinguished; possessory rights in personality, liens and pledges; acquisition of title to personal property by accession, confusion, gift, and finding; fixtures and emblements. Bigelow, *Cases on Personal Property*. First semester, three hours. VANCE.
- I PROPERTY (2). Theory of feudal land tenure: rights in the land of another; natural rights; profits; easements; licenses; covenants running with the land; public ways, and rents. Gray, *Cases on Property* (second edition), Vol. II. Second semester, three hours. FRASER.
9. CARRIERS AND PUBLIC SERVICE COMPANIES. Origin and development of the law of public callings; common carriers of goods and passengers; telephone, telegraph, gas, electric companies; limitation of liability; state and federal regulation. Green, *Cases on Carriers*. Second semester, two hours. FLETCHER.
10. AGENCY. Principal and agent, master and servant—their rights and obligations, mutually and as to third persons. Wambaugh, *Cases on Agency*. Second semester, three hours. BRUCE.

SECOND-YEAR COURSES

- 11-12. PLEADING AND PRACTICE. (1) COMMON LAW PLEADING: Scope of the action, necessary allegations in declaration, and defenses in each form of action at common law; rules governing pleadings in all forms of action at common law. (2) CODE PLEADING: Relation of code pleading to common law pleading; requisites of complaint; answer, demurrer, reply; motions respecting pleadings; amendment; ailer; bills of particulars; parties; joinder of causes of action; construction of pleadings. (3) PRACTICE: Requisites, service, and return of summons; appearance; change of venue; continuance; the jury; right to open and close; opening statement of counsel; dismissal and directed verdict. Whittier, *Cases on Common Law Pleading*. Sunderland, *Cases on Trial Practice*. First semester, two hours; second semester, four hours. FLETCHER.
- 13-14. II EQUITY. Nature of equity jurisdiction; injunctions; bills of peace; interpleader; specific performance; bills for account. Ames, *Cases on Equity*, Vols. I and II. First semester, three hours; second semester, three hours. BRUCE.
- 15-16. EVIDENCE. Nature of evidence; judicial notice; burden of proof; presumptions; admissions; character evidence, confessions, hearsay; opinion evidence; real evidence; writings; parol evidence rule; competency, privilege, and examination of witnesses. Thayer, *Cases on Evidence* (second edition). First semester, two hours; second semester, two hours. JEROME.
- 17-18. II PROPERTY. Titles and conveyancing, including the modes of conveyance at common law, under the statute of uses, and by statu-

- tory grant; the execution of deeds and estates created thereby; covenants for title, and priorities among titles. Aigler, *Cases on Property*. First semester, two hours; second semester, two hours. PAIGE.
19. SALES. Contracts resulting in the transfer of title to personal property, and the special rights and remedies of the buyer and seller. Williston, *Cases on Sales* (second edition). First semester, three hours. FRASER.
20. NEGOTIABLE INSTRUMENTS. Formal and essential requirements of negotiable instruments, and the nature of the liability of the respective parties thereto; acceptance; endorsement; transfer; presentment; notice of dishonor; the Negotiable Instruments Law. Colson's Huffcutt, *Cases on Negotiable Instruments*. Second semester, two hours. PAIGE.
21. WILLS AND ADMINISTRATION. Historical originals of the law of succession; testamentary capacity; execution, revocation, and republication of wills; descent; probate of wills and administration of estates. Costigan, *Cases on Wills*. Second semester, two hours. DIBELL.
38. INSURANCE. Nature and requisites of the contract; premiums and assessments; insurable interest; concealment; representations and warranties; waiver and estoppel; rights under the policy; beneficiaries, assignees, and creditors; construction of the policy. Vance, *Cases on Insurance*. First semester, two hours. VANCE.

THIRD-YEAR COURSES*

- 25-26. III PRACTICE AND PRACTICE COURT (required). This course deals with the various proceedings in an action from the commencement thereof, through trial and appellate courts, to final satisfaction of judgment, including work in the practice court. Sunderland, *Cases on Trial Practice*. First semester, two hours; second semester, three hours. CHERRY.
27. III PROPERTY. Conditional and future interests in land: reversions and remainders; executory limitations by way of use and devise; powers; rule against perpetuities; conditions in restraint of alienation. Gray, *Cases on Property* (second edition), Vols. V and VI. First semester, two hours; second semester, two hours. FRASER.
- 28-29. PRIVATE CORPORATIONS (required). The nature, creation, and citizenship of corporations; *ultra vires* contracts and acts; stock issues;

* Third-year students are required to complete the courses in Practice, Private Corporations, and such other of the third-year courses as will aggregate with the above required courses not fewer than twenty-four credit hours, provided that no student may take less than ten nor more than fifteen hours in either semester of the third year.

- rights and liabilities of stockholders; officers and agents of corporations; rights of creditors. Richards, *Cases on Private Corporations*. First semester, two hours; second semester, two hours. FRASER.
31. CONSTITUTIONAL LAW. The nature of the American constitutional system; legislative, executive, and judicial departments; interstate commerce; constitutional limitations; police power; due process of law; taxation; eminent domain, etc. Hall, *Cases on Constitutional Law*. First semester, three hours. FLETCHER, KELLOGG.
32. PARTNERSHIP. The nature and formation of the partnership relation; the rights and liabilities of the partners, both *inter se* and as to third parties. Gilmore, *Cases on Partnership*. Second semester, two hours. (Not given in 1918-19.)
33. TRUSTS. Nature and incidents of the trust relationship; methods of creating trusts; rights and obligations of trustee and beneficiary; constructive trusts; charitable trusts. Kenneson, *Cases on Trusts*. Second semester, three hours. VANCE.
34. CONFLICT OF LAWS. The rules applied by courts in enforcing rights acquired under the law of a sister state or a foreign country. Lorenzen, *Conflict of Laws*. Second semester, three hours. BRUCE.
35. MORTGAGES. Legal and equitable mortgages of realty and chattels; rights of mortgagor and mortgagee at law and in equity; foreclosure, redemption, extension, assignment, and discharge of mortgages. Dibell, *Cases on Mortgages*. First semester, two hours. DIBELL.
36. EXTRAORDINARY LEGAL REMEDIES. Mandamus; habeas corpus; certiorari; quo warranto; prohibition. Second semester, two hours. Dibell, *Cases on Extraordinary Legal Remedies*. (Not given in 1918-19.)
38. SURETYSHIP. The surety distinguished from the guarantor, the guaranty insurer, and the endorser; surety's defenses against creditor; surety's rights to subrogation, indemnity, contribution, and exoneration; creditor's rights to surety's securities. Ames, *Cases on Suretyship*. First semester, two hours. BRUCE.
22. QUASI CONTRACTS. Nature and scope of quasi contracts, benefits voluntarily conferred by mistake, in partial performance of a contract, in the absence of a contract; benefits conferred under duress; waiver of tort. Thurston, *Cases in Quasi Contract*. Second semester, three hours. (Not given in 1918-19.)
40. DAMAGES. Exemplary damages; nominal damages; direct and consequential damages; elements of injury; functions of court and jury; liquidated damages; entire and prospective damages; limitations of interest; aggravation and mitigation. Special applications. Beale, *Cases on Damages*. First semester, one hour. (Not given in 1918-19.)

41. **BANKRUPTCY.** Origin, history, and nature of the bankruptcy law; jurisdiction of the courts; acts of bankruptcy; practice; receivers; claims, preferences; assets, trustees; liens; adverse claimants; summary jurisdiction; crimes, composition, discharge. Selected cases. First semester, one hour. (Not given in 1918-19.)
42. **TAXATION.** This course deals only with the legal questions arising in connection with the assessment of property and the levying and collection of taxes. Selected cases. Second semester, one hour. (Not given in 1918-19.)
- 43.3 **MUNICIPAL CORPORATIONS.** Legislative control; officers and agents; power to incur indebtedness, to pass ordinances, to grant franchises, to levy taxes, to issue securities, to own and operate public utilities; municipal liability for torts. First semester, two hours. ABBOTT.
45. **INTERNATIONAL LAW.** (1) **INTERNATIONAL RELATIONS IN TIME OF PEACE;** territorial jurisdiction; jurisdiction on the high seas; nationality. (2) **INTERNATIONAL RELATIONS AS MODIFIED BY WAR;** measures short of actual war; effects of war as between enemies; relations between belligerents and neutrals. Scott, *Cases on International Law*. Second semester, two hours. ALLIN.

WORK IN PRACTICE

Work in practice begins with the first-year class. Its members, in order to acquire facility in looking up authorities and in legal reasoning, are required to brief and argue certain assigned legal questions. Second-year students in connection with the class work in practice must prepare pleadings and other papers, while members of the third-year class, in addition to classroom instruction in practice, engage in the exercises of the practice court.

The practice court has divisions corresponding to the District Court and Supreme Court of Minnesota. Each student is assigned a number of cases in which he is required to draw all necessary pleadings, to see to the service of process and pleadings, to conduct the trial, to perfect an appeal, and to prepare all papers in the appellate court. In at least one of the cases so assigned, the student must take steps to secure a provisional or extraordinary remedy.

Members of the third-year class are required to serve as assistants in the office of the Legal Aid Bureau, and to be in the office of the Bureau from 1:30 to 5:30 p.m. daily during the periods assigned for such service.

In connection with the Practice Course, examinations will be given at the end of the first and second semesters. The final examination will cover the work of both semesters.

STUDENTS, 1917-18

THIRD YEAR

REGULAR—25

Bolsta, Charles H., Ortonville	Peterson, Evan H., Stockholm, Wis.
Brunsdale, K. Edward, Portland, N. D.	Pollock, Robert B., Fargo, N. D.
Dalton, John E., B.A. '16, St. Paul	Regan, John M., Minneapolis
Dykman, Howard, B.A. '17, Minneapolis	Rustan, M. B., B.A., Fargo College '13, Underwood
Farley, John H., Minneapolis	Sachs, Louis, Minneapolis
Fullerton, David H., Brainerd	Scriven, Lloyd J., Dixon, Ill.
Grogan, Bernard D., B.A., Carlton, Mankato	Shepley, Lewis C., Farmington
Grottum, Bjarne E., Windom	Stradtman, William, Glencoe
Hale, Quincy H., B.A. '15, Spring Valley	Thompson, Sivert W., B.A. St. Olaf, '14, Devils Lake, N. D.
Johnston, Harold W., Nashwauk	Thonn, Paul G., Moorhead
Lande, Clarence O., Northwood, Iowa	Williams, Dwight, Minneapolis
Lowe, Joseph D., River Falls, Wis.	Williams, George E., Minneapolis
Lundeen, David, B.A. '17, Minneapolis	

SPECIAL—1

Cotlow, Sander, Minneapolis

SECOND YEAR

REGULAR—29

Aichele, Emil L., St. Paul	Hanna, Warren L., B.A. North Dakota, Valley City, N. D.
Bikson, Harry J., Hopkins	Hansen, Ivan O., B.A. '14; M.A. '15, Minneapolis
Carroll, Gerald T., Minneapolis	Hjortholm, Herman C., Clermont, Iowa
Covell, Karl H., Atwater	Hoitomt, Adolf E., Minneapolis
Dahle, Clarence A., B.A. Wisconsin, '15, Minneapolis	Iverson, Clarence J., Aberdeen, S. D.
De Le Fond, Charles, B.A. Chicago, Minneapolis	Leisen, Raymond J., Minneapolis
De Moully, Leo, Washburn, Wis.	Lindeman, Arthur H., B.A. '17, North Redwood
Dirksen, Everett M., Pekin, Ill.	Moule, Harvey W., Mason City, Iowa
Donley, Walter W., Jr., Minneapolis	Neils, Theodore F., Sauk Rapids
Dow, Neal E., Worthington	Parker, Hugh G., Wadena
Drews, Herbert H., Ashley, N. D.	Reyerson, Paul, B.A. '17, Dawson
Duffy, Ray V., Minneapolis	Skanse, Peter E., Minneapolis
Engan, Raymond C., Minneapolis	Stillwell, Phillip J., Appleton
Flaten, Milo G., Minneapolis	Taylor, Willard B., B.A. Ohio, Wes- leyan '16, Minneapolis
Graven, Henry N., Minneapolis	

SPECIAL—13

Allen, William W., Fairmont	Knoche, Enno A., St. Paul
Bacon, Lucas M., St. Paul	Kulberg, Samuel R., Hankinson, N. D.
Bush, Galen E., Minneapolis	Lande, John H., Northwood, Iowa
Dow, Lawrence H., Duluth	Oehler, Karl F., Devils Lake, N. D.
Hentges, Romane, Le Mars, Iowa	Scheid, Arthur F., Mankato
Kahner, Martin L., Minneapolis	Smith, Ivor L., Minneapolis
Kempton, H. Seward, Duluth	

FIRST YEAR

REGULAR—42

Abrahamson, Paul K., Houston	Larson, Clarence M., Crookston
Ackerson, Eugene J., B.A. '17, Elbow Lake	Lind, Carl J., Minneapolis
Ahlstrom, Daniel L., Minneapolis	McKenna, Joseph L., Cloquet
Aldenderfer, F. Wray, St. Paul	Margolith, Haim, Cairo, Egypt
Barker, John B., Minneapolis	Moses, Felix E., Jordan
Bonniwell, Harlow H. Jr., B.A. '17, Hutchinson	Mudge, Norman E., Mesaba
Brodrick, William J., Minneapolis	Overmire, Raymond E., Minneapolis
Brown, Stanley K., St. Paul	Peterson, Ralph A., Minneapolis
Dahl, Wilhelm, Rolette, N. D.	Quinn, Cyril L., Minneapolis
Donahoe, Stanley J., Minneapolis	Rapp, Peter G., Fairfield, Ill.
Druschel, L. G. Perry, Egan, S. D.	Robertson, James C., B.A. '17, Washta, Iowa
Eclov, Hjalmar, Minneapolis	Rucker, J. Edward, Minneapolis
Geib, Philip J., Jr., St. Paul	Schnedler, Louis H., Nora Springs, Iowa
Hannsen, Clifford F., Grandin, N. D.	Segal, Benjamin, Minneapolis
Harris, Herbert H., Detroit	Shaughnessy, Clark D., St. Paul
Hostetler, Roberta B., B.A. '17, Minne- apolis	Spellacy, Aloysius W., Minneapolis
Johnson, Carl A., Lake Crystal	Sprague, Gordon W., Madelia
Keenan, George M., Minneapolis	Struett, Joseph A., Perham
Kelly, Olaf R., B.A. '17, Franklin	Swore, Rudolph L., Osakis
Knight, Leon J., Minneapolis	Wangensteen, Charles T., Lake Park
Knudson, Clarence, Eau Claire, Wis.	Wilk, Mortimer A., Moorhead

SPECIAL—24

Alwin, LeRoy V., Mound	Lord, Samuel, Jr., St. Paul
Calhoun, Bernard P., Columbus, Mont.	Miller, Hymen H., Minneapolis
Casey, Stanley F., Minneapolis	Minsky, Nathan, Minneapolis
Dolliff, Roger P., Redwood Falls	Murray, Joseph B., Staples
Dworsky, Zollie A., Minneapolis	O'Connor, Vernon, Renville
Fisher, Frederick, Minneapolis	Ostrom, Clarence, Minneapolis
Flinn, Charles A., St. Paul	Palmer, Harvey H., International Falls
Friedman, Dewey, Minneapolis	Quigley, Shumeh E., Spokane, Wash.
Geldman, David, Minneapolis	Reyerson, Wallace E., Dawson
Haynes, James A., Minneapolis	Stork, Harold C., St. Paul
Hedding, Simeon A., Minneapolis	Wurdell, Fred C., St. Paul
Kinney, Keith, Osseo	Yager, Saul A., Minneapolis

The Bulletin
of the University of
Minnesota

The Medical School
Announcement for the Year
1918 - 1919



Vol. XXI No. 17 July 18 1918

Entered at the post-office
in Minneapolis as second-class matter
Minneapolis, Minnesota

1918							1919													
JULY							JANUARY							JULY						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
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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
..
AUGUST							FEBRUARY							AUGUST						
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11	12	13	14	15	16	17	9	10	11	12	13	14	15	10	11	12	13	14	15	16
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25	26	27	28	29	30	31	23	24	25	26	27	28	..	24	25	26	27	28	29	30
..	31
SEPTEMBER							MARCH							SEPTEMBER						
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
OCTOBER							APRIL							OCTOBER						
..	..	1	2	3	4	5	1	2	3	4	5	1	2	3	4	
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13	14	15	16	17	18	19	13	14	15	16	17	18	19	12	13	14	15	16	17	18
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27	28	29	30	31	27	28	29	30	26	27	28	29	30	31	..
..
NOVEMBER							MAY							NOVEMBER						
..	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
DECEMBER							JUNE							DECEMBER						
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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
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UNIVERSITY CALENDAR

1918-1919

1918

September	11	Wednesday	Registration closes except for new students
September	11-18	Week	Fees payable except for new students
September	17-24	Week	Examinations for removal of conditions and entrance examinations
September	23-24		Registration and payment of fees for new students
September	25	Wednesday	First semester begins
October	17	Thursday	Senate meeting, 4:00 p.m.
November	5	Tuesday	General Election Day; a holiday
November	20	Wednesday	Medical School second quarter begins
November	27	Wednesday	Thanksgiving recess begins 9:00 p.m.
December	2	Monday	Thanksgiving recess ends 8:00 a.m.
December	21	Saturday	Christmas vacation begins 12 m.

1919

January	2	Thursday	Christmas vacation ends 8:00 a.m.
January	2	Thursday	School of Embalming begins
January	20	Monday	Second semester registration closes except for new students
January	27	Monday	Final examinations begin
January	27	Monday	Payment of second semester fees closes except for new students
January	31	}	Registration and payment of fees for new students
February	1		
February	3	Monday	Second semester begins
February	12	Wednesday	Lincoln's Birthday; a holiday
February	20	Thursday	Senate meeting, 4:00 p.m.
February	22	Saturday	Washington's Birthday; a holiday
March	31	Monday	Medical School fourth quarter begins
April	17	Thursday	Easter recess begins 9:00 p.m.
April	22	Tuesday	Easter recess ends 8:00 a.m.
April	22-28	Week	Condition examinations in certain colleges
May	15	Thursday	Senate meeting, 4:00 p.m.
May	23	Friday	Final examinations begin 2:00 p.m.
May	30	Friday	Memorial Day; a holiday
May	31	Saturday	Second semester closes
June	1	Sunday	Baccalaureate service
June	2	Monday	Senior Class Day exercises
June	4	Wednesday	Alumni Day
June	5	Thursday	Forty-seventh Annual Commencement
June	6	Friday	Summer vacation begins
June	16	Monday	Summer Session begins

The University year for 1919-20 will begin Tuesday, September 16.
Classes will begin September 24.

THE MEDICAL SCHOOL

THE ADMINISTRATIVE BOARD

- MARION LEROY BURTON, Ph.D., D.D., LL.D., President
ELIAS POTTER LYON, Ph.D., M.D., Dean and Director of the Department of Physiology
RICHARD OLDING BEARD, M.D., Assistant Dean and Secretary of the Medical School
LOUIS B. BALDWIN, M.D., Superintendent of the University Hospitals
LEONARD G. ROWNTREE, M.D., Chief of the Department of Medicine
JAMES E. MOORE, M.D., Chief of the Department of Surgery
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ARTHUR D. HIRSCHFELDER, M.D., Director of the Department of Pharmacology
HAROLD E. ROBERTSON, M.D., Sc.D., Director of the Department of Pathology, Bacteriology, and Public Health
FRANK C. TODD, M.D., Chief of the Department of Ophthalmology and Oto-Laryngology
JULIUS P. SEDGWICK, M.D., Chief of the Department of Pediatrics
EMIL S. GEIST, M.D., Member-Elect, Representing the Faculty; alternate,
ARTHUR C. STRACHAUER, M.D.
FREDERICK H. SCOTT, Ph.D., M.B., D.Sc., Member-Elect, Representing the Faculty

FACULTY

- MARION LEROY BURTON, Ph.D., D.D., LL.D., President 1005 S. E. 5th St.
CYRUS NORTHROP, LL.D., President Emeritus 519 10th Ave. S. E.
AMOS W. ABBOTT, M.D., Emeritus Professor of Gynecology 1717 Marquette Ave.
JOHN W. BELL, M.D., Emeritus Professor of Clinical Medicine and Physical Diagnosis 5127 Lake Harriet Blvd.
C. EUGENE RIGGS, M.A., M.D., Emeritus Professor of Mental and Nervous Diseases 10 Crocus Hill, St. Paul
THOMAS S. ROBERTS, M.D., Emeritus Professor of Pediatrics 2303 Pleasant Ave.

-
- FRED L. ADAIR, M.D., Associate Professor of Obstetrics and Gynecology 730 LaSalle Building
*LOUIS B. BALDWIN, M.D., Superintendent of University Hospitals

* On military service.

- *MOSES BARRON, M.D., Assistant Professor of Pathology
 RICHARD OLDING BEARD, M.D., Assistant Dean and Secretary and Associate Professor of Physiology
 University of Minnesota
 ELEXIOUS T. BELL, M.D., Associate Professor of Pathology
 521 S. E. 6th St.
 FRANK S. BISSELL, M.D., Assistant Professor of Roentgenology
 801 LaSalle Bldg.
- *FRANCIS G. BLAKE, M.D., Assistant Professor of Medicine
 EDGAR D. BROWN, Phm.D., M.D., Associate Professor of Pharmacology
 3525 3rd Ave. S.
- *FRANK E. BURCH, M.D., Assistant Professor of Ophthalmology and Otolaryngology
- *JOHN BUTLER, M.D., Assistant Professor of Dermatology
 1042 Metropolitan Bank Bldg.
- CARL C. CHATTERTON, M.D., Assistant Professor of Orthopedic Surgery
 Seven Corners, St. Paul
- JAMES T. CHRISTISON, M.D., Associate Professor of Pediatrics
 535 Lowry Bldg., St. Paul
- ALEXANDER R. COLVIN, M.D., Assistant Professor of Surgery
 632 Lowry Bldg., St. Paul
- HENRY WIREMAN COOK, M.D., Lecturer on Life Insurance
 Auditorium Bldg.
- *J. FRANK CORBETT, M.D., Associate Professor of Experimental Surgery
 4401 E. Lake Harriet Blvd.
- GRETE EGERER, Ph.D., Assistant Professor of Medical Chemistry
 1928 Aldrich Ave. S.
- CHARLES A. ERDMANN, M.D., Associate Professor of Applied Anatomy
 612 9th Ave. S. E.
- CHARLES D. FREEMAN, M.D., Assistant Professor of Dermatology
 444 Lowry Bldg., St. Paul
- *EMIL S. GEIST, M.D., Assistant Professor of Orthopedic Surgery
- JAMES S. GILFILLAN, M.D., Associate Professor of Medicine
 942 Lowry Bldg., St. Paul
- ARTHUR J. GILLETTE, M.D., Professor of Orthopedic Surgery, in charge of the Division
 Seven Corners, St. Paul
- *ALEXANDER R. HALL, M.D., C.M., Assistant Professor of Medicine
- ARTHUR S. HAMILTON, M.D., Professor of Nervous and Mental Diseases, in charge of the Division
 406 Physicians and Surgeons Bldg.
- ERNEST M. HAMMES, M.D., Assistant Professor of Nervous and Mental Diseases
 1019 Lowry Bldg., St. Paul
- THOMAS B. HARTZELL, D.D.M., M.D., Research Professor in Mouth Infections
 716 Donaldson Bldg.
- *ARTHUR T. HENRICI, M.D., Assistant Professor of Pathology and Bacteriology and Research Assistant in Mouth Infections
- ARTHUR D. HIRSCHFELDER, M.D., Professor of Pharmacology and Director of the Department
 2634 Lake of Isles Blvd.

* On military service.

- HARRY G. IRVINE, M.D., Assistant Professor in Dermatology and Syphilis
601 Syndicate Bldg.
- CLARENCE M. JACKSON, M.S., M.D., Professor of Anatomy and Director
of the Department 436 S. E. Harvard St.
- JOHN B. JOHNSTON, Ph.D., Professor of Comparative Neurology
1115 S. E. 5th St.
- *FRANCIS B. KINGSBURY, Ph.D., Assistant Professor in Physiological
Chemistry
- WINFORD P. LARSON, M.D., Associate Professor of Bacteriology
516 9th Ave. S. E.
- *ARTHUR A. LAW, M.D., Associate Professor of Surgery
- THOMAS G. LEE, M.D., Professor of Comparative Anatomy
509 East River Road
- JENNINGS C. LITZENBERG, M.D., Professor of Obstetrics and Gynecology
and Chief of the Department 910 Donaldson Bldg.
- ELIAS P. LYON, Ph.D., M.D., Dean of the Medical School, Professor of
Physiology and Director of the Department 421 S. E. Union St.
- *J. F. McCLENDON, Ph.D., Associate Professor of Physiology
- ARCHIBALD MACLAREN, M.D., Associate Professor of Surgery
914 Lowry Bldg., St. Paul
- *JOHN S. MACNIE, M.D., Assistant Professor of Ophthalmology and Oto-
Laryngology
- ARTHUR T. MANN, M.D., Associate Professor of Surgery
910 Donaldson Bldg.
- JAMES E. MOORE, M.D., Professor of Surgery and Chief of the Depart-
ment 2200 Kenwood Blvd.
- *ANGUS W. MORRISON, M.D., Assistant Professor of Nervous and Mental
Diseases
- WILLIAM R. MURRAY, M.D., Associate Professor of Ophthalmology and
Oto-Laryngology 309 Physicians and Surgeons Bldg.
- HORACE NEWHART, M.D., Assistant Professor of Ophthalmology and Oto-
Laryngology 910 Donaldson Bldg.
- GEORGE M. OLSON, M.D., Assistant Professor of Dermatology and Syphilis
636 Syndicate Bldg.
- OSCAR OWRE, M.D., C.M., Assistant Professor of Urology
707 Masonic Temple
- CHAUNCEY J. V. PETTIBONE, Ph.D., Assistant Professor of Physiological
Chemistry 611 S. E. Delaware St.
- LOUISE M. POWELL, R.N., Superintendent of School for Nurses
417 S. E. Delaware St.
- *WALTER R. RAMSEY, M.D., Associate Professor of Pediatrics
942 Lowry Bldg., St. Paul
- ANDREW T. RASMUSSEN, Ph.D., Assistant Professor of Neurology
979 14th Ave. S. E.
- *CHARLES A. REED, M.D., Assistant Professor of Orthopedic Surgery

* On military service.

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and Chief of the Department
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 ANNA B. YATES, B.A., in the Department of Physiology 1316 S. E. 7th St.

MEMBERS OF OTHER FACULTIES GIVING INSTRUCTION TO
 MEDICAL STUDENTS

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GENERAL INFORMATION

The thirty-first annual course of study in the Medical School begins Tuesday, September 17, 1918, and covers a period of nine months. The summer session opens June 16, 1919.

REQUIREMENTS FOR ADMISSION TO THE MEDICAL SCHOOL

At least two years, or sixty credits, earning sixty honor points, of prescribed and elective study in the College of Science, Literature, and the Arts of this University or of any other approved institution are required for admission to the Medical School. The prescribed academic studies preliminary to medicine are: rhetoric, six credits; physics, eight credits; general chemistry and qualitative analysis, and organic chemistry, twelve to eighteen credits; biology, six credits; and a reading knowledge of French or German.

High-school or college Latin and psychology are recommended as studies preparatory to medicine.

This two or more years of collegiate study must lead, upon the satisfactory completion of one or two years of medical study, earning sixty credits and sixty honor points, to the Baccalaureate degree in science or in arts. Students holding the Bachelor's degree of any recognized college may submit credentials of practical equivalence in cultural studies, provided an adequate knowledge of biology, chemistry, and physics has been attained, and a reading knowledge of French or German demonstrated.

REGISTRATION

Registration is conducted under general University rules, in the office of the Registrar and is reported to the office of the Dean of the Medical School. Students will interview the Students' Work Committee for classification and arrangement of courses. Students will not be permitted to register later than the tenth day from the opening of the semester, unless exceptional causes of delay are presented and are accepted by the Students' Work Committee.

On account of the present limited capacity of the Medical School, the registration of incoming (third year) classes has been limited to ninety. All applicants for admission will fill out and submit to the Dean's office an application form. These applications should be entered as soon as the candidate's entrance requirements are completed. If preparatory work has been done elsewhere than at the University of Minnesota application must be accompanied by certified credentials of high-school and college courses.

The Students' Work Committee will meet to consider applicants for admission at 9 a.m. on June 5, July 2, and August 1, 1918. A personal

interview is required. Recommendations as to personal fitness, preparation, etc., must be submitted, with credentials.

Candidates will be selected with reference (a) to their full compliance with credit requirements; (b) to the quality of their preparatory work; (c) to their general knowledge; and (d) to their personal fitness. They will be submitted to competitive examinations as an aid in determining their comparative merits. These examinations will be held upon the dates given above. They will include tests of mental ability and general information. A physical examination is required.

Holders of the degree of B.A. or B.S. who have covered the required subjects, and those who have successfully completed two or three years of collegiate work, including full credits and required subjects, will be entitled, other things being equal, to first consideration for existing vacancies at the date of their application.

All other qualifications being equal, residents of Minnesota will be given prior opportunity in any vacancies existing at the date of their application. Only under exceptional circumstances will entrance conditions be permitted and, if allowed, they must be removed invariably before the opening of the succeeding school year.

FEEES

The annual tuition fee in the Medical School is \$150, payable in two installments, at the opening of the first and second semesters. No tuition fee is charged for the final hospital or advanced year, which is now requisite to the degree.

A health service is to be provided in the University, and the Board of Regents has directed that a health fee of \$3.00 per semester be paid by each student.

A deposit of \$10 in the first year, and of \$5 in succeeding years, is required as a caution fee. This fee covers the cost of unnecessary damage to school buildings, of breakage and loss of laboratory apparatus and material, penalties for late registration or late payment of fees, fees for condition examinations, and rentals of post-office box and lockers. Any balance remaining from this deposit will be returned to the student at the close of each year.

Students taking less than the regular course may arrange their fees upon a scale of \$3 for each semester-hour's work.

Repetition of work in course demands the repetitional payment of fees.

A fee of \$1 is payable for condition examinations; and one of \$5 for special examinations.

A fee of \$1 is required for attendance of students upon the clinical service of the City and County Hospital of St. Paul.

MICROSCOPES

Students must provide themselves, by purchase or rental, with a microscope of approved quality and equipment. They may arrange with

the Assistant Dean for purchase of microscopes, through the University, upon cash payment or installment plan. Microscopes of suitable type range, at the present time, from \$81 upwards.

COMBINED COURSES IN ARTS AND MEDICINE

Students who are candidates for the degree of Bachelor of Arts, who have successfully completed three years, or ninety credits, of work, fifteen credits being in starred courses, and who have won the required number of honor points in the College of Science, Literature, and the Arts, may elect their fourth year in the Medical School and secure the remaining thirty credits and the remaining thirty honor points required for the Baccalaureate degree, in that school.

Similarly, students who have completed, with the required number of honor points, the work of the first two years, or sixty credits, in the College of Science, Literature, and the Arts, may enter the Medical School and upon the successful conclusion of two years work, with the required sixty credits and sixty honor points, will receive the degree of Bachelor of Science.

Students who have not received the B.A. or B.S. degree will be ineligible to registration in the fifth year of the combined course.

Those who have received the B.A. or the B.S. degree before entering the Medical School must earn, nevertheless, a minimum of sixty honor points in the first two years of medical study. This is the equivalent of an average grade of C.

It will be understood that in either of these combined courses the required subjects, viz.: rhetoric, chemistry, biology, physics, and a reading knowledge of French or German, must be included.

THE CURRICULUM

Within the four years of study in the Medical School, students have a total of 4,200 hours of required and elective work. These hours are distributed as follows:

Subject	Hours	Subject	Hours
Anatomy	688	Medicine, including Medical Juris-	
Physiology	416	prudence	416
Physical Chemistry.....	96	Surgery	232
Pathology	392	Obstetrics	160
Bacteriology	168	Pediatrics	56
Pharmacology	136	Ophthalmology and Oto-Laryngology	48
Hygiene	32	Clinics and Clerkships.....	784
		Electives	576

ELECTIVE STUDIES

Elective courses are offered in the fourth, fifth, and sixth years. These are listed under Departmental Statements.

Certain approved courses in animal biology, chemistry, etc., taught in other units of the University than the Medical School, may be taken as electives by medical students. These, also, are to be found in the departmental statements.

The general arrangement of studies is planned for the average student of medicine. The order of studies is not absolutely fixed. As wide a range of individual freedom is permitted as may prove consistent with systematic education. The Committee on Students' Work has authority, within due bounds of sequence of subjects, to adjust a student's program to his particular preparation, needs, and abilities. This liberty is not intended to suggest any departure from acknowledged standards.

MIGRATORY STUDENTS

Students migrating from recognized medical schools will present to the Registrar their official credentials of admission requirements, which must be equivalent to those of this School. They will submit to the Students' Work Committee time and subject credits in medicine. They will present to the head of each department, in which they seek exemption or advanced standing, notebooks and records of scholarship in each subject. These may be accepted as of full value or may be supplemented by review examination, or by additional work at the discretion of the department. Subject credit, but not time credit, may be given for work done other than in a medical school. Special work will be arranged for students taking such subject credits to fill the full period required by law in medical study.

No advanced standing entitles the student to take two years of any graded study coincidentally.

CLINICAL SERVICE

Attendance upon clinics is required. Seniors are assigned to clinical clerkships in the University Hospital. As clinical clerks they are under the supervision of senior interns or Teaching Fellows, who will assign them to duty. Clinical clerks will record physical examinations, make and record laboratory investigations, and will attend hospital rounds and general clinics. Patients will be examined by clinical clerks only at the direction of the attending clinician.

EXAMINATIONS

The standing of students is determined by recitations, oral or written examinations, and review of laboratory or clinical notebooks. Examinations are usually held at the end of each semester upon the courses closed within that period. Final standings are determined at the close of each semester in conference of the heads of departments with the Students' Work Committee. Reports of such standings are filed in, and announced by the Registrar's Office.

A uniform marking system is operative throughout the University. Four passing grades, indicated by the symbols A, B, C, and D, represent differing degrees of merit. While a grade of D passes a student in an individual course, not less than an average of C is regarded as satisfactory work. The symbol E represents a condition, which may be removed by examination and by such supplementary work as the department imposing it may require. F stands for a failure and calls for a repetition of the work in class. I stands for incomplete and grants the student further time for the completion of the required work.

CONDITIONS

It is incumbent upon the student to remove a condition at the first opportunity offered. If not so removed it becomes a failure.

Examinations for the removal of conditions and for advanced standing are held at the opening of the school year, from September 17 to 24, 1918. Schedule of examinations may be had upon request.

An opportunity for the removal of first-semester conditions will be given at the Easter recess.

Any student, who, at the end of any given semester, receives grades of E or F in more than 50 per cent of his registered work in that semester, will be indefinitely dropped for poor scholarship; such percentage to be estimated upon a credit hour basis. Any student so dropped will not be eligible to condition examination or to reinstatement excepting upon recommendation of the Students' Work Committee and affirmative vote of the Administrative Board.

REQUIREMENTS FOR GRADUATION

Compliance with the admission requirements; the prior attainment of the degree of Bachelor of Arts or Bachelor of Science, to which one year in medicine for the arts degree, and two years in medicine for the science degree, may contribute; the completion of the full four-year period of required and elective work in the Medical School; a thesis presented at the close of the senior year; an approved hospital internship or advanced laboratory work or public health study for one year; and an unimpeached moral character, are the essentials for graduation.*

The required internship insures to the practitioner of medicine a year of varied clinical experience under competent supervision and gives to the public a greater assurance of efficiency in the graduate. The alternative of advanced laboratory work serves to encourage men and women of training who desire to enter the profession of medical teaching. The alternative of public health study meets a growing demand for trained medical sanitarians.

* For the period of the war, the degree of Bachelor of Medicine will be given upon the satisfactory completion of the four full years of medical study; the degree of Doctor of Medicine upon the certified completion of the required and approved hospital internship of one year's duration.

CLINICAL OPPORTUNITIES

THE UNIVERSITY HOSPITALS

The University is fortunate in the ownership and control of the University Hospital service. The Elliot Memorial Building, the product of a bequest of the estate of the late Dr. and Mrs. A. F. Elliot, supplemented by legislative appropriations, provides a present clinic of 192 beds.

The University Hospital system seeks the highest attainable results in the treatment of patients and the training of students. Its clinical service is closely coöperative with the laboratory departments. Its service is free and patients are admitted only upon the certificate of physicians of the state vouching for the applicant's inability to pay ordinary hospital charges and physician's fees, and stating the clinical character of the case.

A service building provides kitchens, dining-rooms, storerooms and quarters for domestic help.

The Outpatient Department of the University Hospitals is housed in Millard Hall. Its service is open to free patients and is conducted by the clinical staff of the Faculty of the Medical School. It is subdivided into medical, surgical, gynecological, obstetrical, children's, eye, ear, nose and throat, skin, syphilis, genito-urinary, nervous and mental, and orthopedic clinics. It enrolled 15,830 new patients and received 55,997 patients' visits during the past year.

Sections of the senior and junior classes are assigned to these clinics daily and are trained in case-history taking, physical examinations and diagnosis, in prescription writing, and in general therapeutic methods.

A Clinical Pathological Conference is held weekly in which the history and clinical manifestations and the gross and microscopic features of cases coming to autopsy are discussed. Members of the Faculty and students are invited to participate.

THE SOCIAL SERVICE OF THE UNIVERSITY HOSPITALS

A Social Service Department has been established in relation to the hospital system and its outpatient clinics. In addition to the economic values it brings to the clinical service and the benefits which hospital and dispensary patients derive from a trained supervision extending to their homes, it offers opportunities of field work and social study to medical and sociological students.

AFFILIATED HOSPITALS

The Minneapolis City Hospitals and the City and County Hospitals of St. Paul are closely affiliated with the Medical School of the University. One half of their clinical service is under the direction of the Faculty. Attending and consulting staffs are appointed annually upon the recommendation of the Administrative Board of the School.

The combined resources of these two hospitals cover some 1,400 beds. Every phase of clinical service is represented and clinical material is utilized, so far as possible, by the School.

The State Hospital for the Crippled and Deformed, at Phalen Park, invites the Medical School to full participation in its clinical opportunities. Its superintending surgeon and his aides are members of the Faculty. Teaching Fellows and interns of the University Hospital are assigned in rotation to its service. It provides weekly clinics for divisions of the senior class.

Additional clinics are held in other institutions, as the Pillsbury House, the Glen Lake Sanitorium, and the St. Paul Free Dispensary.

LIBRARY

The library of the Medical School consists of the General Library, housed in Millard Hall, and of collections of books in the departmental libraries of Surgery, Obstetrics, Anatomy, and Pathology and Bacteriology. These departmental collections are readily available to students and investigators. The General Library is open from 9 a.m. to 10 p.m. Some 200 current journals are on file; 15,850 bound volumes and 32,859 unbound volumes and monographs, etc., are cataloged.

The libraries of other schools and colleges in the University and of the Hennepin County and Ramsey County Medical Societies are accessible to students of medicine.

PRIZES, FELLOWSHIPS, AND ASSISTANTSHIPS

The Rollin E. Cutts Prize in Surgery.—Dr. Martha Smith Cutts, '91 medical, established, some years ago, as a memorial to her husband, the late Dr. Rollin E. Cutts, a fund of \$500, the income of which is awarded, in the form of a gold medal, to the member of the senior class of the Medical School who presents the best thesis evidencing original work upon an approved surgical subject.

The Shevlin Fellowship.—A fellowship, representing the income of \$10,000, established in the Graduate School by the late Thomas H. Shevlin, is open to candidates for one full year's work in acceptable medical research. This fellowship has been held during the past year by Martin B. Ott, B.A.

Several student assistantships and, occasionally, fellowships in the fundamental departments, offer varying stipends.

THE WAR SERVICE OF THE MEDICAL SCHOOL

Early in the past year, the President of the United States provided regulations under which bona fide medical students of the second, third, and fourth years in medicine and hospital internes (representing the fourth, fifth, sixth, and seventh years of the combined course in this School) who

are successfully maintaining their courses of study, may apply for discharge from the National Army, and, having physically qualified, may enlist in the Enlisted Reserve of the Medical Department under the direction of the Surgeon General. Later, the Government extended this opportunity to matriculants of the first (third) year and to medical students under or over draft age.

Students, so enlisted, are placed on inactive status for the continuance of their studies, subject to call to active medical service at the need of the Government. At the close of their interne year they are eligible for commissions in the United States Army or Navy Medical Reserve Corps.

The Surgeon General has expressed his intention to permit of the completion of a year's internship before a commission is granted, but the Government holds itself free to abrogate this privilege if necessary.

It is clearly understood that the retention of the student in inactive service depends upon the successful pursuit of his studies and his continuing progress from one year to another in the course. The clear purpose of these regulations is not the exemption of the medical student, but his fit preparation for the practice of his profession and for the best service that he can render to the country. It should serve as a stimulus to the best work of which the student is capable.

It is possible that the Surgeon General may ask the medical schools of the country to maintain a continuous session throughout the year; but of the wisdom of this course he is not at present assured.

As an added contribution to the war service, the University has undertaken the intensive training of naval hospital corps men, in detachments of one hundred each, for periods of four months. Three such detachments have been entered and have taken courses of instruction in anatomy, physiology, physiologic chemistry, bacteriology, pharmacology, first aid measures, hospital ward procedures and dietetics.

THE SUMMER SESSION

A summer session of six weeks' duration almost immediately follows the commencement exercises in June. The courses in this session are conducted in the laboratories and lecture halls of the Medical School, in the Hospitals and in the Outpatient Department.

Undergraduates in medicine are admitted in the Summer Session to courses of study offered for the following purposes: (1) to secure advanced standing in courses equivalent to those of the regular session; (2) to compensate for deficiencies in studies taken in other acceptable schools; (3) to remove conditions or failures in subjects which are equivalently covered in these courses.

For courses of instruction offered and schedule of tuition fees see circular of information of the Summer School.

THE GRADUATE SCHOOL IN MEDICINE

The Graduate School in Medicine has been established as a part of the main Graduate School of the University. It offers to suitably prepared graduates in medicine, courses covering two and three years, leading to the degree of Master of Science, Doctor of Philosophy, or Doctor of Science. The adequate training of specialists in medicine is one of the main purposes of the school and for this purpose, teaching fellowships, under annual stipends, have been created; with an additional number of graduate scholarships, under an abatement of tuition fees, to which selected graduate students receive appointment. Still other graduate students in medicine may be received under an annual tuition fee of \$50.

The field of graduate teaching in medicine has been extended to the inclusion of the opportunities for graduate study and medical research offered by the Mayo Foundation for Medical Education and Research, established at Rochester, Minnesota. Fellows and graduate scholars are assigned to courses of study both at the University and in the Foundation.

Students in the Medical School who have received the Baccalaureate degree from this or any other approved University may become candidates for the degree of Master of Arts, Master of Science, or Doctor of Philosophy in the Graduate School. They will pursue courses of study conforming to the regulations of the Graduate School.

Students registered in the Graduate School may elect majors or minors for the graduate degrees, for which advanced courses are provided, in anatomy, embryology, histology, neurology, pathology, bacteriology, physiology, physiologic chemistry and pharmacology, in the Medical School.

In all cases, students must comply with the rules and regulations of the Graduate School of the University of Minnesota, further information of which may be found in the Announcement of the Graduate School, or in the Circular of Information on graduate work in medicine. Application blanks for teaching fellowships and scholarships may be had upon request.

OPPORTUNITIES OF STUDY FOR PHYSICIANS

Physicians who desire to attend medical lectures and clinics for a limited period of time may obtain a visitor's ticket from the Dean. They may enter for regular lecture and clinical courses in the Medical School upon payment of a fee of \$10 for each semester. They may arrange for special courses of study in anatomy, physiology, experimental surgery, pathology, bacteriology, pharmacology, etc., at a fee varying from \$15 to \$30 for each full semester's course, with additional charge for material used.

The School announces the semi-annual opportunity of Physicians' Clinic Days, during which a full program of clinics in the University Hospital, the outpatient service, and the allied municipal hospitals will

be presented. Circulars of information of these occasions will be distributed.

THE SCHOOL FOR NURSES

The School for Nurses is a department of University instruction under the control of the Medical School. It is conducted in connection with the University Hospitals. It is in charge of a Superintendent, assisted by a committee of management and by a teaching staff selected from the Faculty of the Medical School. While the undergraduates of the School for Nurses constitute in part the nursing corps of the University Hospitals, the School exists primarily for the efficient education of the nurse. It is the first school for nurses in the United States organized under direct university control.

A four years' high-school course is the minimal requirement for admission. A six months' preliminary course in foundational studies is given before entry to the hospital service. The full course covers a period of three years. It leads to the degree of Graduate in Nursing conferred, upon the recommendation of the Faculty, by the Board of Regents.

Nurses in training are received from certain affiliated hospitals for the completion of their courses of study.

For further information, see Bulletin of the School for Nurses.

THE SCHOOL OF EMBALMING

With the coöperation of the State Funeral Directors' Association a School of Embalming has been organized by the University and is conducted for a period of twelve weeks, commencing January 3, 1919. It is under the direction of a committee of the Administrative Board of the Medical School.

Didactic and laboratory instruction is given in anatomy, bacteriology, autopsies, chemistry, public health and sanitation, professional embalming, funeral management, and business principles. Certificates are issued to candidates successfully completing the course and are accepted for state license by the State Board of Health.

Circular of Information will be sent upon application.

TABULAR STATEMENTS OF STUDIES IN THE MEDICAL SCHOOL
1918-1919

SUBJECTS	HOURS		TOTAL HOURS	SUBJECTS	HOURS				TOTAL HOURS
	1st Sem.	2nd Sem.			1st Quar.	2nd Quar.	3rd Quar.	4th Quar.	
THIRD YEAR				FOURTH YEAR					
Gross Anatomy..... (3-4)	13	8	336	Neurology	6	6	..	..	96
Histology	10	..	160	(Anat. 103)					
(Anat. 101)				Physiology	8	8	8	8	256
Embryology .....	..	6	96	(103-104)					
(Anat. 102)				Special Bacteriology.....	9	..	..	..	72
Physical Chemistry.....	6	..	96	(Path., etc., 105)					
(Chem. 121)				General Pathology.....	..	12	..	..	96
Physiology Chemistry.....	..	10	160	(101)					
(Physiol. 102)				Special Pathology.....	..	..	15	14	232
General Bacteriology.....	..	6	96	(102)					
(Path., etc., 104)				Pharmacology .....	..	..	6	6	80
				(102-104)					
				Physical Diagnosis, etc.....	..	..	3	..	24
				(Medicine 50)					
				*Electives	6	6	6	6	192
				* Elective courses are subject to adjustment by the Stu dents' Work Committee. The hours are distributed in this schedule on a basis of average assignment.					
Sub-totals	29	30	944	Sub-totals	19	32	38	34	1,048
Third Year, Total Hours.....				Fourth Year, Total Hours.....					

SUBJECTS		HOURS				TOTAL HOURS	SUBJECTS		HOURS				TOTAL HOURS
FIFTH YEAR	1st Quar.	2nd Quar.	3rd Quar.	4th Quar.	SIXTH YEAR		1st Quar.	2nd Quar.	3rd Quar.	4th Quar.			
Pharmacology and Therapeutics.. (103)	1	1	2	2	48	Therapeutic Conference..... (Pharm. 107)	1	1	..	..	8
Clinical Pathology..... (103)	4	4	..	..	64	Hygiene	2	2	..	..	32
Medicine	8	8	7	7	240	Medical Clinic..... (Medicine 63-64)	2	2	2	2	64		
(51 to 57)						Mouth Infections..... (Medicine 60)	..	..	1	..	8
Nervous and Mental Diseases.... (75-76)	..	1	2	2	40	Medical Jurisprudence..... (Medicine 62)	..	..	2	..	16
Dermatology	1	1	1	..	24	General Surgery..... (55)	..	..	2	2	32
Diseases of Children..... (Pediatrics 101-102)	1	2	2	2	56	Urology	1	1	..	..	16
Principles of Surgery..... (54)	2	2	2	1	56	(Surgery 73)							
General Surgery..... (51)	2	2	2	..	32	Ophthalmology and Otology.... (79)	2	2	..	..	32
Regional Surgery..... (56)	..	..	3	3	48	Rhinology and Laryngology.... (81)	1	1	..	..	16
Surgical Quiz..... (52)	..	..	1	1	16	Obstetrics and Gynecology..... (57 to 61)	2	2	3	3	80
Surgical Diagnostic Clinic..... (59-60)	1	1	1	1	32	Section Clinics and Clerkships..	18	18	19	19	592		
Obstetrics	2	2	2	2	64	Electives	6	6	6	6	192		
(51-52)													
Gynecology	2	..	..	..	16						
(Obst. 53)													
Section Clinics.....	6	6	6	6	192								
Electives	6	6	6	6	192								
Sub-totals	36	36	37	33		Sub-totals	34	34	35	32			
Fifth Year, Total Hours.....					1,120	Sixth Year, Total Hours.....					1,088		

DEPARTMENTAL STATEMENTS*

THE DEPARTMENT OF ANATOMY

Professors CLARENCE M. JACKSON, JOHN B. JOHNSTON, THOMAS G. LEE, RICHARD E. SCAMMON; Associate Professor CHARLES A. ERDMANN; Assistant Professor ANDREW T. RASMUSSEN; Instructor JAY A. MYERS; Assistants ROBERT S. GUTSELL, RUSSELL W. MORSE, BYRON L. ROBINSON, ROY E. ST. CLAIR, FAUS P. SILVERNALE; Teaching Fellows HELEN A. MACKEEN, HJALMAR L. OSTERUD.

Departmental Office, Institute of Anatomy

REQUIRED COURSES

- 1a,b. ELEMENTARY HUMAN ANATOMY. School for Nurses. 48 hours; two credits. ST. CLAIR.
- †3-4. GROSS HUMAN ANATOMY. Dissection, including osteology. A disarticulated skeleton loaned to every two students. Every student required to dissect lateral half of the body. Third-year medical students and (beginning with the session 1918-19) second-year dental students; 13 hours a week, seven credits, first semester; 8 hours a week, four credits, second semester. 336 hours; eleven credits. JACKSON, ERDMANN, MYERS, and Assistants.
7. HISTOLOGY AND EMBRYOLOGY. Minute structure and development of the tissues and organs. Second-year dental students. 128 hours; four credits. JACKSON, LEE, and Assistants.
101. HUMAN HISTOLOGY. Microscopic study of the various tissues and organs. Third-year medical students. 160 hours; five credits. SCAMMON, and Assistants.
102. HUMAN EMBRYOLOGY. Development of the human body. Third-year medical students. Prerequisite: Course 101. 96 hours; three credits. LEE, SCAMMON, and Assistants.
103. HUMAN NEUROLOGY. A study of the central nervous system and sense organs. Fourth-year medical students. Prerequisite: Courses 101, 102. 96 hours; three credits. JOHNSTON, RASMUSSEN, and Assistants.

* Courses with number followed by "a,b," are given in each semester. Odd numbers denote first semester, and even numbers second semester courses.

† Course 5-6 in Gross Human Anatomy is discontinued after the session 1917-18, dental students being required to take Course 3-4 instead.

ELECTIVE COURSES

- 107-108. **MAMMARY GLAND PROBLEMS.** A special study of the mammary gland, human and comparative. Laboratory course. 96 hours; three credits, or less. MYERS.
108. **ADVANCED OSTEOLOGY.** Special study of the skull or other regions. Laboratory. 32 hours, one credit. MYERS.
110. **SPECIAL EMBRYOLOGY.** Detailed study of the development of man and mammals. Supplementary to Course 102 which must precede or accompany it. 48 hours, one and one-half credits. SCAMMON.
- 111a,b. **ANATOMICAL TECHNIQUE.** Microtechnique, reconstruction and museum methods, etc. Fourth-, fifth-, or sixth-year medical students. Limited to sixteen students. 96 hours; three credits. LEE.
113. **ADVANCED HISTOLOGY.** A study of special preparations, including practice in the identification of unknown specimens. Fourth-, fifth-, or sixth-year medical, or graduate students. Limited to sixteen students. Prerequisite: Course 101. 48 hours, one and one-half credits. RASMUSSEN.
114. **TOPOGRAPHIC ANATOMY.** Based upon a study of serial cross-sections of the human body. Fourth-, fifth-, or sixth-year medical, or graduate students. Prerequisite: Course 3-4. 96 hours, three credits. JACKSON.
115. **FETAL ANATOMY.** Study of the human fetus, with comparison of earlier embryonic and later post-natal structure. Fourth-, fifth-, or sixth-year medical, or graduate students. Limited to twenty students. Prerequisites: Courses 3-4, 102. 96 hours, three credits. SCAMMON.
117. **IMPLANTATION AND PLACENTATION.** A study of the implantation of the ovum, and the formation of the placenta, and the earlier stages of embryonic development in man and mammals. Fourth-, fifth-, or sixth-year medical, or graduate students. Limited to twelve students. Prerequisite: Course 102 or equivalent. 96 hours, three credits. LEE.
118. **APPLIED ANATOMY.** Relationships, with reference to their clinical applications. Fourth-, fifth-, or sixth-year medical, or graduate students. Prerequisite: Course 3-4. 48 hours; one and one-half credits. ERDMANN.
119. **SPECIAL DISSECTIONS.** Dissections of special regions, including preparation of museum specimens. Fourth-, fifth-, or sixth-year medical, or graduate students. Limited to twenty-four students. Prerequisite: Course 3-4. 96 hours; three credits. ERDMANN.
120. **EXPERIMENTAL NEUROLOGY.** A study of the morphology of the central nervous system as determined by experimental methods. Fifth-, or sixth-year medical, or graduate students. Limited to five students. Prerequisite: Course 103. 96 hours; three credits. RASMUSSEN.

- 123-124. **ADVANCED ANATOMY.** Advanced work, largely individual in character, in gross anatomy, histology, embryology, or neurology. Open to fourth-, fifth-, or sixth-year medical, or graduate students. Admission only upon approval of instructor. Hours and credits to be arranged. JACKSON, JOHNSTON, LEE, or SCAMMON.
- 201-202. **RESEARCH IN ANATOMY.** Research work in gross or microscopic anatomy, neurology, histology, or embryology, for properly qualified students, graduates, or others, upon approval of any one of the instructors. Hours and credits to be arranged. JACKSON, JOHNSTON, LEE, SCAMMON.
- 203-204. **ANATOMICAL SEMINAR.** Presentation and discussion of research work in progress in the department, together with reviews of current anatomical literature. Open to graduates or others upon approval of instructor. 32 hours; two credits. JACKSON.

THE DEPARTMENT OF PHYSIOLOGY

Professors ELIAS P. LYON, FREDERICK H. SCOTT; Associate Professors RICHARD OLDING BEARD, J. F. McCLENDON;* Assistant Professors FRANCIS B. KINGSBURY,* CHAUNCEY J. V. PETTIBONE, M. RUSSEL WILCOX; Assistants CARL G. ARVIDSON, CHARLES C. GAULT, JOHN L. MILLS, HERMAN J. MOERSCH; Teaching Fellow ANNA B. YATES.

Departmental Office, Millard Hall

REQUIRED COURSES

- †1-2. **ELEMENTARY PHYSIOLOGY AND HYGIENE.** A course planned to afford teachers a helpful knowledge of the human subject. The study of muscle-nerve function; the circulation; respiration; nervous system and senses. Lectures and laboratory work. 48 hours; two credits, each semester. LYON, BEARD, and Assistant.
- †1X-2X. **ELEMENTARY PHYSIOLOGIC CHEMISTRY.** The chemical components of the body and body fluids; physiology of secretion; digestion, absorption, foods; metabolism and excretion. Lectures and laboratory work. 48 hours, two credits in each semester.
- 3a,b. **ELEMENTARY HUMAN PHYSIOLOGY.** School for Nurses, Home Economics students, and others. Prerequisites: elementary biology and chemistry. .96 hours; three credits. LYON, BEARD, and Assistants.

* On military service.

† Courses 1-2 and 1X-2X are offered in alternate years. Together they are designed to cover the field of physiology in its physical and chemical aspects. These courses are given on Saturdays from 9:00 to 12:00 and are primarily for teachers. Course 1-2 will be given in 1917-18. Course 1X-2X in 1918-19.

4. **ELEMENTARY PHYSIOLOGY.** Sophomore dental students. Prerequisites: elementary biology or anatomy and chemistry. 80 hours; three credits. LYON, BEARD, SCOTT, and Assistants.
6. **ELEMENTARY PHYSIOLOGIC CHEMISTRY.** Sophomore dental students. Prerequisite: organic chemistry. 64 hours; two credits. KINGSBURY, PETTIBONE, and Assistants.
102. **PHYSIOLOGIC CHEMISTRY.** The components of the animal body; foods, digestion, the excreta and metabolism. Third-year medical students and others. Prerequisite: organic chemistry. 160 hours; five credits. KINGSBURY, PETTIBONE, and Assistants.
103. **PHYSIOLOGY OF MUSCLE, NERVE, BLOOD, CIRCULATION, AND DIGESTION.** Fourth-year medical students and others. Prerequisites: organic chemistry and animal biology. 128 hours; four credits. LYON, SCOTT, BEARD, McCLENDON, and Assistants.
104. **PHYSIOLOGY OF THE NERVOUS SYSTEM AND SPECIAL SENSES; RESPIRATION, METABOLISM, NUTRITION, AND EXCRETION.** Fourth-year medical students and others. Prerequisites: organic chemistry and animal biology. 128 hours; four credits. LYON, SCOTT, BEARD, McCLENDON, WILCOX, and Assistants.

ELECTIVE COURSES

111. **PHYSICAL CHEMISTRY OF CELLS.** Osmotic pressure, surface tension and electric conductivity of blood and urine; colloids; permeability of cells and tissues, and changes in permeability produced by electrolytes. Prerequisites: animal biology and two courses in chemistry. 96 hours; three credits. McCLENDON.
112. **ELECTRO-PHYSIOLOGY.** The bio-electric currents and the theory of stimulation and narcosis. Hydrogen ion concentration and its relation to enzyme activity and irritability. Prerequisites: animal biology and two courses in chemistry. 96 hours; three credits. McCLENDON.
- 113-114. **PROBLEMS IN PHYSIOLOGY.** Arranged by instructors with qualified students. Each student will be assigned a topic for special laboratory study, leading in some cases to original investigation. Fourth-, fifth-, or sixth-year medical students and others. 96 hours; three credits, or more; either or both semesters. LYON, SCOTT, McCLENDON.
- 115-116. **CONFERENCE COURSE IN PRINCIPLES OF PHYSIOLOGY; STUDENT SEMINAR.** Informal lectures and library study. Basis of study, Bayliss' *Text-Book*. Fourth-, fifth-, and sixth-year medical students and others. 12 hours, each quarter; one and one-half credits, each semester. LYON, SCOTT, McCLENDON.
131. **ADVANCED PHYSIOLOGY OF MUSCLE AND BLOOD.** Alterations due to physiological conditions. Methods of examination. Fourth-, fifth-,

- or sixth-year medical students. Limited to sixteen students. 48 hours; one and one-half credits. SCOTT.
132. **ADVANCED PHYSIOLOGY OF THE CIRCULATION AND DIGESTION.** Conference and laboratory work. Open to fourth-, fifth-, or sixth-year medical students. Limited to sixteen students. Conference may be taken separately. 24 or 48 hours; three-fourths or one and one-half credits. SCOTT.
137. **FOODS AND PRACTICAL DIETETICS.** A study of human foods and food values; of the principles of food selection; of caloric indices and balanced dietaries. Exercises in the practical preparation of foods. Open to fourth-, fifth-, or sixth-year medical students. Limited to twelve students. 48 hours; two credits. BEARD, assisted by MISS THOMAS.
138. **PHYSIOLOGY OF DEVELOPMENT.** The physiology of the ovum, the embryo, the fetus; the functions of menstruation, ovulation, pregnancy, parturition and lactation; the functional characteristics of birth, infancy, childhood, adolescence, maturity, and old age. Open to fourth-, fifth-, or sixth-year medical students. 32 hours; two credits. BEARD.
139. **EXAMINATION OF THE EYE AND EAR.** A study of advanced methods. Lectures, demonstrations, and laboratory exercises. Prerequisite: Course 104. Open to fifth- or sixth-year medical students. 24 hours; one credit. WILCOX.
140. **PHYSIOLOGY OF ACCOMMODATION.** A study of optical principles and methods. Lectures, demonstrations, and laboratory exercises. Open to fifth- or sixth-year medical students. 24 hours; one credit. WILCOX.
- 151-152. **PHYSIOLOGIC CHEMISTRY.** The components of the body, foods, digestion, and metabolism. Prerequisite: organic chemistry. Open to qualified students in all divisions of the University. May be taken by medical students in place of Course 102. 192 hours; six credits. KINGSBURY.
- 153-154. **ADVANCED PHYSIOLOGIC CHEMISTRY.** Course arranged by instructors with qualified students for special work. Open to fourth-, fifth-, or sixth-year medical students and others; may be taken in either semester or both. Prerequisite: Course 102. 96 hours; three credits, either semester or both. PETTIBONE, KINGSBURY.
161. **URINALYSIS.** Advanced methods. Open to fourth-, fifth-, or sixth-year medical and other qualified students. First quarter. Prerequisite: Course 102. 48 hours; one and one-half credits. PETTIBONE.
163. **METABOLISM.** Lectures and laboratory work on special phases of metabolism. Lectures may be taken alone; number of students unlimited; laboratory course limited to ten students. Open to fourth-,

- fifth-, or sixth-year medical students and others. Prerequisite: Course 102. 48 hours; three-fourths or one and one-half credits. PETTIBONE.
- †164. QUANTITATIVE METHODS. The estimation of certain important substances in the urine, blood, and other body fluids. Open to fourth-, fifth-, or sixth-year medical students and others. Prerequisite: Course 102. 96 hours; three credits. KINGSBURY.
- 201-202. SEMINAR IN PHYSIOLOGY AND PHARMACOLOGY. For instructors and advanced students. 16 hours, each semester; one credit. LYON, HIRSCHFELDER, and Staff.
- 203-204. RESEARCH IN PHYSIOLOGY. Hours and credits arranged. LYON, SCOTT, McCLENDON.
- 205-206. RESEARCH IN PHYSIOLOGIC CHEMISTRY. Hours and credits arranged. KINGSBURY, PETTIBONE.
- †208. SEMINAR IN PHYSIOLOGIC OPTICS. Primarily for graduate students. Open to sixth-year medical students. 24 hours; one and one-half credits. LYON.
- †210. PHYSIOLOGIC OPTICS. A laboratory course. For graduate and sixth-year students. 48 hours. One and one-half credits. LYON.

DEPARTMENT OF PHARMACOLOGY

Professor ARTHUR D. HIRSCHFELDER; Associate Professor EDGAR D. BROWN; Assistant ALFRED E. LANGE.

Departmental Office, Millard Hall

REQUIRED COURSES

- 1a,b. ELEMENTARY PHARMACOLOGY. A study of the history, uses, classification, and preparation of drugs; definition of descriptive terms; systems of weights and measures; methods of administration, principles of dosage, etc. School for Nurses and others. 64 hours; three credits.
4. COURSE IN PHARMACOLOGY. The history, origin, nature, pharmaceutical preparations, and uses of drugs, including the discussion of their physiologic, pharmacologic, and therapeutic actions. Second-year dental students. 48 hours; three credits.
102. GENERAL PHARMACOLOGY. The principles underlying the structure, physicochemical properties, physiologic, therapeutic, and toxic actions of substances, natural or synthetic, used as medicines. Fourth-year medical students. 32 hours; two credits. HIRSCHFELDER, BROWN.

† Probably not offered in 1918-19.

104. EXPERIMENTAL PHARMACOLOGY. Exercises illustrating the preparation and action of medicines, their relation to chemical structure, and their mode of administration. Fourth-year medical students. 48 hours; one and one-half credits. HIRSCHFELDER, BROWN.
- 105a,b. GENERAL PHARMACOLOGY AND THERAPEUTICS. A more detailed study of drugs important in clinical practice, covering the relations of chemical structure to physiologic and therapeutic action and modes of application in clinical medicine. Fifth-year medical students. 48 hours; two credits. HIRSCHFELDER, BROWN.
- 107a,b. THERAPEUTIC CONFERENCE. Discussion of the treatment of diseases based upon a study of notes of typical cases. One half the class each semester; sixth-year students; 8 hours. HIRSCHFELDER, BROWN.

ELECTIVE COURSES

6. EXPERIMENTAL PHARMACOLOGY. Experiments upon the effects of the important heart and nerve stimulants, sedatives, purgatives, and antiseptics. Offered to dental and pharmacy students and nurses. 24 to 48 hours; one to two credits. HIRSCHFELDER, BROWN.
- 109a,b. EXPERIMENTAL PHARMACOLOGY. Special investigation and experimental study of one or more subjects in pharmacology, in which the student is given an opportunity of choice of the following topics:
- a. Anesthetics, general and local; the principles and dangers of anesthesia.
 - b. Stimulants and depressants of the circulation and their relation to the treatment of heart disease.
 - c. Drugs acting upon the kidneys, normal or diseased.
 - d. Urinary antiseptics and the urinary excretion of drugs.
 - e. Action and detection of poisons and their antidotes.
 - f. Detailed study of the effects in man of the common harmless drugs.
 - g. The internal secretions and gland extracts; their effect upon the action of drugs.
 - h. Action of drugs upon animal and bacterial parasites, tumors, etc. Offered in the second half of the fourth year and in the entire fifth or sixth year. 24 or 48 hours; one or two credits, each semester. HIRSCHFELDER, BROWN.
110. POISONS. Their detection, action, and antidotes. Open to fourth-, fifth-, or sixth-year medical students. 48 hours; one and one-half credits. BROWN.
- 111a,b. PRESCRIPTION WRITING. The principles of prescription writing; study of the flavoring, coloring, and incompatibilities of drugs. Open to fourth-, fifth-, or sixth-year medical students. 16 hours; one credit. BROWN.

112. PRACTICAL MATERIA MEDICA AND PRESCRIPTION WRITING. The study of crude drugs, pharmaceutical preparations, and of the flavoring and compounding of prescriptions. Open to fourth-, fifth-, and sixth-year medical students. 8 hours; one-half credit. BROWN.
- 201-202. SEMINAR IN PHYSIOLOGY AND PHARMACOLOGY. Reviews of recent literature bearing upon physiologic and pharmacologic subjects. Conducted by department directors, with the collaboration of the staffs and of qualified graduate or undergraduate students. 32 hours.
- 203-204. RESEARCH IN PHARMACOLOGY. HIRSCHFELDER, BROWN.

THE DEPARTMENT OF PATHOLOGY, BACTERIOLOGY,
AND PUBLIC HEALTH

Professor HAROLD E. ROBERTSON;* Associate Professors ELEXIOUS T. BELL, WINFORD P. LARSON; Assistant Professors MOSES BARRON,* ARTHUR HENRICI,* Instructors ANNE BENTON, JOHN C. MCKINLEY, CHESTER A. STEWART, MARGARET WARWICK; Assistants SIEGFRIED F. HERRMANN, HUGH T. JONES, ORVILLE N. NELSON.

Departmental Office, Institute of Public Health and Pathology

REQUIRED COURSES

3. BACTERIOLOGY. The principles governing the isolation and study of bacteria. The bacteria and other parasites of the mouth and teeth. Studies of pathogenic organisms which produce, or appear in rheumatism; relation to infections of the teeth. Dental students. 96 hours; four credits. LARSON, BENTON, and Assistants.
4. PATHOLOGY. The study and recognition of gross and microscopic disease processes. The principles of general pathology with special consideration of diseases peculiar to the mouth and teeth and important in dental practice. Dental students. 96 hours; four credits. STEWART, WARWICK, and Assistants.
- 6a,b. ELEMENTARY BACTERIOLOGY. The principles and technique of general bacteriology. Studies in the morphologic and biologic characters of the common bacteria. Preparation of culture media. Disinfectants and disinfection. Bacteriology of water and food products. Students of Home Economics, Agriculture, Nursing, etc. 80 hours; three credits. LARSON, BENTON, MCKINLEY, and Assistants.
101. GENERAL PATHOLOGY. The general principles governing pathologic changes, including disturbances of the circulation and metabolism; inflammation, regeneration, and repair; tumor formation. The study and recognition of gross and microscopic lesions. Fourth-year medi-

* On military service.

- cal students. Prerequisites: histology and special bacteriology. 96 hours; four credits. BELL, MCKINLEY, STEWART.
102. SPECIAL PATHOLOGY. The study of the pathologic processes of infectious diseases, such as diphtheria, typhoid fever, etc.; the special pathology of lesions in various organs, systems of organs, and tissues of the body. Fourth-year medical students. Prerequisite: general pathology. 232 hours; eight credits. BELL, MCKINLEY, STEWART.
103. CLINICAL PATHOLOGY. The principles and methods involved in the examination of urine, blood, stomach contents, feces, sputum, exudates, and transudates; the relation of pathologic findings to the diagnosis of disease. Fifth-year medical students. 64 hours. WARWICK.
104. GENERAL BACTERIOLOGY. The preparation of culture media; the morphology of bacteria; methods of staining and identification; anaerobic bacteria; principles of sterilization and disinfection; examination of air, water, milk; relation of bacteriology to the industries. Third-year medical students and others. Prerequisites: general chemistry, and botany or zoology. 96 hours; four credits. LARSON, BENTON, and Assistants.
105. SPECIAL BACTERIOLOGY. The study of pathogenic bacteria, especially in relation to definite diseases; bacteriological methods in clinical diagnosis; principles of infection and immunity, with practical application of serum reactions. Fourth-year medical students and others. Prerequisite: general bacteriology. 72 hours; three credits. LARSON, BENTON, and Assistants.
107. PREVENTIVE MEDICINE AND HYGIENE. A systematic study of the principles of personal and communal hygiene and of general procedures for the protection of the public health. Sixth-year medical students. 32 hours. BEARD.
- 109a,b. CLINICAL PATHOLOGY. Practical work in the examination of blood, urine, stomach contents, sputum, etc. Conducted in the Out-patient Department with class sections. Sixth-year medical students. 12 hours. WARWICK.
- 111a,b. AUTOPSIES. Technique of performing autopsies; making autopsy records; examination of fresh organs removed from these autopsies. Opportunities afforded to study observed lesions microscopically. Three or four students called to each post-mortem, excused from regular classes. Preference given to senior students. Each candidate for the degree must have taken part in at least four autopsies. Fifth- and sixth-year medical students. The Staff.

ELECTIVE COURSES

- †112. PATHOLOGIC TECHNIQUE. General and special methods of preparation of microscopic and gross pathologic specimens; including prac-

† Probably not offered in 1918-19.

- tice with freezing microtome, celloidin and paraffin embedding methods, general and special stains, preparation of museum specimens, etc. Limited to ten students. Fourth-, fifth-, and sixth-year medical students. Prerequisite: general pathology. 48 hours; one and one-half credits.
- 113a,b. **ADVANCED PATHOLOGY.** Laboratory studies in the examination of routine operative and autopsy specimens, with the investigation of special associated problems. Credit for work in this course is to be judged entirely by the character and amount of work accomplished. Dates and hours to be arranged. The Staff.
114. **ADVANCED BACTERIOLOGY.** An advanced course giving additional work in bacteriology and the opportunity of working out special problems. Fifth-year medical students. Limited to ten students. 48 hours; one and one-half credits. LARSON.
- 115a,b. **COURSE IN IMMUNITY.** Laws of hemolysis. Quantitative relationship between antigen and antibody. Wassermann reaction. Opsonins. Vaccines. Precipitin reaction. Abderhalden reaction. Anaphylaxis. Fifth- and sixth-year medical students. Limited to ten students in each semester. 48 hours; one and one-half credits. LARSON.
117. **DIAGNOSIS OF TUMORS.** Rapid diagnosis and study of tumors and other pathologic conditions simulating tumor formation. Fifth- and sixth-year medical students. Prerequisite: special pathology. 48 hours; one and one-half credits. BELL.
118. **GYNECOLOGICAL PATHOLOGY.** The special study of pathologic conditions found in the female genital tract. This elective is an integral part of Course 102, special pathology. Fourth-, fifth-, or sixth-year medical students. 48 hours; one and one-half credits. BELL, ADAIR.
- †120. **NEUROPATHOLOGY.** The special study of pathologic conditions of the nerve tissues in lesions of the central and peripheral nervous system. This elective is an integral part of Course 102, special pathology. Fourth-, fifth-, or sixth-year medical students. 24 hours; three-fourths credit. BELL, HAMILTON.
121. **CLINICAL LABORATORY COURSE.** Practical diagnostic study in the Out-patient Department laboratory. Limited to sections of four students. Fifth- or sixth-year medical students. 36 hours; one credit. WARWICK.
122. **MEDICAL ENTOMOLOGY:** A study of insects, and their allies, which are disease-bearers or parasites of man; life-history, habits, and methods of control. Fourth-, fifth-, or sixth-year students. Prerequisite: animal biology. 32 hours; two credits. HOWARD.

† Probably not offered in 1918-19.

- †124. HEMATOLOGY. Advanced studies in diseases of the blood; with particular attention to special technical procedures and the significance of laboratory findings. Fifth- or sixth-year medical students. 48 hours; one and one-half credits.
- 201-202. RESEARCH. Graduate students, of the necessary preliminary training, may elect research, either as majors or minors in pathology. Hours and credits to be arranged. BELL.
- 203-204. RESEARCH. Graduate students of the necessary preliminary training may elect research, either as majors or minors, in bacteriology. Hours and credits to be arranged. LARSON.
125. PUBLIC SCHOOL MEDICAL WORK. Lectures on the duties and qualifications of school medical officers. Fifth and sixth years. 8 hours. CHARLES H. KEENE, M.D., Director of Hygiene, Minneapolis Schools.
- 127a,b. PRACTICAL MEDICAL WORK, in the schools of Minneapolis, by school physicians. Fifth and sixth years, 24 hours. DR. KEENE and others.

DEPARTMENT OF SURGERY

Professors JAMES E. MOORE, ARTHUR J. GILLETTE; Associate Professors J. FRANK CORBETT,* ARTHUR A. LAW,* ARCHIBALD MACLAREN, ARTHUR T. MANN, JOHN T. ROGERS; Assistant Professors ALEXANDER R. COLVIN, EMIL S. GEIST,* OSCAR OWRE, CHARLES A. REED,* HARRY P. RITCHIE, ARTHUR C. STRACHAUER, FRANKLIN R. WRIGHT; Instructors JOHN S. ABBOTT,* PAUL F. BROWN,* CARL C. CHATTERTON, WALLACE COLE,* PAUL W. GIESSLER,* HUGO J. HARTIG, JOHN P. HIEBERT, JAMES A. JOHNSON, WALTER J. KREMER, FREDERICK H. POPPE, JOHN C. STALEY, HENRY C. STUHR, ANTON G. WETHALL, HARRY B. ZIMMERMAN;* Assistants LOUIS E. DAUGHERTY, WALTER A. FANSLER, CHARLES A. HALLBERG,* ARNOLD L. HAMEL, M. KELLER KNAUFF, FREDERICK A. OLSON, MANFORD O. OPPEGAARD,* EMIL C. ROBITSHEK, GILBERT J. THOMAS;* Teaching Fellow EARL CRAFTS.

Departmental Office, Millard Hall

REQUIRED COURSES

51. GENERAL SURGERY. The diseases and injuries of tendons, fasciae, bursae, blood-vessels, nerves, brain, and meninges. Lectures and demonstrations. Fifth year. 32 hours. LAW.
- 53-54. PRINCIPLES OF SURGERY. A study of surgical inflammations, etc.; illustrated by gross and microscopic preparations from the living

* On military service.

† Probably not offered in 1918-19.

- subject and from experimental courses. Lectures and demonstrations. Fifth year. 56 hours. CORBETT.
56. REGIONAL SURGERY. The practical surgery of the several regions of the body; diseases of bones, injuries, and acute diseases of joints, etc. Lectures and demonstrations. Fifth year. 48 hours. MOORE.
58. GENERAL SURGERY. Fractures and dislocations. Lectures and demonstrations. Sixth year. 32 hours. LAW.
- 59-60. DIAGNOSTIC CLINIC. A series of clinics upon the diagnosis of surgical conditions as presented in the hospital wards. Fifth year. 32 hours. MOORE.
- 61-62. DIAGNOSTIC AND OPERATIVE CLINIC. A course in operative procedure conducted at the University Hospitals, the Minneapolis City Hospital, and the City and County Hospital at St. Paul, on Thursdays and Saturdays, throughout the year. Fifth-year class, in sections. 56 hours. MOORE, LAW, MACLAREN, RITCHIE, STRACHAUER, CORBETT, MANN, ROGERS, COLVIN, JOHNSON, HARTIG, HIEBERT, POPPE, STUHR.
- 63a,b. DIAGNOSTIC CLINIC. A series of clinics in which the students are assigned cases for presentation before the class; taking case histories, making diagnosis, and suggesting treatment, under supervision. Sixth year. 64 hours. MOORE.
- 64a,b. OPERATIVE CLINIC. A course of operations in the University Hospitals, the Minneapolis City Hospital, and the City and County Hospital at St. Paul, on Tuesdays, Thursdays, and Saturdays. For sections of class; sixth year. 48 hours. MOORE, LAW, MACLAREN, RITCHIE, STRACHAUER, CORBETT, MANN, ROGERS, COLVIN, JOHNSON, HARTIG, HIEBERT, POPPE, STUHR.
- 65a,b. MINOR OPERATIVE CLINICS. Course conducted with class sections on three days in each week at the Outpatient Department. Sixth year. 12 hours. JOHNSON and Assistants.
66. MEDICAL ETHICS AND ECONOMICS. Sixth year. 8 hours. MOORE.

ELECTIVE COURSES

- 101a,b. COURSE IN MINOR SURGERY. The study of diagnosis and treatment of selected cases. Sixth year. 36 hours. JOHNSON and Assistants.
103. OPERATIVE COURSE ON THE CADAVER. The technique of abdominal incision and closure; of bowel suturing, appendiceal removal, kidney exploration, nephrotomy, tracheotomy, amputations, ligations, and other problems in emergency surgery. Fifth year. 32 hours. CORBETT.

104. COURSE IN EXPERIMENTAL SURGERY. A study of surgical technique by cardinal operations upon animals. Sixth year. 40 hours. CORBETT.
- 105a,b. DIAGNOSTIC CLINIC, WITH OCCASIONAL OPERATIONS. Conducted at the City and County Hospital, St. Paul. Limited to ten students. Fifth or sixth year. 12 hours. COLVIN.
- 107a,b. EXTRACTION OF TEETH. Course offered in the College of Dentistry. Limited to eight students. Fifth or sixth year. 8 hours. GRIFFITH.

DIVISION OF ORTHOPEDIA

REQUIRED COURSES

- 70a,b. ORTHOPEDIC SURGERY. A course of clinical lectures and operations conducted in each quarter, with divisions of class, at the Hospital for Crippled and Deformed at Phalen Park. Sixth year. 24 hours. GILLETTE, CHATTERTON.
- 71a,b. ORTHOPEDIC CLINIC. A study of cases of orthopedic disease and treatment at the Outpatient Department; with class sections, three weekly sessions. Sixth year. 8 hours. GEIST, COLE, REED.

ELECTIVE COURSES

- 113a,b. CLINIC IN ORTHOPEDIC SURGERY. The study of selected cases. Conducted in Outpatient Department. Limited to three students. Sixth year. 36 hours. GEIST, REED.
114. ORTHOPEDIC SURGERY. Illustrated clinical lectures. Sixth year. 24 hours. GEIST.
- 115a,b. CLINIC IN ORTHOPEDIC SURGERY. Conducted at Phalen Park Hospital for the Crippled and Deformed. 24 hours in each semester. CHATTERTON.

DIVISION OF UROLOGY

REQUIRED COURSES

73. GENITO-URINARY DISEASES. The etiology, diagnosis, and treatment of this group of diseases. A course of lectures. Sixth year. 16 hours. WRIGHT.
- 75a,b. GENITO-URINARY CLINIC. The study of cases at the bedside and in the operating rooms of the several hospitals. Sixth year. 8 hours. OWRE, WRIGHT.
- 77a,b. GENITO-URINARY CLINIC. The observation, examination, and treatment of patients in the Outpatient Service at three weekly sessions. Sixth year. 8 hours. OWRE, WRIGHT, and Assistants.

ELECTIVE COURSES

- 117a,b. GENITO-URINARY DISEASES. The study of cases in the Outpatient Clinics, giving the student the opportunity of examination and supervised treatment of patients. Sixth year. 36 hours. OWRE, WRIGHT, and Assistants.
- 118a,b. ENDOSCOPY AND CYSTOSCOPY. Methods of investigation and treatment. Conducted in Outpatient Department. Sixth year. 8 hours. WRIGHT.

DEPARTMENT OF MEDICINE

Professors LEONARD G. ROWNTREE, ARTHUR S. HAMILTON, S. MARX WHITE,* ARTHUR A. SWEENEY; Research Professor THOMAS B. HARTZELL; Associate Professor JAMES S. GILFILLAN; Assistant Professors FRANCIS G. BLAKE,* JOHN BUTLER,* CHARLES D. FREEMAN, ALEXANDER R. HALL,* ERNEST M. HAMMES, HARRY G. IRVINE, ANGUS W. MORRISON,* GEORGE M. OLSON, ERNEST T. F. RICHARDS, JOHN P. SCHNEIDER, SAMUEL E. SWEITZER, HENRY L. ULRICH; Lecturer HENRY WIREMAN COOK; Instructors JOHN M. ARMSTRONG, J. FOWLER AVERY,* ARCHIBALD H. BEARD,* PAUL B. COOK,* CHARLES R. DRAKE, EDWIN L. GARDNER, OLGA S. HANSEN, RALPH E. MORRIS,* ROBERT I. RIZER, FREDERICK W. WITTICH, CHARLES B. WRIGHT; Research Assistant WILLIAM A. GREY; Assistants LOUISA M. BOUTELLE, EDWARD J. ENGBERG,* WALTER A. FANSLER, ERNEST S. MARIETTE, JOSEPH C. MICHAELS,* FREDERICK P. MOERSCH,* HARRY P. NORDLEY,* JOHN H. SCHROEDER; Teaching Fellows FLOYD GRAVE, CHARLES E. NIXON.

Departmental Office, Millard Hall

REQUIRED COURSES

50. PHYSICAL DIAGNOSIS. A study of general symptomatology, and of methods of physical examination, diagnosis, and record, with demonstrations upon the normal and abnormal subject; introductory to the group teaching of physical diagnosis in the fifth year. Fourth year. 24 hours. ROWNTREE, SCHNEIDER, and Assistants.
- 51-52. THE PRINCIPLES AND PRACTICE OF MEDICINE. Diseases of the heart and blood-vessels; of the bronchi, lungs, and pleura; of the intestinal tract; renal diseases; acute infections. Fifth year. 64 hours. ROWNTREE, RICHARDS, GARDNER, RIZER, WITTICH.
- 53a,b. PHYSICAL DIAGNOSIS AND CASE TAKING. Studies conducted, with divisions of the class, in the following clinics: (1) cardiac and vascular diseases; (2) respiratory diseases and tuberculosis; (3) metabolic diseases; (4) gastro-intestinal diseases; (5) nervous diseases; (6) dermatology and syphilis. See also Courses 77 and 85. Fifth

- year. 144 hours. IRVINE, OLSON, SCHNEIDER, SWEITZER, RIZER, WITTICH, WRIGHT, and Assistants.
55. PHYSICAL DIAGNOSIS. A course of lectures in elaboration of the practical work in the Outpatient Service. Fifth year. 16 hours. SCHNEIDER, RIZER, WITTICH.
56. PRACTICAL THERAPY AND THERAPEUTIC TECHNIQUE. A study of special methods of therapeusis. Fifth year. 16 hours. RICHARDS.
- 57a,b. CLINIC IN MEDICINE. Conducted in the University Hospital. Fifth year; one half the class in each semester. 16 hours. ULRICH.
- 59a,b. SECTION CLINICS IN MEDICINE. Conducted throughout the year in the Minneapolis City Hospital and the City and County Hospital, St. Paul. Fifth year. 48 hours. GILFILLAN, HALL, GARDNER.
60. MOUTH INFECTIONS. The typical infections of the oral cavity and their causal relations to disease. Fourth quarter. Sixth year. 8 hours. HARTZELL.
62. MEDICAL JURISPRUDENCE. The principles of law, the rules of evidence, and the duties of physicians in medico-legal cases. Third quarter. Sixth year. 16 hours. SWEENEY.
- 63a,b. CLINIC IN MEDICINE. A study of cases and case histories in the University Hospital service. Sixth year. 64 hours. ROWNTREE.
- 65a,b. CLINICAL CLERKSHIPS. The personal and direct observation of patients in hospital under the supervision of the staff; the taking and recording of case histories and the making of provisional diagnoses. One fourth of class in each quarter. Hospital open for this service from 9:30 to 12 and 1 to 4:30. Sixth year. 144 hours.
- 67a,b. SECTION CLINICS IN MEDICINE. Conducted throughout the year at the Minneapolis City Hospital and the City and County Hospital of St. Paul. Sixth year. 8 hours. GILFILLAN, GARDNER, HALL.
- 107a,b. CLINICAL-THERAPEUTIC CONFERENCE. A weekly conference in which the clinical features and the treatment of cases are discussed; followed by a reproduction of corresponding lesions and therapeutic effects in the animal. Sixth year. 32 hours. ROWNTREE, HIRSCHFELDER.

ELECTIVE COURSES

- 101a,b. CLINICAL ELECTIVES, offering the student an assistantship in the Outpatient Department in any of the services in medicine, nervous and mental diseases, and dermatology and syphilis. For services, see Courses 53, 119, 121. Sixth year. Open to two students, who have completed clinical clerkships, in each service and in each quarter. 36 hours. The Staff.

- 103a,b. **BEDSIDE CLINICS IN MEDICINE.** Conducted at the City and County Hospital, St. Paul. Limited to ten students. Fifth year. 12 hours. HALL.
104. **THE EXAMINATION FOR LIFE INSURANCE.** The requirements of standard and special examinations of applicants for life insurance. Fifth or sixth year. 8 hours. COOK.
105. **ACUTE INFECTIOUS DISEASES.** Non-contagious. A comparative study of fevers. City Hospital. Limited to six students. Sixth year. 8 hours.
106. **DISEASES OF THE RESPIRATORY TRACT.** A study of physical signs. City Hospital. Limited to six students. Fifth year. 8 hours.
108. **ADVANCED WORK IN GRAPHIC RECORDING AND FUNCTIONAL DIAGNOSIS OF CARDIO-VASCULAR DISEASES.** A study of the use of the polygraph and electro-cardiograph. Limited to six students. Sixth year. 16 hours. WHITE.
- 103a,b. **ADVANCED PHYSICAL DIAGNOSIS OF THE CHEST.** Practical work on tuberculous patients at available hospitals. Two classes of six students each. Fifth and sixth year. WITTICH and Associates.
110. **STUDIES IN METABOLISM, CLINICAL AND EXPERIMENTAL.** Limited to six students. Sixth year. 48 hours. ROWNTREE and Staff.
111. **PROBLEMS IN ADVANCED MEDICAL DIAGNOSIS.** Limited to four students. Sixth year. 16 hours. ULRICH.

DIVISION OF NERVOUS AND MENTAL DISEASES

REQUIRED COURSES

69. **NEUROLOGY AND NEUROLOGIC DIAGNOSIS.** The general symptomatology and methods of examination of the nervous system; the etiology, pathology, diagnosis and treatment of the special diseases of the nervous system. Lectures, recitations, and lantern demonstrations. Fifth year. 24 hours. HAMILTON, HAMMES.
70. **PSYCHIATRY.** The principal data and methods of modern psychiatry, with the diagnosis and treatment of the various mental disorders. Lectures, recitations, and demonstrations. Prerequisite: Course 75. Fifth year. 16 hours. HAMILTON.
- 71a,b. **CLINICAL NEUROLOGY AND PSYCHIATRY.** Section clinics in nervous and mental diseases, conducted at the University Hospital, the Minneapolis City Hospital, and the City and County Hospital, St. Paul. Fifth year. 20 hours. HAMILTON, HAMMES, NIXON.
- 73a,b. **ADVANCED SECTION CLINICS** conducted at the above hospitals throughout the year. Sixth year. 20 hours. HAMILTON, HAMMES.

- 75a,b. PERSONAL OBSERVATION AND STUDY of cases of nervous and mental disease in the University Outpatient Service. In sections. Sixth year. 12 hours.
- 77a,b. PHYSICAL DIAGNOSIS AND CASE TAKING. Studies conducted with divisions of the class in medical clinics, including neurology, in the Outpatient Department. See Course 53a,b. Fifth year. 24 hours.

ELECTIVE COURSES.

113. PATHOLOGY OF THE NERVOUS SYSTEM. The exhibition of gross and microscopic preparations of diseased nerve tissues; the relations existing between pathologic lesions and signs and symptoms; the chief neurone systems and the principles underlying their degeneration. Limited to four students. Prerequisites: Courses 75 and 76. Sixth year. 8 hours. HAMILTON, NIXON.
115. ORGANIC NERVOUS DISEASES. Advanced diagnosis of nervous diseases, with a view of giving each student practical experience in all the chief diagnostic procedures employed in the study of nervous diseases. Limited to four students. Prerequisites: Courses 75 and 76. Sixth year. 16 hours. HAMILTON.
116. SYPHILITIC NERVOUS AFFECTIONS. The diagnosis and treatment of the expressions of syphilis in the central nervous system, combining clinical and laboratory teaching and referring particularly to dementia paralytica and tabes dorsalis. Limited to six students. Sixth year. 16 hours. HAMMES.
118. REGIONAL DISEASES. A didactic and clinical conference on the regional diagnosis of lesions of the nervous system. Limited to four students. Third quarter, sixth year. 8 hours.
- 119a,b. CLINICAL ASSISTANTSHIP, in nervous and mental diseases in the Outpatient Department. Sixth year. Open to two students in each quarter. 36 hours.

DIVISION OF DERMATOLOGY

REQUIRED COURSES

79. COURSE IN DERMATOLOGY. Clinical lectures upon the common skin diseases and syphilis, including diagnosis and treatment. Fifth year. 32 hours. SWEITZER.
- 81a,b. CLINICAL DERMATOLOGY. Section clinics conducted at the City and County Hospital, St. Paul. Sixth year. 4 hours.
- 83a,b. CLINIC IN DERMATOLOGY. The practical study of cases of skin and syphilitic disease, in the Outpatient Service. Sixth year. 12 hours. IRVINE, OLSON, SWEITZER.

85a,b. PHYSICAL DIAGNOSIS AND CASE TAKING. Studies conducted with divisions of the class in medical clinics, including dermatology and syphilis, in the Outpatient Department. See Course 53a,b. Fifth year. 24 hours. IRVINE, OLSON, SWEITZER.

ELECTIVE COURSES

121a,b. ASSISTANTSHIP IN DERMATOLOGY, in the Outpatient Department. Sixth year. Open to two students in each quarter. 36 hours. SWEITZER, IRVINE, OLSON.

123a,b. WARD CLINICS IN DERMATOLOGY. Conducted in the City and County Hospital, St. Paul. Limited to ten students. Fifth or sixth year. 12 hours.

THE DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

Professor JENNINGS C. LITZENBERG; Associate Professors FRED L. ADAIR, JOHN L. ROTHROCK; Instructors J. WARREN BELL,* WILLIAM H. CONDIT, RAE T. LAVAKE,* CLARENCE O. MALAND, WILLMAR C. RUTHERFORD,* JALMAR SIMONS; Assistants ELIZABETH BARNARD, JAMES F. HAMMOND,* MENDELSSOHN JONES, FREDERICK J. SOUBA; Teaching Fellows LEE W. BARRY, LEROY A. CALKINS, GORDON M. CLARK.

Departmental Office, Institute of Anatomy

REQUIRED COURSES

- 51-52. OBSTETRICS. The physiology and pathology of pregnancy, parturition and the puerperium. Lectures and recitations. Fifth year. 64 hours. ADAIR, CONDIT.
53. GYNECOLOGY. Course in gynecologic diagnosis. Fifth year. 16 hours. LITZENBERG.
- 55a,b. CLINICS IN OBSTETRICS AND GYNECOLOGY. Sections of the class at the Minneapolis City Hospital, City and County Hospital, St. Paul. Fifth year. 10 hours. ROTHROCK, RUTHERFORD, ADAIR, and Assistants:
57. OBSTETRICS. A study of the pathology of pregnancy and parturition and of the puerperium. Sixth year. 32 hours. LITZENBERG.
59. GYNECOLOGY. A study of the diseases of women. Sixth year. 32 hours. LITZENBERG.
61. CASE ANALYSIS IN OBSTETRICS AND GYNECOLOGY. A course in the analytical study of cases. Sixth year. 16 hours. LITZENBERG.
- 63a,b. CLINIC IN OBSTETRICS AND GYNECOLOGY. Demonstrations, diagnosis, and treatment of cases in the Outpatient Department. Sections of class, sixth year. 12 hours. ADAIR and Assistants.

- 65a,b. CLINICS IN OBSTETRICS AND GYNECOLOGY. Demonstrations, diagnosis and treatment of cases. Conducted in Minneapolis City Hospital and City and County Hospital, St. Paul. Sections of class, sixth year. 24 hours. ADAIR, ROTHROCK, and Assistants.
- 67a,b. CLINICAL CLERKSHIPS. The direct observation of patients in hospital, under supervision; taking and recording of case histories; making provisional diagnoses; including parturition clinics in hospital and Outpatient Service; operations and manikin demonstrations. Sixth year, in sections. 32 hours. LITZENBERG and Associates.
- 69a,b. PARTURITION CLINICS. Conducted in the University Hospital and the Outpatient Service, at the Minneapolis City Hospital and the City and County Hospital, St. Paul. Students are on call for parturition cases; attendance required. No credits. Fifth and sixth years. ADAIR, RUTHERFORD, and Assistants.

ELECTIVE COURSES

- 101a,b. SEMINAR IN OBSTETRICS. Offering opportunities of advanced study. Limited to eight students. Sixth year. 16 hours. LITZENBERG.
- 103a,b. SPECIAL CLINICAL COURSE. A study in the diagnosis and treatment of diseases of women and of obstetrical conditions, at the Outpatient Department. Limited to four students. Sixth year. 36 hours. CONDIT.
- 105a,b. Same as above course. Fifth year. 8 hours. ADAIR.
- 107a,b. Same as above courses. Sixth year. 8 hours. ADAIR.
109. GYNECOLOGICAL CLINIC. A study in the diagnosis and treatment of diseases of women. Conducted in the St. Paul Dispensary. Two students. Sixth year. 16 hours. ROTHROCK.
- 111a,b. GYNECOLOGICAL CLINIC. Bedside studies in diagnosis and treatment of diseases of women. City and County Hospital, St. Paul. Fifth and sixth year. Limited to four students. 12 hours. JONES.
- 113a,b. CLINIC IN GYNECOLOGY AND OBSTETRICS. Bedside clinic at the Minneapolis City Hospital. Fifth or sixth year. Four students. 12 hours. MALAND.
115. CLINIC IN GYNECOLOGY AND OBSTETRICS. Course same as III. SIMONS.
- †117. APPLIED ANATOMY OF THE PELVIS. Fifth year. 8 hours. LAVAKE.

† Discontinued during military service of instructor.

THE DEPARTMENT OF PEDIATRICS

Professor JULIUS PARKER SEDGWICK; Associate Professors JAMES T. CHRISTISON, WALTER R. RAMSEY; Assistant Professor FREDERIC W. SCHLUTZ; Instructors TOBIAS L. BIRNBERG, BRONSON CROTHERS,* EDGAR J. HUENEKENS, FREDERICK C. RODDA, MAX SEHAM, MILDRED ZIEGLER; Assistants WILLIAM D. BEADIE,* GLENN R. MATCHAN, CHARLES A. OLSON, NABOTH O. PEARCE, EUGENE F. WARNER; Teaching Fellow ALBERT G. ALLEY.

Departmental Office, Millard Hall

REQUIRED COURSES

- 101-102. DISEASES OF CHILDREN. The etiology, pathology, diagnosis and treatment of diseases peculiar to, or distinctive of, children, with particular emphasis upon their differences from adult type. Fifth year. 56 hours. SEDGWICK, CHRISTISON, RAMSEY.
- 102a,b. CLINIC IN PEDIATRICS. Conducted at the University Hospitals, the Minneapolis City Hospitals, Lymanhurst, and the City and County Hospital, St. Paul. Sections of class, fifth year. 16 hours. SEDGWICK, CHRISTISON, RAMSEY, SCHLUTZ, HUENEKENS, RODDA, and Assistants.
- 103a,b. CLINIC IN CONTAGIOUS DISEASES. Conducted in the Minneapolis City Hospital and the City and County Hospital, St. Paul. Sections of class, fifth year. 16 hours. CHRISTISON, RAMSEY, HUENEKENS, RODDA, and Assistants.
- 104a,b. CLINIC IN PEDIATRICS. An advanced clinical course, conducted at the University Hospital and affiliated hospitals. Sections of class, sixth year. 8 hours. SEDGWICK, CHRISTISON, RAMSEY, SCHLUTZ, HUENEKENS, RODDA.
- 105a,b. OUTPATIENT PEDIATRIC CLINIC. The practical study of the diseases of children in the Outpatient Service. Sections of class, sixth year. 12 hours. SCHLUTZ, SEHAM, and Assistants.

ELECTIVE COURSES

111. DISEASES OF THE NEW-BORN. The pathology and treatment of these disorders, with the presentation of illustrative cases. Limited to six students. Fifth or sixth year. 16 hours. SEDGWICK, PEARCE.
113. CONTAGIOUS DISEASES. The advanced study of contagious diseases, including the practice of intubation and tracheotomy, with training upon the cadaver. Fifth or sixth year. 16 hours. RAMSEY.

114. COURSE IN INFANT FEEDING. Conducted at the St. Paul Baby Welfare Clinic of the H. Amherst Wilder Charity. Sixth year. 24 hours. RAMSEY.
- 115a,b. THEORY AND PRACTICE OF INFANT FEEDING, INCLUDING DISEASES OF THE GASTRO-INTESTINAL TRACT. Limited to six students. In first three quarters, sixth year; in fourth quarter, fifth year. 8 hours. SCHLUTZ.
- 117a,b. CONGENITAL DEFECTS AND CONSTITUTIONAL DISORDERS OF INFANCY AND CHILDHOOD. Limited to six students. In each quarter. Fifth or sixth year. 8 hours. SCHLUTZ.
- 121a,b. PEDIATRIC CLINIC, OUTPATIENT DEPARTMENT. Limited to six students. Fifth or sixth year. 36 hours. SCHLUTZ, SEHAM.
- 125a,b. CLINIC IN CONTAGIOUS DISEASES. Conducted at the Minneapolis City Hospital. Limited to four students. Sixth year. 16 hours. SCHLUTZ.
- 127a,b. CLINIC IN CONTAGIOUS DISEASES. Conducted at the City and County Hospital, St. Paul. Limited to ten students. Course repeated in each quarter. Fifth or sixth year. 12 hours. RAMSEY, BIRNBERG.

DEPARTMENT OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

Professor FRANK C. TODD;* Associate Professor WILLIAM R. MURRAY; Assistant Professors FRANK E. BURCH,* JOHN S. MACNIE,* HORACE NEWHART; Instructors WALTER E. CAMP, HOWARD S. CLARK, WILLIAM W. LEWIS, WILLIAM E. PATTERSON, FRED J. PRATT, JOHN A. PRATT; Assistants EARL A. LOOMIS, G. ELMER STROUT, H. JOURNEY WELLES, Teaching Fellow VICTOR L. LANGENDERFER; Special Fellow FRANK N. KNAPP.

Departmental Office, Millard Hall

REQUIRED COURSES

79. OPHTHALMOLOGY AND OTOLGY. Disorders and diseases of the eye and ear and their corrective, medical, and surgical treatment. Sixth year. 32 hours. TODD.
81. RHINOLOGY AND LARYNGOLOGY. The diagnosis and treatment of diseases of the nose and throat. Sixth year. 16 hours. MURRAY.

* On military service

- 83a,b. SECTION CLINICS IN EYE, EAR, NOSE, AND THROAT. Diagnostic and operative procedures in the clinics of the University Hospital, the Minneapolis City Hospital, and the City and County Hospital, St. Paul. Sixth year. 28 hours. TODD, MURRAY, BURCH, LEWIS.
- 85a,b. SECTION CLINIC IN DISEASES OF THE EYE. Study and treatment of cases in the Outpatient Service. Sixth year. 12 hours. MACNIE, CLARK, and Assistants.
- 87a,b. SECTION CLINIC IN DISEASES OF THE EAR. Study and treatment of cases in the Outpatient Service. Sixth year. 12 hours. NEWHART and Assistants.
- 89a,b. SECTION CLINICS IN DISEASES OF THE NOSE AND THROAT. Study and treatment of cases in the Outpatient Service, at three weekly sessions. Sixth year. 12 hours. MURRAY, PRATT, and Assistants.

ELECTIVE COURSES

- 115a,b. CLINIC IN DISEASES OF THE EYE. The examination of patients, diagnosis of disease conditions and supervised treatment. Alternate days, in the Outpatient Department. Sixth year. 36 hours. MACNIE and Assistants.
- 117a,b. CLINIC IN DISEASES OF THE EAR. Studies in examination of cases, diagnosis, and supervised treatment. Alternate days, at the Outpatient Department. Sixth year. 18 hours. NEWHART and Assistants.
- 119a,b. CLINIC IN DISEASES OF THE NOSE AND THROAT. The examination of patients, diagnosis of disease conditions and supervised treatment. Alternate days, at the Outpatient Department. Sixth year. 18 hours. MURRAY, PRATT, and Assistants.
- 121a,b. OPERATIVE CLINICS IN EYE, EAR, NOSE, AND THROAT. Conducted at the University Hospital. Course repeated in each quarter. Limited to ten students. Sixth year. 18 hours. TODD, BURCH, CLARK.
123. REFRACTION. A course of lectures. Required of all desiring the practical Course 125a,b. Sixth year. 8 hours. BURCH.
- 125a,b. PRACTICAL COURSE IN REFRACTION. Limited to ten students. Prerequisite: Course 123. Sixth year. 36 hours. BURCH, LOOMIS.
126. OPHTHALMOSCOPY. The principles and practice of this method of examination of the eye. Sixth year. 16 hours. MACNIE, CLARK.
- 127a,b. CLINIC IN DISEASES OF THE EYE. City and County Hospital, St. Paul. Limited to ten students. Fifth or sixth year. 12 hours. LEWIS.
- 201-202. SEMINAR IN OPHTHALMOLOGY AND OTO-LARYNGOLOGY. Sixth year. 48 hours. Staff.

THE DEPARTMENT OF SOCIAL SERVICE

Director, MARION A. TEBBETS

ELECTIVE COURSES

101. MEDICAL SOCIAL SERVICE. A study of interrelated physical, social, and industrial conditions affecting the individual health and demanding the service of the physician. The origin and purpose of medical social service. The social factors in household, industrial, and communal health. The community's health resources. Special medico-social problems. Lectures and laboratory field work. Limited to ten students. Offered in fifth or sixth year. 48 hours. TEBBETS.

THE SCHOOL OF CHEMISTRY

Associate Professors IRA H. DERBY, WILLIAM H. HUNTER; Instructor CARL L. SCHUMAN.

(Contributing courses to The Medical School)

- 13-14. MEDICAL ORGANIC CHEMISTRY. An outline of the chemistry of carbon, including the preparation of some of the more important organic compounds. Special emphasis is laid on the parts of organic chemistry most important in medicine. For third-year medical students who have not completed organic chemistry in the pre-medical years. 208 hours; six credits. HUNTER, SCHUMAN, and Assistants.
91. PHYSICAL CHEMISTRY. Special attention will be given to those divisions of the subject which have most application in the science of medicine, such as osmosis, colloidal solutions, chemical equilibria, etc. Third-year medical students. Two hours lectures; four hours of laboratory work, weekly. 96 hours; four credits. DERBY.

NOTE: For information regarding other available courses in Chemistry, see Bulletin, School of Chemistry.

DEPARTMENT OF ANIMAL BIOLOGY

Professors HENRY F. NACHTRIEB, HAL DOWNEY, CHARLES P. SIGERFOOS.

(Contributing elective courses to the Medical School)

36. RELATION OF INSECTS TO DISEASE. The causation and transmission of diseases by insects and other arthropods. Life history, habits, and methods of control of hominoxious species. Three credits. RILEY.

117. PROTOZOOLOGY. Lectures, reference, and laboratory work on the structure and life histories of Protozoa. Special reference is paid to the relations of the Protozoa to diseases of animals. Three credits. SIGERFOOS.
- 123-124. BLOOD OF VERTEBRATES. A comparative study of blood and blood-forming organs of vertebrates. A portion of time to be devoted to research. Six credits. DOWNEY.

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The Bulletin of the University of Minnesota

*The Medical School
The School of Embalming
January 8 to April 2
1919*



Vol. XXI No. 36 December 12 1918

*Entered at the post-office in Minneapolis as second-class matter
Minneapolis, Minnesota*

*Acceptance for mailing at special rate of postage provided for in section 1103,
Act of October 3, 1917, authorized July 12, 1918*



Institute of Public Health and Pathology

The course of study will include the following subjects:

I. ANATOMY

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

60 hours. Lectures, recitations, and lantern demonstrations; laboratory work, in which each student will dissect the thoracic and abdominal viscera, will obtain experience in personally raising the different arteries, and will familiarize himself with the anatomy relating to practical embalming. Exercises held in The Institute of Anatomy. Subjects of study:

1. The cells, tissues, organs.
2. The framework of the body.
3. The musculature; topography of the viscera.
4. The alimentary canal.
5. The circulatory system.
6. The respiratory system.
7. The urinary system.
8. The reproductive system.

II. BACTERIOLOGY AND AUTOPSIES

W. P. LARSON, M.D., Associate Professor of Bacteriology.

48 hours. Lectures, recitations, demonstrations, and practical work for each student, in The Institute of Public Health and Pathology. Subjects of study:

1. Classification of bacteria. Morphological types.
2. Saprophytic bacteria in their relation to the natural processes of putrefaction, liquefaction, and oxidation of animal and vegetable tissues.
3. Parasitic or disease-producing bacteria.
4. Methods of differentiating bacteria.
5. Methods of cultivating bacteria.
6. Methods of estimating the numbers of bacteria in measured quantities of material.
7. Practical studies of disinfection and disinfectants.
8. Experiments with the various germicides in relation to color, preservation and effects upon animal tissues.

Textbook: *Morley's Fundamentals of Bacteriology*.

E. T. BELL, B.S., M.D., Associate Professor of Pathology.

12 hours. Practical demonstration of autopsy technique, with instruction in the proper care of a body following post-mortem examination.

III. CHEMISTRY

I. W. GEIGER, Ph.D., Instructor.

54 hours. Lectures, demonstrations, and personal practical work for each student, in the laboratories of The School of Chemistry. Subjects of study:

1. Brief discussion of matter.
2. Chemical elements.
3. Chemical compounds.
4. Discussion of physical and chemical changes in matter.
5. Study of the following elements with those compounds which are of especial importance to embalmers: oxygen, hydrogen, chlorine, sulphur, nitrogen, carbon, and the common metals as sodium, potassium, calcium, and magnesium.
6. Effects of chemicals on organic matter.
7. Solutions in relation to embalming.
8. The chemistry of embalming fluids.

Textbooks: *First Course in Chemistry*, and *Exercises in Chemistry*, McPherson and Henderson.

IV. PUBLIC HEALTH

Representatives of the State Board of Health will give lectures and demonstrations covering the various phases of public health laws. The lectures will include the following:

1. By Dr. H. M. BRACKEN, Secretary and Executive Officer of the State Board of Health.

Five lectures upon public health and sanitary laws, rules and regulations, especially those affecting the profession of embalming.

2. By Dr. ORIANNA McDANIEL, Director of the Pasteur Institute. One lecture upon rabies.

3. By Dr. A. J. CHESLEY, Director of the Division of Epidemiology of the State Board of Health.

Twelve lectures on preventable diseases.

4. By Mr. H. A. WHITTAKER, Director of the Division of Sanitary Engineering of the State Board of Health.

Four lectures on environmental sanitation and its relation to public health.

V. PROFESSIONAL EMBALMING AND FUNERAL MANAGEMENT

By Professor WILLIAM P. HOHENSCHUH of Iowa City, Iowa.

60 hours. Lectures, practical demonstrations, and recitations; conducted in The Institute of Anatomy. Subjects of study:

1. Embalming, its purpose.
2. Decomposition, putrefaction, and fermentation.
3. Arterial embalming.
4. Capillary and tissue injection; tissue gas.
5. Discolorations; causes and methods of prevention and removal.
6. Cavity preservation.
7. Treatment of post-mortem and mutilated cases.



Chemistry Building

8. Plastic surgery and cosmetics.
9. Dessication and mould.
10. Communicable diseases; treatment of cases.
11. Preparations for transportation.
12. Laying-out of bodies.
13. Dressing of body.
14. Costs and overhead expenses.
15. Show-rooms and salesmanship.
16. Advertising.
17. Funeral management.
18. Collections.

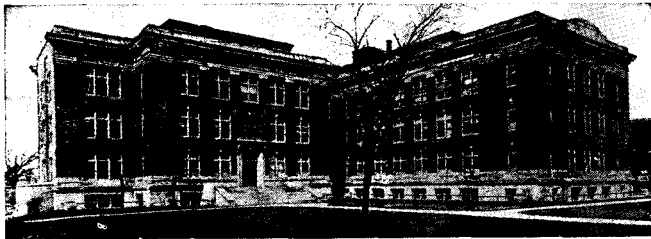
VI. BUSINESS ORGANIZATION AND MANAGEMENT

Under the direction of Mr. CHARLES H. PRESTON, Assistant Professor of Business Administration.

Eight lectures upon purchasing, credit, collections, correspondence, office organization problems, etc., given in Millard Hall.

VII. PRACTICAL WORK

Demonstrations in practical embalming and funeral management by leading members of the Minnesota Funeral Directors' Association, resident in the Twin Cities, will be given from time to time in their mortuaries, at hours to be announced later.



Institute of Anatomy

GENERAL INFORMATION

In accordance with previous announcement, the fourth annual session of the School of Embalming will begin January 8, 1919, and continue for twelve weeks.

Applicants are required to have not less than one year of high school study, or its equivalent.

They should register for the School of Embalming at Room 118, Millard Hall, not later than January 8, and will pay a fee of \$45 at the time of registration. Examinations will be held at the close of the course, and certificates will be issued to successful candidates. This certificate will be accepted by the Minnesota State Board of Health, and licenses will be granted when candidates have complied with other requirements. The fee of \$45 covers instruction, examination, and certificate.

Certificates of good moral character must be presented from a reputable physician in good standing, and also from a reliable business man or firm.

Board may be had near the University campus at about \$6 to \$7 per week. Lodging will cost from \$5 to \$7 per week. The Minnesota Union maintains a dining hall, at which meals are furnished at very moderate cost.

The registration office, Room 118, Millard Hall, can be reached by the Minneapolis-St. Paul interurban street railway.

For further information, address School of Embalming, University of Minnesota, Minneapolis, Minn.

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The Bulletin of the University of Minnesota

*The College of Dentistry
Announcement for the Year
1918 - 1919*



Vol. XXI No. 35 December 10 1918

*Entered at the post-office in Minneapolis as second-class matter
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*Acceptance for mailing at special rate of postage provided for in section 1103,
Act of October 3, 1917, authorized July 12, 1918*

UNIVERSITY CALENDAR

1918-1919

1918			
September	11	Wednesday	Registration closes except for new students
September	11-18	Week	Fees payable except for new students
September	17-24	Week	Examinations for removal of conditions and entrance examinations
September	23-24		Registration and payment of fees for new students
September	25	Wednesday	First semester begins
October	17	Thursday	Senate meeting, 4:00 p.m.
November	5	Tuesday	General Election Day; a holiday
November	27	Wednesday	Thanksgiving recess begins 9:00 p.m.
December	2	Monday	Thanksgiving recess ends 8:00 a.m.
December	21	Saturday	Christmas vacation begins 12 m.
1919			
January	2	Thursday	Christmas vacation ends 8:00 a.m.
January	20	Monday	Second semester registration closes except for new students
January	27	Monday	Final examinations begin
January	27	Monday	Payment of second semester fees closes except for new students
January	31	}	Registration and payment of fees for new students
February	1		
February	3	Monday	Second semester begins
February	12	Wednesday	Lincoln's Birthday; a holiday
February	20	Thursday	Senate meeting, 4:00 p.m.
February	22	Saturday	Washington's Birthday; a holiday
April	17	Thursday	Easter recess begins 9:00 p.m.
April	22	Tuesday	Easter recess ends 8:00 a.m.
April	22-28	Week	Condition examinations in certain colleges
May	15	Thursday	Senate meeting, 4:00 p.m.
May	23	Friday	Final examinations begin 2:00 p.m.
May	30	Friday	Memorial Day; a holiday
May	31	Saturday	Second semester closes
June	1	Sunday	Baccalaureate service
June	2	Monday	Senior Class Day exercises
June	4	Wednesday	Alumni Day
June	5	Thursday	Forty-seventh Annual Commencement
June	6	Friday	Summer vacation begins
June	16	Monday	Summer Session begins

The University year for 1919-20 will begin Tuesday, September 16. Classes will begin September 24.

COLLEGE OF DENTISTRY

FACULTY

- MARION LEROY BURTON, Ph.D., D.D., LL.D., President 1005 S. E. 5th St.
CYRUS NORTHROP, LL.D., President Emeritus 519 10th Ave. S. E.
ALFRED OWRE, B.A., M.D., C.D., D.M.D., Dean, Professor of Theory and
Practice of Dentistry, Dental Metallurgy, and Head of the Depart-
ment University of Minnesota
RICHARD OLDING BEARD, M.D., Associate Professor of Physiology
University of Minnesota
ROY G. BLAKEY, Ph.D., Associate Professor of Economics
619 S. E. Beacon St.
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638 6th Ave. N.
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* Absent on military service.

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 436 S. E. Harvard St.
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 521 S. E. 6th St.
- PAUL E. KLOPSTEG, Ph.D., Assistant Professor of Physics
 1026 15th Ave. S. E.
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 BERT A. ROSE, Band Instructor 710 7th St. S. E.
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* Absent on military service.

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307 Masonic Temple

DANIEL ZISKIN, D.D.S., Instructor in Oral Surgery 1600 Plymouth Ave.

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HJALMAR L. OSTERUD, Teaching Fellow in Anatomy 652 S. E. Erie St.

BYRON L. ROBINSON, Assistant in Anatomy 505 S. E. Walnut St.

FAUS P. SILVERNALE, Assistant in Anatomy 1013 24th Ave. S. E.

GENERAL INFORMATION

CURRICULUM

The course in the College of Dentistry leads to the degree of Doctor of Dental Surgery and covers a period of four or five years' collegiate study.

For statements of entrance requirements, registration, and fees, see Bulletin of General Information.

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.

COMBINED COURSES

Courses will be given in the College of Science, Literature, and Arts and the College of Dentistry leading to the degree of Bachelor of Arts or Bachelor of Science and Doctor of Dental Surgery.

GRADUATE WORK IN DENTISTRY

Graduates of dental schools who have received their Baccalaureate degree from this or any other approved university may become candidates for the degree of Master of Arts, Master of Science, or Doctor of Philosophy in the Graduate School. They will pursue courses of study conforming to the regulations of the Graduate School.

FELLOWSHIP

The Mayo Foundation offers a Fellowship in Dentistry similar to fellowship in any other specialty on the Foundation.

SUMMER SESSION

A summer session of six or twelve weeks is offered in the Departments of Anatomy, Animal Biology, Bacteriology, Chemistry, Crown and Bridge Work, Oral Anatomy, Oral Surgery, Operative Dentistry, Orthodontia, Physiology, and Prosthetic Dentistry.

EXTENSION WORK

The College of Dentistry, with the coöperation of the General Extension Division, offers intensive lecture and clinical work.

The course is prepared to give as complete a working knowledge of the subjects to the practicing dentists as the time will permit.

CONTINUATION COURSES

Departments offer teaching facilities and laboratories to any who wish to continue their study beyond the time allotted.

COLLEGE OF DENTISTRY

STUDY COURSES FOR DENTISTS

During the year the College of Dentistry will continue to offer graduate dentists the opportunity to register and take any course of lectures or clinical practice offered in the college laboratories and infirmary.

ADMISSION

General Requirements

1. English, three units.
2. Chemistry, one unit.
3. Mathematics: Elementary Algebra, one unit; Plane Geometry, one unit.
4. Enough additional work to make in all fifteen units of which not more than four may be in Group F.
5. Manual Training recommended.

On account of the limited capacity of the College of Dentistry, not more than ninety freshmen can be admitted. Applications for admission should be in the Registrar's office not later than July 25.

Candidates will be selected according to quantity and quality of preparation, and when necessary their fitness shall be determined by an examination and conference with the Students' Work Committee.

All other qualifications being equal, residents of Minnesota will be given prior consideration for vacancies existing at the date of their application.

All freshmen students, entering the College of Dentistry must confer with the Dean of the College some time before their matriculation or immediately after.

FOUR-YEAR COURSE

Expenses

Freshman year	
Annual incidental fee.....	\$100.00
Instruments	125.00
Books	25.00
*Military uniform for men.....	18.00
Sophomore year	
Annual incidental fee.....	\$175.00
Instruments	225.00
Books	35.00
Junior year	
Annual incidental fee.....	\$175.00
Instruments	100.00
Books	25.00
Senior year	
Annual incidental fee.....	\$175.00
Instruments	15.00
Books	10.00

* Subject to change due to cost of material.

GENERAL INFORMATION

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FIVE-YEAR COURSE

Expenses

Pre-Dental year	
Annual incidental fee.....	\$40.00
Books	10.00
*Military uniform for men.....	18.00
Freshman year	
Annual incidental fee.....	\$40.00
Instruments	25.00
Books	25.00
Sophomore year	
Annual incidental fee.....	\$175.00
Instruments	300.00
Books	35.00
Junior year	
Annual incidental fee.....	\$175.00
Instruments	75.00
Books	25.00
Senior year	
Annual incidental fee.....	\$175.00
Instruments	5.00
Books	10.00

MILITARY DRILL

Military Drill will be required of all men during the first two years of attendance.

PHYSICAL EDUCATION

A course is offered in Physical Education for Men and Women.

RULES AND REGULATIONS

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. The examinations at the end of semester or quarter are only for those who are taking the courses, while the condition examinations are only for those who are attempting to remove conditions.

* Subject to change due to cost of material.

The final standing of any student in a given subject shall be determined as the result of (a) practical work (laboratory or clinical), (b) recitations, and (c) oral or (d) written examinations. All of these factors shall be taken into consideration in making up the final grading in any subject.

All standings shall be reported officially to and from the Registrar's office at the end of each semester.

A uniform marking system has been adopted for the whole University. Four passing grades, indicated by the symbols *A*, *B*, *C*, and *D*, represent differing degrees of merit. The symbol *E* represents a condition, which may be removed by examination and by such supplementary work as the department imposing it may require. *F* stands for a failure and calls for a repetition of the work in course. *I* stands for incomplete and grants the student further time for the completion of the required work. The percentage range value of each letter is as follows: *A*, 100 to 93; *B*, 92 to 87; *C*, 86 to 81; *D*, 80 to 75; *E*, 74 to 60; *F*, below 60.

Regular examinations for the removal of conditions shall be given at no other time than (1) the week following the Easter recess and (2) the registration week in September.

Students having conditions will be subject to the action of the Students' Work Committee.

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 carrying less than the complete schedule of work may pay fees on a clock-hour basis.

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

A student who has incomplete course conditions or failures in sixty per cent of his course for any semester shall be dropped.

A student may not be promoted if he has incomplete conditions or failures in more than twenty per cent of the course of any year.

A student who fails to remove a condition or failure within twelve months from the time it was incurred shall automatically be dropped from the school.

An incomplete course is one that has not been completed because of illness or other personal emergency.

Work limited.—Students pursuing any continuous subject who have done such poor work in the first semester as to receive a condition or failure in such subject, 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.

Additional work.—A student may elect a subject in another department or college if his standing in the regular course is satisfactory and on approval of the Students' Work Committee.

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.

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

Tardiness and absences are only excusable on account of sickness.

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.

Except in cases of required work 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 intercollegiate debates or oratorical contests, unless he has a clear record at the time.

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.

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, 1918-1919

FOUR-YEAR COURSE

<i>Freshman Year</i>	First Semester		Second Semester	
	Credits	Hours	Credits	Hours
Anatomy, Oral	1	16	2	64
Animal Biology	3	96	3	96
Chemistry, Adv. Gen. and Qualitative....	3	96	3	96
English, Rhetoric	3	48	3	48
Hygiene, Personal	1	16		
Military Science and Tactics.....				
Prosthetic Dentistry	3	112	3	112
Technical Drawing, Shop Practice, or Physics	2-4	64-96	2-4	64-96
	16-18	448-480	16-18	480-512
<i>Sophomore Year</i>				
Anatomy, Gross	7	208	4	118
Anatomy, Histology and Embryology.....	4	128		
Anatomy, Oral	3	96		
Chemistry, Organic	3	96		
Military Science and Tactics.....				
Operative Dentistry			4	160
Physiology and Physiologic Chemistry.....			7	192
Prosthetic Dentistry	1	48	3	144
	18	576	18	624
<i>Junior Year</i>				
Bacteriology, General and Oral.....	4	128		
Crown and Bridge Work.....	6	256	3	112
Hygiene, General and Oral.....	1	48	1	16
Metallurgy, Applied	1	16		
Operative Dentistry	4	128	3	144
Orthodontia			2	96
Pathology, General and Oral.....			4	128
Pharmacology and Therapeutics.....			4	64
Prosthetic Dentistry	3	80	2	96
	19	656	19	656
<i>Senior Year</i>				
Crown and Bridge Work.....	3	112	3	112
*Elective	1	16-48	1	16-48
Operative Dentistry	5	208	4	192
Orthodontia	2	64	2	64
Pathology, Oral	3	48		
Prosthetic Dentistry	2	96	1	48
Surgery, Oral	3	80	6	160
Theory and Practice of Dentistry and Conference Course			2	32
	19	624-656	19	624-656

One credit hour may be either one recitation hour through one semester, two laboratory hours with outside work, or three laboratory hours without outside work.

* A student may elect a subject in another department if his standing in the regular course is satisfactory.

COURSE OF STUDY, 1918-1919

FIVE-YEAR COURSE

<i>Pre-Dental Year</i>	First Semester		Second Semester	
	Credits	Hours	Credits	Hours
Animal Biology	3	96	3	96
Chemistry, Adv. Gen. and Qualitative....	3	96	3	96
English, Rhetoric	3	48	3	48
Hygiene, Personal	1	16		
Mathematics, History, or Language.....	3-5	48-80	3-5	48-80
Military Science and Tactics.....				
Technical Drawing or Shop Practice.....	2	96	2	96
	15-17	400-432	14-16	384-416
<i>Freshman Year</i>				
Anatomy, Gross	7	208	4	128
Chemistry, Organic	3	96	3	96
Economics or Psychology.....	3	48	3	48
Military Science and Tactics.....				
Physics (with or without Mathematics as prerequisite)	4	64	4	64
	17	416	14	336
<i>Sophomore Year</i>				
Anatomy, Histology and Embryology.....	4	128		
Anatomy, Oral	6	176		
Operative Dentistry			4	160
Physiology and Physiologic Chemistry....			7	192
Prosthetic Dentistry	6	224	4	192
	16	528	15	544
<i>Junior Year</i>				
Bacteriology, General and Oral.....	4	128		
Crown and Bridge Work.....	6	256	3	112
Hygiene, General and Oral.....	1	48	1	16
Metallurgy, Applied	1	16		
Operative Dentistry	4	128	3	144
Orthodontia			2	96
Pathology, General and Oral.....			4	128
Pharmacology and Therapeutics.....			4	64
Prosthetic Dentistry	3	80	2	96
	19	656	19	656
<i>Senior Year</i>				
Crown and Bridge Work.....	3	112	3	112
*Elective	1	16-48	1	16-48
Operative Dentistry	5	208	4	192
Orthodontia	2	64	2	64
Pathology, Oral	3	48		
Prosthetic Dentistry	2	96	1	48
Surgery, Oral	3	80	6	160
Theory and Practice of Dentistry and Conference Course			2	32
	19	624-656	19	624-656

One credit hour may be either one recitation hour through one semester, two laboratory hours with outside work, or three laboratory hours without outside work.

*A student may elect a subject in another department if his standing in the regular course is satisfactory.

DEPARTMENTAL STATEMENTS

Odd numbers indicate first-semester courses; even numbers, second-semester courses. A combination of the two (e.g., 5-6) indicates courses continuing through the year. In the case of courses repeated the second semester, the suffix *a* indicates first semester; the suffix *b*, second semester.

ANATOMY

Professors CLARENCE M. JACKSON, THOMAS G. LEE; Associate Professor CHARLES A. ERDMANN; Instructor CHESTER A. STEWART; Assistants ROBERT S. GUTSELL, HJALMAR L. OSTERUD, BYRON L. ROBINSON, FAUS P. SILVERNALE.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
3-4.	Gross Anatomy	11	Fr.	An. Biol.
7.	Histology and Embryology.....	4	Fr., soph.	An. Biol.
3-4.	GROSS HUMAN ANATOMY. Dissection, including osteology. A disarticulated skeleton loaned to any two students. Every student required to dissect lateral half of the body. Third-year medical and second-year dental students. lecture hours; laboratory hours. JACKSON, ERDMANN.			
7.	HISTOLOGY AND EMBRYOLOGY. Minute structure and development of the tissues and organs. Second-year dental students. 128 hours. JACKSON, LEE, and Assistants.			

ANATOMY—ORAL

Associate Professor GEORGE M. DAMON; Assistant Professors OSCAR COOPERMAN, CARL H. PETRI, CHARLES E. RUDOLPH; Instructor LEE H. HARKER.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1-2.	Oral Anatomy	3	Fr., soph.	1
3.	Oral Anatomy	3	Soph.	2
1-2.	ORAL ANATOMY. A course of lectures and recitations on the anatomy and nomenclature of the teeth, and such laboratory work as drawing, dissection, modeling, and carving of the teeth. 32 lecture hours; 48 laboratory hours. DAMON, COOPERMAN, PETRI, RUDOLPH, HARKER.			
3.	ORAL ANATOMY. Continuation of Course 2 as outlined above. 32 lecture hours; 64 laboratory hours. DAMON, COOPERMAN, PETRI, RUDOLPH, HARKER.			

ANIMAL BIOLOGY

Professors HENRY FRANCIS NACHTRIEB, CHARLES P. SIGERFOOS; Assistant Professor ELMER J. LUND; Instructor GEORGE DELVIN ALLEN.

COURSES

Introductory Course

No.	Title	Credits	Offered to	Prereq. courses
1-2.	General Zoology	6†	All	None

INTRODUCTORY COURSE

1-2. GENERAL ZOOLOGY. A survey of the animal kingdom, emphasizing the principles of structure, physiology, embryology, classification, and evolution of animals. 64 lecture hours; 128 laboratory hours. Textbook, lectures, and quizzes. SIGERFOOS, LUND, ALLEN.

CHEMISTRY

Associate Professor WILLIAM H. HUNTER; Assistant Professor FRANK H. MACDOUGALL; Instructor CARL L. SCHUMAN.

COURSES

Division of General and Inorganic Chemistry

No.	Title	Credits	Offered to	Prereq. courses
3-4.	Adv. Gen. Chem. and Qualitative Anal.	6†	Fr., soph., jr.	Entrance credit in Chemistry
37.	Organic Chemistry	3	Soph.	3-4
3-4.	ADVANCED GENERAL CHEMISTRY AND QUALITATIVE ANALYSIS. Lectures and laboratory work. A discussion of the general chemical theories and laws, with qualitative analysis. 64 lecture hours; 128 laboratory hours. MACDOUGALL and Assistants.			
37.	ORGANIC CHEMISTRY. A course in the essentials of organic chemistry, with especial reference to compounds important in dentistry. Lectures, recitations, and laboratory work. 32 lecture hours; 64 laboratory hours. HUNTER, SCHUMAN, and Assistants.			

CROWN AND BRIDGE WORK

Professor FORREST H. ORTON; Associate Professors PETER J. BREKHUS, ALFRED A. PAGENKOPF, GEORGE W. REYNOLDS, AMOS S. WELLS; Assistant Professors HERBERT C. NELSON, WILLIAM A. ROLL; Instructors EVERETT E. MACGIBBON,* CARL OTTO, WILLIAM D. VEHE.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1-2.	Crown and Bridge Technique.....	9	Jr.	Dent. Anat. 3
3-4.	Crown and Bridge Practice.....	6	Sr.	1-2

† Both semesters must be completed before credit is given for the first semester.

* Absent on leave.

- 1-2. CROWN AND BRIDGE TECHNIQUE. A course of lectures, demonstrations, and laboratory work that includes all the more important forms of crowns and bridges. 32 lecture hours; 288 laboratory hours; 48 practice hours. PAGENKOPF, REYNOLDS, WELLS, NELSON, MACGIBBON, OTTO.
- 3-4. CROWN AND BRIDGE PRACTICE. A course of lectures and clinical practice covering the entire field of crown and bridge work, including porcelain crown work. 32 lecture hours; 192 practice hours. ORTON, BREKHUS, ROLL, VEHE.

DENTAL METALLURGY

Professor ALFRED OWRE; Associate Professor HARRY C. LAWTON.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1.	Dental Metallurgy	1	Jr.	Chem. 21-22

- I. DENTAL METALLURGY. Lectures, recitations, and demonstrations, taking up the most important metals with special reference to those used in dentistry. 16 lecture hours. OWRE, LAWTON.

DRAWING AND DESCRIPTIVE GEOMETRY

Professor WILLIAM H. KIRCHNER; Instructors INGVALD KVITRUD, MAURICE B. LAGAARD.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
41-42.	Technical Drawing	4	All	None

- 41-42. TECHNICAL DRAWING. Theoretical and practical graphics, reading and making of drawings. Projection, sketching, lettering, conventions, renderings, and translations. Preparation of conventional charts and diagrams of particular interest to dentists; also construction drawings of tools, instruments, and apparatus. 192 laboratory hours. KIRCHNER, KVITRUD, LAGAARD.

ECONOMICS

Associate Professors ROY G. BLAKEY, WILLIAM W. CUMBERLAND; Instructors LLOYD M. CROSGRAVE, ALBERT C. JAMES, J. WARREN STEHMAN.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
3-4.	General Economics	6	Soph., jr., sr.	None

- 3a,b-4. GENERAL ECONOMICS. Principles that underlie the present industrial order and the main public economic problems of to-day, such as the labor movement, social insurance, railway, trust, and other mo-

nopoly problems. 96 lecture hours. BLAKEY, CUMBERLAND, CROSS-GRAVE, JAMES, STEHMAN.

MECHANICAL ENGINEERING

Professor JOHN J. FLATHER; Instructors FRANCIS A. HOBART, EDWARD QUIGLEY, WILLIAM H. RICHARDS.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1-2.	Elementary Shop Practice.....	4	Fr., Pre-Dent.	.....
1-2.	ELEMENTARY SHOP PRACTICE. A general course in shop practice, which includes pattern making, foundry, forge, and machine work. 192 laboratory hours. HOBART, QUIGLEY, RICHARDS.			

MILITARY SCIENCE AND TACTICS

Captain STARKEY Y. BRITT, U. S. Army, retired, Professor of Military Science and Tactics, Head of Department; RAY CUNNINGHAM, Adjutant and Assistant Commandant; Sergeant JOSEPH HAVLICEK, U. S. Army, retired, Instructor; BERT A. ROSE, Band Instructor.

REQUIRED WORK

All physically fit male students are required to take military training during the first two undergraduate years of their course unless they have secured such training at an approved institution endorsed by the Military Department. When this course is entered upon it must be carried to completion as a prerequisite for graduation. No credits are allowed for this work.

ELECTIVE WORK

(a) All juniors and seniors who have completed two years of drill may register for the course required by General Orders No. 49 War Department for members of the 'Reserve Officers' Training Corps. Such students sign a written agreement to continue in this corps for the remainder of the college course, the completion of this work is a prerequisite to promotion.

Juniors and seniors who take the course required by General Orders No. 49, will receive an allowance of thirty cents per day for subsistence while pursuing the course and will have all expenses paid to and from the encampments. They also are eligible for appointment as temporary second lieutenants in the Infantry branch of the Regular Army for six months with a salary of one hundred dollars per month upon graduation and commission in the Reserve Corps. The Reserve Corps furnishes officers for Citizens Training Camps in time of peace and commission in the United States Volunteers in time of war, such officers having preference for commissions in the volunteers immediately below experienced officers in the federal service.

The course includes three hours a week of drill and two of study in the Military Department and also includes recommended courses offered by the respective colleges which have a direct bearing on the work of the Corps, such as Military History and International Law in the Liberal Arts College. The work carries three credits in each semester in the Military Department, and such additional credits as the respective curricula of the colleges may permit.

(b) Any student having completed the two years of required Military Training may continue the work for credit in the third and fourth years. Credit for such work is allowed in practically all of the colleges of the University, the maximum being three credits a year.

OPERATIVE DENTISTRY

Professors JAMES M. WALLS, HENRY S. GODFREY; Associate Professor ROBERT O. GREEN, MARK O. PATTRIDGE; Assistant Professors NORMAN J. COX, JOSEPH M. LITTLE, RICHARD S. MAYBURY, JOSEPH F. SHELLMAN; Instructors WILLIAM C. NAEGELI, V. T. NYLANDER, PAUL S. PARKER, RAY E. RAMAKER, WILLIAM D. VEHE.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
2.	Operative Technique	4	Soph.	Dent. Anat. 3
3-4.	Operative Dentistry	7	Jr.	2
5-6.	Operative Dentistry	9	Sr.	3-4

2. OPERATIVE TECHNIQUE. This course consists of lectures, recitations, demonstrations, and laboratory work of a technical nature. 16 lecture hours; 144 laboratory hours. GREEN, PARKER, RAMAKER, and Assistants.

3-4. OPERATIVE DENTISTRY. This course consists of lectures, recitations, and clinical practice. 32 lecture hours; 240 practice hours. WALLS, GREEN, MAYBURY, LITTLE, SHELLMAN, NAEGELI, NYLANDER, PARKER, RAMAKER.

5-6. OPERATIVE DENTISTRY. A course of lectures, recitations, demonstrations, conference work, collateral reading, and clinical work covering the entire field of operative dentistry, including porcelain operations. 16 lecture hours; 384 practice hours. WALLS, GODFREY, PATTRIDGE, COX, LITTLE, MAYBURY, SHELLMAN, NAEGELI, VEHE.

ORAL SURGERY, PATHOLOGY, HYGIENE, ROENTGENOLOGY, AND DIAGNOSIS

Professor THOMAS B. HARTZELL; Associate Professors CHARLES A. ERDMANN, CHARLES A. GRIFFITH, RAY R. KNIGHT, HERMANN A. MAVES, CHARLES WIETHOFF; Assistant Professors HAROLD J. LEONARD, ARTHUR A. ZIEROLD; Instructors K. PAUL CARSON, WILLIAM A. GREY, CLARENCE

HERMANN, HELMER W. HOLMGREN, ELEANORA S. WHITE, DANIEL ZISKIN.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1.	Oral Hygiene	2	Jr.	None
2.	Oral Pathology	3	Sr.	Path. and Bact.
3.	Oral Surgery	*9	Sr.	Anat., Path., Bact., and Course 1
	* { Principles of Surgery.....	2		
	Surgical Anatomy	2		
	Oral Surgical Operations....	2		
	Clinical Practice	3		

1. ORAL HYGIENE. A course of lectures and recitations on the hygiene of the mouth, practice in the technic of prophylaxis, treatment of gingivitis, examination, and diagnosis. 16 lecture hours; 48 practice hours. MAVES, LEONARD, CARSON, WHITE.
2. ORAL PATHOLOGY. Lectures and recitations involving general pathology as a foundation for special pathology of the teeth, peridental structures, and oral cavity, and including metastatic infections and neurological disturbances due to infections and irritations in the mouth. 48 lecture hours. LEONARD.
3. ORAL SURGERY. Four courses in principles of surgery; surgical anatomy; oral surgical operations and technic; practice in technic of extraction, oral roentgenology, hospital dental practice, pyorrhea treatment, oral diagnosis, local and nitrous oxide anaesthesia, oral surgery proper. 96 lecture hours; 144 practice hours. HARTZELL, ERDMANN, GRIFFITH, KNIGHT, MAVES, WIETHOFF, LEONARD, CARSON, GREY, HERMANN, HOLMGREN, WHITE, ZISKIN.

ORTHODONTIA

Professor OSCAR A. WEISS; Associate Professors WILLIAM E. LASBY, HARRY C. LAWTON; Assistant Professors MAX E. ERNST, CARL O. FLAGSTAD; Instructors BERT G. ANDERSON, HOUGHTON HOLLIDAY.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
2.	Orthodontia Technique	2	Jr.	Pros. Tech. 4
3-4.	Orthodontia Practice	4	Sr.	1

2. ORTHODONTIA TECHNIQUE. A course of lectures, recitations, and laboratory work in the making of regulating appliances. 96 laboratory hours. LAWTON, HOLLIDAY.
- 3-4. ORTHODONTIA PRACTICE. A course of lectures and recitations upon theory and practice and clinical work. Every student is required to treat at least one case of irregularity of the teeth. 32 lecture hours; 96 practice hours. WEISS, LASBY, ERNST, ANDERSON.

PATHOLOGY, BACTERIOLOGY, AND PUBLIC HEALTH

Associate Professor WINFORD P. LARSON; Assistant Professor HERBERT C. NELSON; Instructors ANNE BENTON, MARGARET WARWICK; Assistant HUGH T. JONES.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
3.	Bacteriology	4	Jr.	Hist. 51
4.	Pathology	4	Jr.	Chem. 21-22

3. BACTERIOLOGY. Principles governing isolation and study of bacteria, with particular attention to bacteria and other parasites of mouth and teeth. Studies of pathogenic organisms which produce, or appear in rheumatism, their relation to infections of teeth. 32 lecture hours; 96 laboratory hours. LARSON, NELSON, BENTON, JONES.
4. PATHOLOGY. The study and recognition of gross and microscopic disease processes. The principles of general pathology with special consideration of diseases peculiar to the mouth and teeth and important in dental practice. 32 lecture hours; 96 laboratory hours. NELSON, WARWICK, JONES.

PHARMACOLOGY AND THERAPEUTICS

Professor ARTHUR R. HIRSCHFELDER.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
2.	General Pharmacology	4	Jr.	Chem. 21, 22

2. GENERAL PHARMACOLOGY AND THERAPEUTICS. As applied to dentistry comprises a study of the properties, action, and therapeutic application of the principal drugs used in dentistry with exercises in prescription writing. 64 lecture hours. HIRSCHFELDER.

PSYCHOLOGY

Professor MELVIN E. HAGGERTY;* Assistant Professor JOSEPH PETERSON.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1-2.	General Psychology	6	Fr.	None

- 1-2. GENERAL PSYCHOLOGY. The aims and methods of psychology; the facts, laws and functions of mental life; development and learning in relation to training and instinct. 96 lecture hours. HAGGERTY, PETERSON.

* Absent on military service.

PHYSICAL EDUCATION

FOR MEN

Director LOUIS J. COOKE; Assistant Director WILLIAM K. FOSTER.

The purpose of the department is to provide all men of the University opportunity for exercise in order to maintain and build up their general health. It also provides special training for the correction of physical defects and functional derangements.

A physical examination is required of all new matriculants, and of all others using the department privileges, at the beginning of the year, and as often during their college course as their physical condition may indicate. Students taking the required work in physical education are examined also at the close of the year. A study of these records shows a marked improvement in the standard of health of the average student during his college course.

The gymnasium, swimming pool, and baths are open to all students of the University, who are free to use the apparatus and to pursue a course in physical training under the supervision of the Director and his assistants.

Those students taking the required course in physical education who can not swim, must make a reasonable effort, as determined by the department, to pass the swimming and life-saving requirements, and will be assigned special hours for instruction.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1.	Personal Hygiene	1	All	None

1. PERSONAL HYGIENE. Two hours per week; first six weeks of first semester. Examination at close of course. COOKE.

A special lecture on sex hygiene is given sometime during the first ten days of the autumn semester, with required attendance on the part of all freshmen.

PHYSICAL EDUCATION

FOR WOMEN

Associate Professor J. ANNA NORRIS; Assistant Professor MAY S. KISSOCK; Instructors VALERIA G. LADD, ALICE H. TOLG.

This department aims to promote the health of the women students. It gives physical examination and advice to all on entrance; plans systematically to keep in close touch with them during their first year in college; conducts yearly consultations with, and examines when necessary, all upper-class students; gives courses in hygiene; organizes physical work to meet the varying needs and physical tastes of students; cooperates closely with the Woman's Athletic Association in encouraging and organizing athletic sports; holds regular office hours for the purpose

of consultation with all students who desire its advice; and investigates cases of illness which come to its attention.

Work in this department is required of all newly entering students (see Courses 1-2 and 11), of sophomores who can not pass the swimming examination, and of all students permitted, for reasons connected with their physical condition, to carry less than the minimum number of credit hours. Physical examinations or consultations required annually of all students.

Elective work without credit arranged in social dancing, gymnastic dancing, swimming, fencing, basket-ball, baseball, and other activities.

PHYSICS

Professor ANTHONY ZELENY; Assistant Professor PAUL E. KLOPSTEG.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1-2.	General Physics	6	Fr., soph., jr., sr.	None

1. GENERAL PHYSICS. Mechanics of solids, fluids, sound, and heat. Treatment experimental rather than mathematical; fundamental principles. First part of general Course 1-2. Preferably taken with Course 3, may be taken separately. One lecture, two recitations per week. ZELENY, KLOPSTEG.
2. GENERAL PHYSICS. Electricity, magnetism, and light. Treatment experimental; fundamental principles, including those of radioactivity, ionization, X-radiation. Second part of general Course 1-2. Preferably taken with Course 4, may be taken separately. One lecture, two recitations per week. ZELENY, KLOPSTEG.

PHYSIOLOGY

Professors ELIAS P. LYON, FREDERICK H. SCOTT; Associate Professor RICHARD OLDING BEARD; Assistant Professor CHAUNCEY J. V. PETTIBONE.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
4.	Physiologic Chemistry	3	Soph.	Chem. 37
6.	Physiology	4	Soph.	An. Biol.

4. PHYSIOLOGIC CHEMISTRY. A course of lectures and laboratory studies of the compounds occurring in the animal body; of the food-stuffs; the digestion and of urinalysis. 32 lecture hours; 32 laboratory hours. PETTIBONE and Assistants.
6. PHYSIOLOGY. Lectures and laboratory exercises. The study of muscle-nerve functions; of blood, the circulation, respiration, digestion, secretion, and excretion. 48 lecture hours; 80 laboratory hours. SCOTT, BEARD, and Assistants.

PROSTHETIC DENTISTRY

Professor OSCAR A. WEISS; Associate Professors GEORGE M. DAMON, WILLIAM F. LASBY, HARRY C. LAWTON; Assistant Professors OSCAR COOPERMAN, CARL O. FLAGSTAD, CARL H. PETRI, CHARLES E. RUDOLPH; Instructors BERT C. ANDERSON, RUDOLPH W. DELTON, LEE H. HARKER, HOUGHTON HOLLIDAY, ANDREW J. WEISS.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
1-2.	Prosthetic Technique	6	Fr.	None
3-4.	Prosthetic Technique	4	Soph.	1-2
5-6.	Prosthetic Practice	5	Jr.	3-4
7-8.	Prosthetic Practice	3	Sr.	5-6

1-2. PROSTHETIC TECHNIQUE. This course consists of lectures and technique work in the laboratory, comprising impression materials and their uses and the different processes of plate work. 32 lecture hours; 192 laboratory hours. DAMON, COOPERMAN, PETRI, RUDOLPH, HARKER.

3-4. PROSTHETIC TECHNIQUE. The course consists of lectures, recitations, and laboratory work covering the principles and practice of plate work. 192 laboratory hours. LAWTON, ANDERSON, DELTON, HOLLIDAY.

5-6. PROSTHETIC PRACTICE. A course of lectures and recitations upon theory and practice and clinical work in the simpler forms. 32 lecture hours; 144 practice hours. WEISS, LASBY, ANDERSON.

7-8. PROSTHETIC PRACTICE. A course of lectures and clinical work in special prosthesis, as cleft palate and facial restoration. 144 practice hours. WEISS, LASBY, FLAGSTAD, ANDERSON.

RHETORIC

Professor JOSEPH M. THOMAS; Instructor CYRIL A. HERRICK.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
3.	Composition and Rhetoric.....	3	Fr.	None
4.	Composition and Rhetoric.....	3	Fr.	None

3. COMPOSITION AND RHETORIC. Review of grammar; study of simple expository composition; theme writing; reading and discussion of a selected list of masterpieces. 96 lecture hours. HERRICK.

4. COMPOSITION AND RHETORIC. Study and analysis of selected essays; imitative and original writing; reading and discussion of a selected list of masterpieces. 96 lecture hours. HERRICK.

THEORY AND PRACTICE OF DENTISTRY

Professor ALFRED OWRE and Associates.

COURSES

No.	Title	Credits	Offered to	Prereq. courses
2.	Theory and Practice of Dentistry.....	2	Sr.	None
2.	THEORY AND PRACTICE OF DENTISTRY. A lecture and conference course in the theory and practice of dentistry, applied economics, jurisprudence, psychology, ethics, and art. 32 lecture hours. OWRE and Associates.			

For Mathematics, History, and Languages, see Bulletin of the College of Science, Literature, and the Arts.

STUDENTS

SENIORS

O. H. Abrahams	*G. A. Johnson	C. W. Passer
*A. W. Albrecht	*Harvey Johnson	W. H. Pattridge
C. O. Anderson	H. E. Johnson	E. H. Pearson
*E. J. Anderson	R. E. Johnson	*J. A. Peterson
G. R. Anderson	*C. W. Kelsey	L. C. Peterson
R. H. Anderson	F. K. Kirkpatrick	E. W. Plonty
*C. B. Bang	V. L. Kirkpatrick	L. R. Priske
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Elmer Haugberg	*H. B. Ness	*H. S. Woodruff
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*G. J. Hiebert	*I. H. Northfield	A. L. Wrucke
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